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ONLINE DESIGN AUCTION

Bachelor of Information Technology

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ABSTRACT

The project that we are developing is called Online Design Auction. It is a website that functions as an online store and marketplace selling banners, animated images, website template, static logos, animated logos and flash introduction.

It provides service solution to customers in order for them to capitalize on the latest multimedia designs quickly and cost-effectively without the burden of building, managing and maintaining a web site. It also allows customers placing bids on images sold online in the catalogue. Developers of this site will be able to display and control catalogue of designs so that buyers can browse through the catalogue and activate orders.

With the development of this system, it is divided into two parts which is the Multimedia part that is handled by my partner, Melanie and the other part is the Transaction part which is handled by me. The Multimedia part focuses heavily on the searching and browsing of images in the catalogue. The Transaction part focus more on the purchasing actions of images that users want to buy.

ACKNOWLEDGEMENT

First of all, I would like to acknowledge my partner in this project, Melanie, for helping me to understand this project more clearly and for trusting me to pair with her to do the other part of this system with her, which is the Transaction part.

Secondly, I would like to thank Madam Norazlina Khamis as my supervisor for guiding me in the development of this project and the comments that she gave to keep me on track about the flow of this project.

Besides that, I would also like to take this opportunity to thank Miss Norisma Idris for being able to be my moderator for this project. There is a sudden realization that there is so much things to learn.

As for my fellow friends, my course mates, and my housemates, thank you for all the help that is given directly or indirectly by lending books, and software to help me in understanding the development of this project.

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Introduction

CHAPTER 1 : INTRODUCTION

1.1 Introduction of Online Design Auction

Online Design Auction basically providing a website that turn into auction, online store and marketplace. We develop and run a business to fulfill the requirement of multimedia industry nowadays. Providing Business-to-Business (B2B) services solution to customer in order for them to capitalize on the latest multimedia designs quickly and cost-effectively without burden of building, managing and maintaining.

Focusing on the market, Online Design Auction will form to capitalize on the high potential growth opportunities for B2B ventures within the emerging of Internet services. Dynamic designs with extensive layouts will be auctioned to support our objectives to be experienced in e-commerce, business and marketing. Multimedia designs aim to be flooded with valuable experience, skills and enthusiastic ideas.

1.2 Objectives of Developing OAD

Our company, ***From Ideas to Reality*** is a privately held e-commerce development company, providing Business-to-Business (B2B) and e-marketplace services, as well as complete Business-to-Consumer (B2C) and Consumer-to-Consumer (C2C) e-commerce business arena. With insight on the burgeoning global online business market, ***From Ideas to Reality*** incorporates the-art-of-Multimedia solutions into global business strategy of emerging online service companies. The combination of

Internet business and Multimedia innovation, ***From Ideas to Reality*** transforms traditional business into the world of e-Business.

1.2.1 From Ideas to Reality Vision

We recognize an opportunity to help develop the online market and use our expertise to advance a paradigm shift in the traditional methods of conducting business. Our objective is to create a vibrant environment where we'll be able to display and control catalogue of designs and buyers can browse through and activate orders.

1.3 Products and Services

From Ideas to Reality provides web-based application services and e-commerce solution, for businesses that have Internet requirements.

Services strategy centers on the concept to auction multimedia designs for users to manage their own inventories. We try to organize the systems to run smoothly and ensure that users will be able to navigate through the site and make their orders with ease. As momentum we will also provide updated, reliable information on technological innovations, industries and products to keep users informed on markets progress.

Whenever the customers have difficulties and questions regarding the designs we enhance the relationship between the suppliers and the buyers through direct connectivity.

By bringing in catalogue of designs to the Internet global marketplace customer will be able to compare prices, check the designs and manage to transmit purchase in real time. In other words, workflow of business process is offered.

1.4 Scope of project

Under this project, we cover two modules which is :

- User Module
- Administration Module

1.4.1 User Module

In this module, the user module, it consist of these functions:

- Latest information technology update through news
- Send in suggestions and inquires
- Choose desired image and purchase it
- Ask for our service to invent logo, banner, animation and such for users' company

1.4.2 Administration Module

In this module, the administration module, it consists of these functions:

- Enable administrator to maintain information in database

Task Name	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03
Planning									
Introduction									
Literature Review									
Methodology									
System Analysis									
System Design									
Development									
System Testing									
Disscussion									

Table 1 : Schedule chart of Online Design Auction

- Enable add, delete and edit functions on web applications
- Enable administrators to handle with errors

1.5 Project Schedule

The purpose of project schedule is to ensure the development is completed at a fixed time. Besides that, project schedule also states the date frame of each activity, which is the date frame of each activity, which consists the start time and the finish time of a certain activity.

Please turn over to see the Gantt chart of the schedule of this project:

1.6 Project Limitations

- Response time is longer because databases are in images types, so have to get a higher speed processor computer.
- The time available to develop this system is quite short, so if there is more time, system would probably be more better in terns of designing the interface to be more attractive.
- System requires large database. Larger database means bigger memory to store in databases. This indirectly increases the cost of hardware and therefore also affects the project cost.
- Development cost is higher because it needs lots of software tools to use for Web site, forms and electronic commerce development.

Chapter 2

Literature Review

CHAPTER 2 : LITERATURE REVIEW

2.0 About Literature Review

Literature review is an activity where research is done on the background study about the knowledge and information gained in developing this project. The purpose of carrying out literature review is to have a better understanding about the development tools used to develop this project and also the programming languages, for example Visual Basic, Active Server Pages and others. Besides that, literature review can help to obtain a better skill on the development methodologies used while developing a project. It is important because it gives an overview of step for information gathering before going to other phases such as system design and analysis, system implementation and others. In this case, it requires studying the background of project, the relationship to other types of system, comparison of other system, marking down details of the going to be system and analysis of the enhancement probability. It also requires researching from other peoples' research, electronic resources, journals, books, and personal observation.

For this project, titled "Online Design Auction ", will be handled by two people, and that would be me, Beverley Jominit, by and my partner, Melanie Michael. For this project, I would focus more about security whereas my partner would focus about multimedia.

2.1 Overview of Online Design Auction

Online Design Auction (ODA) is a web-based project. In this project, it sells banners, static logos, animated logos, animated introduction, background templates, web site templates and banner. This web site also accepts bids. This web site also contains an e-bulletin. Besides that, this project offers users' and developing companies a helping hand in building their web site. This unique solution helps users' and companies save time, manpower and resources. They could inquire for these services through our online services by sending an email and stating the details of their company otherwise their personal profile.

With this online service, customers will be able to purchase the items sold by filling up a form, where in this form customers' have to fill in their personal data such as their: name, address, email address, telephone number and account number. As customers' have to put in their personal information, security has to be tight. Therefore, a secured web site is important to ensure reliable services.

2.2 Related Research

2.2.1 Electronic Commerce Overview

This 'Online Design Auction' is a project that sells items online, meaning on the Internet. Selling items on the web is referred as electronic commerce. Electronic commerce is defined as the use of electronic data transmission to implement or enhance business processes by telecommunication networks. Nowadays, people prefer to do business the electronic way rather than the traditional way. Firms have used various

electronic communications tools to conduct different kinds of business transactions. For example, banks have used electronic funds transfers (EFT) to move customers' money around the world.

The advantages of electronic commerce are because of the ability of one site to offer a wider selection of titles than even the largest physical bookstore, can outweigh the advantages of a traditional bookstore – for example, the customer's ability to browse. Besides that, buyers can consider many different products and services from a wider variety of sellers on the Internet. This wide variety is available for customers to evaluate 24 hours a day, every day. Some buyers prefer a great deal of information in deciding a purchase while other buyers prefer less days to make up their mind in purchasing an item they really want. It depends on the needs and wants of the buyers. Electronic commerce provide buyers an easy way to customize the level of detail in the information they obtain about a prospective purchase, so instead of waiting for days for the mail to bring a catalog or product specification sheet, buyers can have instant access to detailed information on the Web. Products such as software, audio clips, or images can even be delivered through the Internet, which reduces the time buyers need to wait to begin their purchases.

Electronic commerce can increase sales and decrease cost. If advertising that is done well on the web could even get a small firm's message out to potential customers in the world. Besides that, business could expand not only in one country but also to customers that are scattered geographically. A virtual firm could also gather people who share a common interest. A business can reduce the costs of handling sales inquiries,

providing price quotes, and determining product availability by using electronic commerce in its sales support and order taking processes.

Setting up a business online could increase sales opportunities for the seller and together with that increase purchasing opportunities for the buyer. It could also identify new suppliers and business partners. The web also provides competitive bid information very efficiently, a spot for negotiating price and also the delivery terms. And speaking of delivery terms, electronic payments is done to issue the purchase of a product and is therefore sent securely and quickly when transmitted over the Internet. Furthermore, electronic payments can be easier to audit and monitor than payments made by check, providing protection against fraud and theft losses.

Besides that, buyers can benefit from the reduction in commuter-caused traffic and pollution. Electronic commerce increases the speed and accuracy with which businesses can exchange information, which reduces costs on both sides of transactions. Other than that, electronic commerce can also make products and services available in remote areas. For example, distance education where it makes people possible to learn skills and earn degrees no matter where they live or what hour or time they have available to study.

2.2.2 Internet Security Overview

With electronic commerce using the technology of the Internet to expand its boundaries, it is possible to expect that every business in the future would go online. The Internet is an exciting and useful tool that puts vast information at our fingertips.

With only a click of the mouse, it lets us do anything that you can think of, such as purchasing an airline ticket, booking a stay in a hotel, sending gifts to friends, or buying a favorite book. But when exploring online resources, chances are that personal information such as the cookies in the computer might be vandalized by hackers or be seen by other people. This will therefore lead to misuse of rights. Therefore, in order for users to be more secured when navigating through online resources, users should be aware of the online environment whether it provides security protection or not.

Security is often cited as a major barrier to electronic commerce. Prospective buyers, for example, are leery of sending credit card information over the web. Prospective sellers worry that hackers will compromise their systems. Therefore, the National Computer Security Association (NCSA) has identified four cornerstones of secure electronic commerce. Included are:

- Authenticity - is the sender (either client or server) of a message who they claim to be ? In TCP/IP, the basic means of verifying the identity of a user is a password, but passwords can be guessed and intercepted. Internet protocol addresses can also be screened to prevent unauthorized access. Yet, IP has no way of verifying that a packet has actually come from a particular domain. By means of a technique called IP spoofing, a hacker can send a message that appears to come from a particular domain when in fact it does not or he or she can alter a URL an a Web page so that subsequent accesses appear as if they were being handled by a trusted site, when in fact they are not.

- Privacy – are the contents of a message secret and only known to the sender and receiver? Breaches to privacy can occur both during and after transmission. Once a message is received, the sender must be assured that its contents remain private. Here, the term contents are used in its broadcast sense. For example, even when a user accesses a page from a Web site, a log is made of the transaction. The log records information like the time and date, the address of the user's machine, and the URL of the previous page the viewer were viewing. If the user is accessing the Web by an ISP, the ISP's server can potentially maintain every site visited by the user. In the same rein, many commercial sites utilize cookies to maintain information about users. In most cases, there are legitimate uses for cookies. However, some advertisers have made unscrupulous use of cookies to track the viewing habits of users. The greatest threat to privacy is not the information that is obtained in underhanded ways. Instead, it is the information that users freely provide to web sites that can be most compromising.
- Integrity – have the contents of a message been modified (intentionally or accidentally) during transmission? The TCP/IP transmits data packets in plain text because the packet associated with given message often traverse a number of routers and lines as they move from client to server and back again, they are susceptible to capture and modification while en route. For instance, a hacker might modify the address where the contents of a Web form will be submitted. The user might fill in a credit card number on a form, click on a "Submit" button and unknowingly transmit the information to the hacker's server.

- Nonrepudiation – can the sender of a message deny that they actually sent the message? Say if users order an item through a mail-order catalog and pay by check, then it is difficult to dispute the veracity of the order. If the user orders the same item through the catalog's number and pay by credit card, then there is always room for dispute, although caller ID can be used to identify the phone, which the order was placed. Similarly, if users use the catalog's web site and pay by credit card, user's can always claim that it was not the user that placed the order, although the access log file that the server creates and updates automatically records the sender's Internet address.

At a minimum, this means that the privacy of data and messages must be protected, identities must be verified and verifiable and unauthorized access must be controlled. Ensuring the overall security of an electronic commerce site is an extremely complex task for which there are a number of guides. We can look at three solutions – encryption, digital signatures, and firewalls – that provide the foundation for client and server security in an electronic commerce application.

2.2.3 Security Overview

2.2.3.1 Encryption

One way to assure the confidentiality and privacy of messages is to make sure that even if they fall into the wrong hands, the messages cannot be read. This is where cryptography comes into play. While cryptography dates to the ancient Greeks, today's system relies on sophisticated mathematical formulas and computer algorithms. Cryptography has four basic parts:

1. Plaintext – the original message in human-readable form.
2. Ciphertext – the plaintext message after it has been encrypted into readable form.
3. Encryption algorithm – the mathematical formula used to encrypt the plaintext into ciphertext and vice versa.
4. Key – the secret key used to encrypt and decrypt a message. Different keys produce different ciphertext when used with the same algorithm.

Cryptography enables text but also binary information, video, sound, and executable software modules – to be encrypted for secure transmission across the Internet. Internet algorithms can be used to encrypt messages. Even if the algorithm is known, the message is still secure as long as the key is unknown. It is possible to guess a key simply by having a computer try all the possibilities until the message is decrypted. This is why the length of a key is the main factor in securing a message. If a key were only 4 bits long (example: 0101), then there would be 16 possibilities (2^4=16).

The actual length of key that is employed depends on a variety of factors. One of these factors is the useful life of the data. For example, information about an individual's credit history must remain confidential beyond the life of the individual. On the other hand, a credit card number only needs to remain confidential during the life of the card. There are two kinds of encryption technology that is:

1. Asymmetric encryption (public-key encryption)
2. Symmetric encryption (private-key encryption)

2.2.3.1.1 Asymmetric Encryption

Asymmetric encryption also known as public-key encryption, utilizes a pair of keys – one public and one private key. The public key is made available to anyone who wants to send an encrypted message to the holder of the private key. The only way to decrypt the message is with the private key. In this way, messages can be sent without agreeing on the keys in advance.

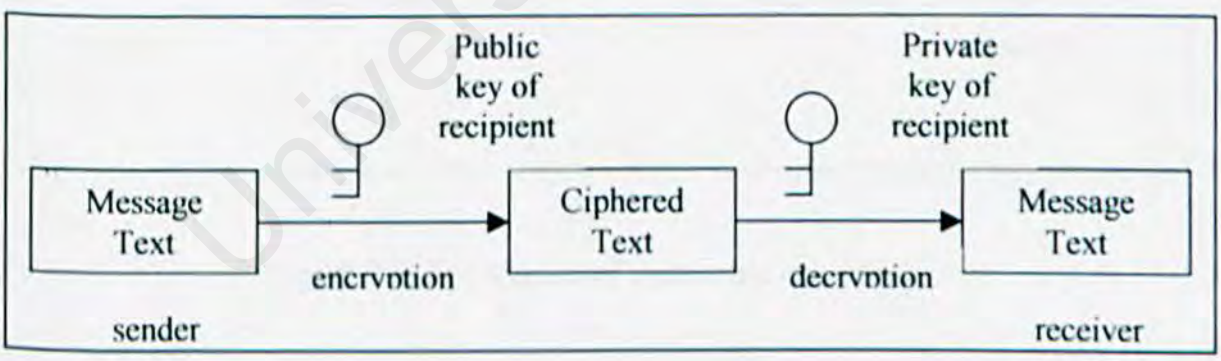


Figure 2.1: The process of public key encryption

Unlike symmetrical encryption, there are only a couple of algorithms for encrypting public key messages. One of it is RSA (named after Ronald Rivest, Adi Shamir, and Leonard Adelman). However, the main problem with all public key algorithm is their speed. Symmetrical algorithms are qualitatively faster than public key algorithms because they require shorter keys. This is why a combination of symmetrical and public key encryption is used with real-world applications. The combination of symmetrical and public key encryption is known as a digital envelope.

2.2.3.1.2 Symmetric Encryption

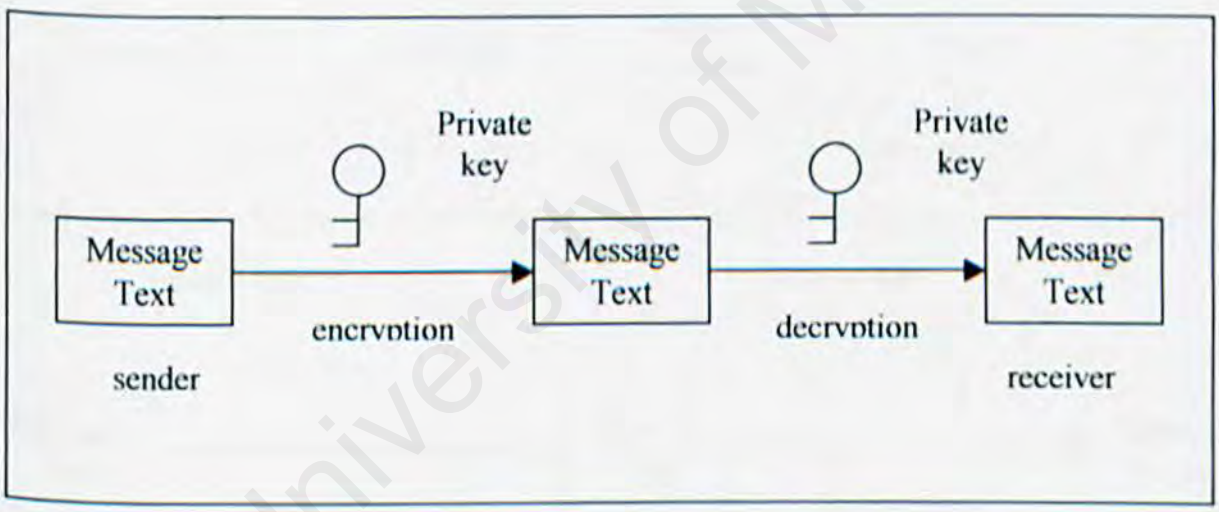


Figure 2.2: The process of symmetric encryption

Symmetrical encryption means that the same key used to both encrypt and decrypt a message. This means that the sender and receiver has to agree in advance on the key. Symmetrical encryption is also called private key encryption.

One difficulty with symmetrical is that many Internet messages are sent between people, or people and machines that never met. Another difficulty is that many people access Web servers. If a server's private key is distributed to thousands of users, there is no way that the key will remain secret for long.

2.2.3.2 Digital Envelope

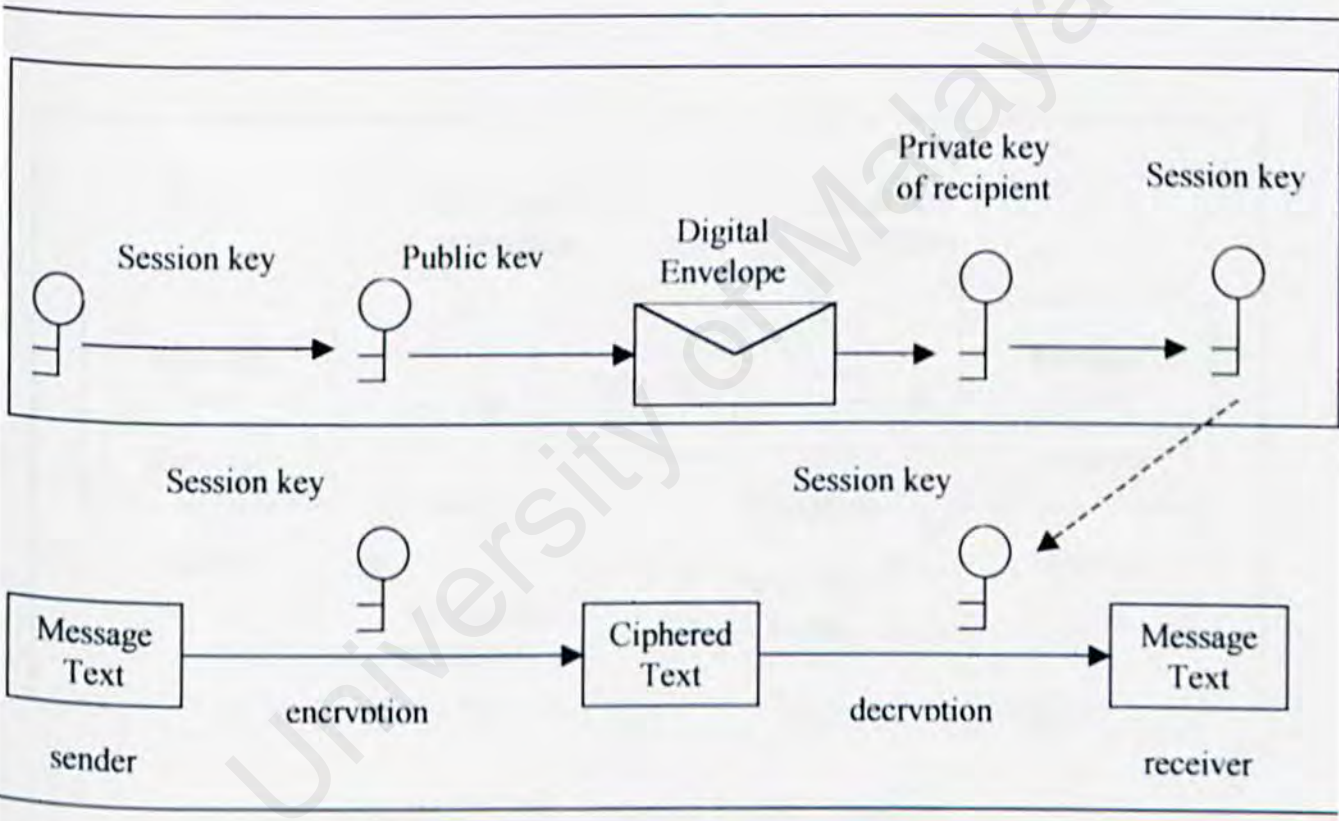


Figure 2.3: The process of digital envelope

The combination of symmetrical and public key encryption is known as a digital envelope. The basic idea is to use public key encryption to create and send a

symmetrical key to the message recipient. The symmetrical key is then used to encrypt and decrypt the message as shown in figure 2.3.

2.2.3.3 Digital Signature

Digital signature is the network equivalent of personal signatures that cannot be forged. Digital signatures are based on public key encryption. The use of digital signature is illustrated below:

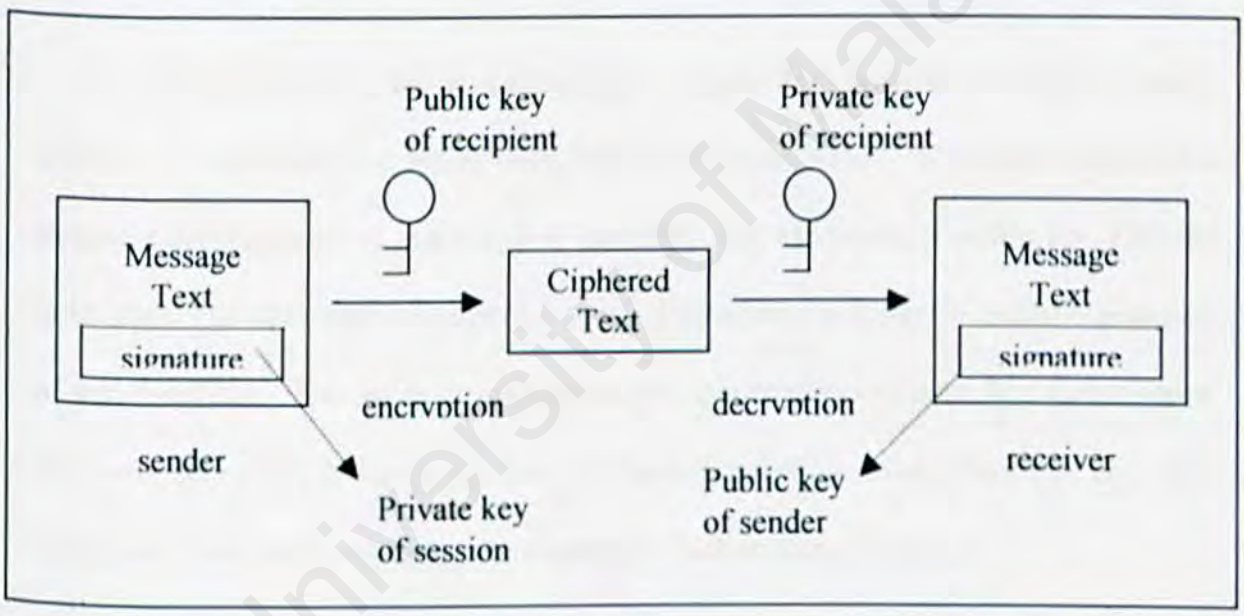


Figure 2.4: The process of Digital Signature

The basic idea is that messages encrypted with a private key can only be decrypted with a public key. Essentially, the sender creates a phrase and encrypts it with his or her private key. This phrase is then attached to the message and the combined

message is encrypted with the recipient's public key. Upon receipt, the message is first decrypted with the recipient's private key. The signature phrase is decrypted with the sender's public key. If the phrase is successfully decrypted, then the recipient knows that the holder of the sender's private key could have only sent the message. Of course, at this point, there is no guarantee that the sender is actually the sender. It could be someone who has stolen the private key. This is where digital certificates come into play.

2.2.3.4 Digital Certificate

The digital certificate is a common credential that provides a means to verify identity. A certificate is a set of data that identifies an entity. A trusted organization assigns a certificate to an individual or an entity that associates a public key with the individual. The individual or entity to which a certificate is issued is called the subject of that certificate. The trusted organization that issues the certificate is a Certification Authority (CA) and is known as the certificate's issuer. A trustworthy CA will only issue a certificate after verifying the identity of the certificate's subject.

Using digital certificates can protect your security when dealing with personal or financial transactions on the Internet because they bind the identity of the certificate owner to a pair (public and private) of electronic keys that can be used to encrypt and sign information digitally. These electronic credentials assure that the keys actually belong to the person or organization specified. Protecting your privacy and security is especially important in Internet Explorer.

2.2.3.5 Firewall

A firewall is a computer and software combination that is installed at the Internet entry point of a networked system. The firewall provides a defense between a network to be protected and the Internet or other network that could pose a threat. All corporate communication to and from the Internet flows through firewalls. The protected network and computers are inside the firewall, and any other network outside. Firewalls are computers that have the following characteristics:

1. All traffic from outside and from inside the network must pass through it.
2. Only authorized traffic, as defined by the local security policy, is allowed to pass through it.
3. The firewall itself is immune to penetration.

Those networks inside the firewall are often called trusted, whereas networks outside the firewall are called untrusted. Firewalls acts as a filter, permitting selected messages to flow into and out of the protected network. Firewall protection should prevent access to networks inside the firewall by unauthorized users, and thus prevent access to sensitive information.

2.3 Summary

Security is important in securing a web site especially for electronic commerce web site. It is because users will be giving out personal information in order to purchase products online or either doing any transactions between users and administrator. So, in order to make sure the web site for this system would not be jeopardized, firewall and digital certificates will be used to enhance security measures. I choose firewall because it is easy to implement and moreover it is easy to find free firewall software through the Internet. As for digital certificates, it is also easy to implement by buying digital certificates online or by getting it as a trial for 30 days through the Internet.

Chapter 3

Methodology

CHAPTER 3 : METHODOLOGY

3.0 About Methodology

Methodology is a detailed description about the method used in doing the research for this project, so that when problems arise, quick solutions can help to guide the project back on track.

3.1 Approach

Information are gathered in these following approach in order to know more about the system that is develop:

- Books – information through the books are more reliable for knowledgeable and trusted authors that are experienced write about developing a system. Books are also used as a guide and reference.
- Search engine – Finding information through search engines benefits a lot because it saves time. It is also faster and easier because users only have to type in the key word at the search function in order to display the lists of results matching the key word.
- Existing thesis – Existing thesis located at the faculty library sent in by seniors are referred to know the procedure of building a system and also to refer to the arrangements of the contents.

3.2 Software Process Models

When producing a product, sequences of steps are to be followed to accomplish a set of tasks. The tasks are usually performed in the same order each time. A set of ordered tasks is called a process; a series of steps involving activities, constraints, and resources that produce an intended output of some kind.

A process usually involves s set of tools and techniques. When the process involves the building of some product, we refer to the process as a life cycle. Processes are important because they show consistency and structure on a set of activities. The process structure guides our actions by allowing us to examine, understand, control, and improve the activities that comprise the process.

Processes are also important for enabling us to capture our experiences and pass them along to others. In the same way, we want to learn to produce high-quality software, and follow a software development process so we can understand, control, and improve what happens as we build products for our customers. The software development stages are:

- Requirements analysis and definition
- System design
- Program design
- Writing the program
- Unit testing

- Integration testing
- System testing
- System delivery
- Maintenance

Each stage is itself a process that can be described as a set of activities. And each activity has constraints, such as a budget and schedule for producing the requirements document, and standards about the kinds of requirements to include and perhaps the notation to express them.

In order to work out system development software, processes have to be modeled to make developers understand the progress of the development. There are several reasons for a modeling process:

- To form a common understanding of the activities, resources, and constraints involved in software development.
- Helps the development team find inconsistencies, redundancies, and omissions in the process and in its constituent parts. As these are corrected, the process becomes more effective and focused.
- It reflects the goals of the development. With its existence, the development team would not wander away from the main goal.

There are 7 processing models:

- Waterfall Model
- Waterfall Model with Prototyping
- V Model
- Prototyping Model
- Operational Specification
- Transformational Model
- Phased Development: Increments and Interations
- Spiral Model

Among the seven models, I choose the Waterfall Model with Prototyping.

3.2.1 Waterfall Model with Prototyping

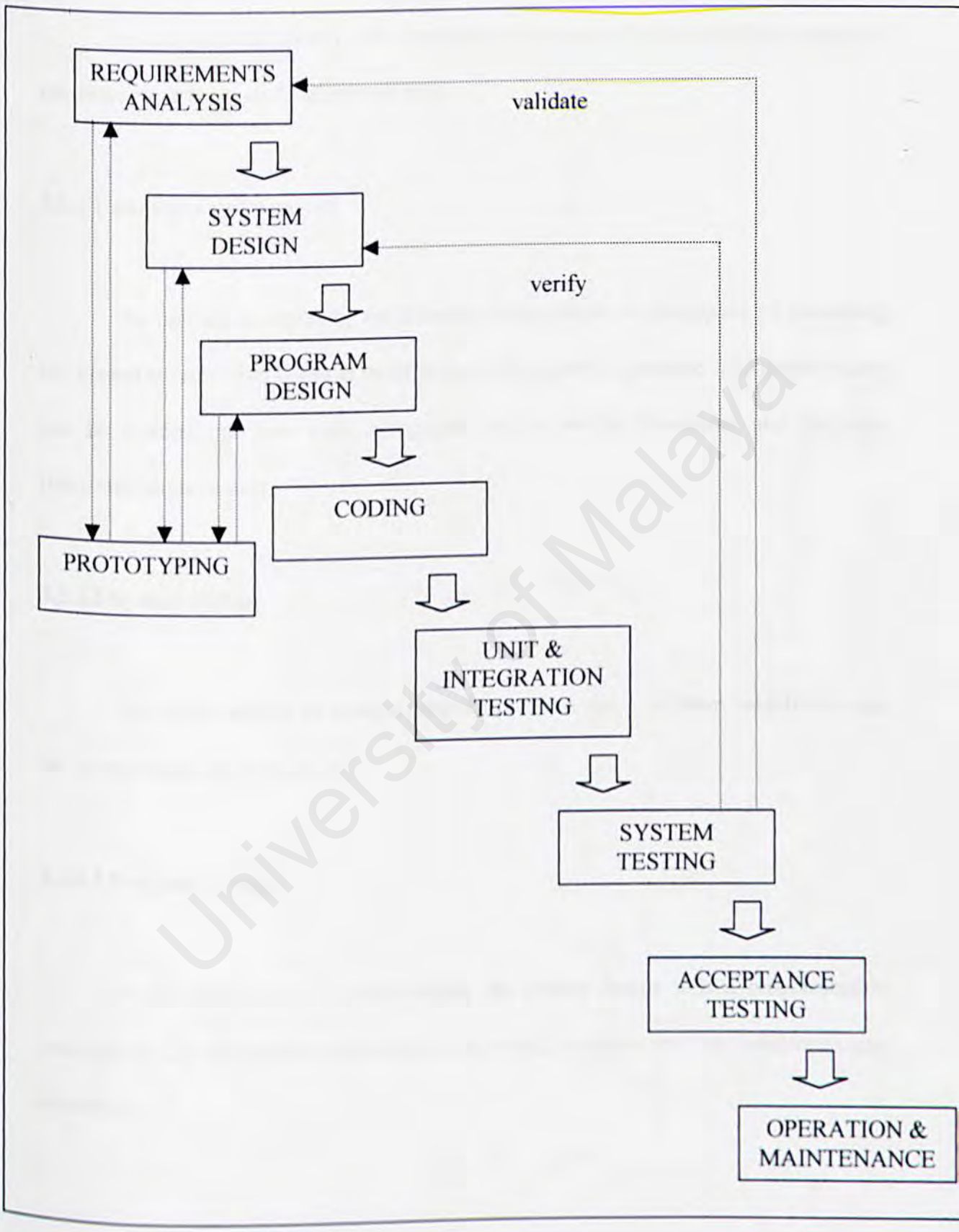


Figure 3.1: The Waterfall Model with Prototyping

3.2.2 Software Development Stages

For the waterfall model with prototyping, below are the development stages and the description for each development stage:

3.2.2.1 Requirement Analysis

The process of capturing the features of the system or description of something the system is capable of doing in order to fulfill the system's purpose. The requirements can be divided into two main categories, which are the functional and the non-functional requirements.

3.2.2.2 System Design

This is the process of transforming the problem into a solution, which then can be incorporated into the system.

3.2.2.3 Program Design

This is the process of transforming the system design into a programmable structure such as decomposing the system into several modules and later transforms into algorithm.

3.2.2.4 Prototyping

This is a part of the process of continuous developing a quick and rough version of a desired or parts of that system this stage is important especially in developing a suitable user interface that meets the user requirements especially for the catalogue views.

3.2.2.5 Coding

This is where the program design is realized as a set of program codes.

3.2.2.6 Unit and Integration Testing

Each program unit or modules are tested independently. Then, several modules are combined and tested to ensure integration capability.

3.2.2.7 System Testing

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

3.2.2.8 Verify and Validate

Validation is carried out to ensure that the system has implemented all of the requirements, so that each system function can be traced back to a particular requirement in the specification where it makes sure that the developer is building the right products. Whereas verification ensures that each function works correctly where it checks the quality of the implementation.

3.2.2.9 Acceptance Testing

This is part of the stage that actual user is given the opportunity to use the system. The purpose is to enable the users to determine if the system really meets their needs and expectations.

3.2.2.10Operation and Maintenance

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

3.2.3 Waterfall Model with Prototyping Development Method

This model is an approach to enable client to have a preview of the system from the quick design and the prototype developed early in the process. Designer's can revise forms, input screens, databases, and processing methods, which can then be submit to a limited number of system and users for testing, and then later be revised for necessary final design.

With the usage of this model, users or those who are handling the project can add or refine requirements and specification to the system at the beginning step. The complexity of an error is low because the prototype enables the developer to detect any deficiency. Each state of development will enforce discipline; the system will be deliverable with documents by developer. Validation and verification will be done during system testing. System can be traced back to a particular requirement in the specification.

3.2.4 Reasons using Waterfall Model with Prototyping

Below are the reasons for choosing this model:

- Enables an earlier change in development, because this method depends on feedback from customers.
- Provides communication basis for discussions among the groups involved in the development process, between users and developers.
- Provide common understanding between user, customer and developer.

- Cost to build a prototype is relatively less than building a fully working application.
- Easy to explain to those who are not familiar with system development.

3.3 Summary

Even though the real life situation for a development stage is depends on one another, I choose the waterfall model with prototyping because of the presence of using prototyping to make information gathering more easier to understand. Besides that, by verification and validation, system could be analyzed again to make sure that the product later would reach the needs of the customer.

Chapter 4

System Analysis

CHAPTER 4 : SYSTEM ANALYSIS

4.0 About System Analysis

Analysis is carried out in order to develop this project. Briefly, system analysis is a part of the development stage indirectly for it is where the requirements of the system is stated. System requirements for this project is divided into 4 parts:

- Functional requirements
- Non-functional requirements
- Software requirements
- Hardware requirements

4.1 Functional Requirements

Functional requirements describe an interaction between the system and its environment. The functional requirements for this project are as follows:

- Login – This login has the functionality of login in process. User has to type in their login ID and password. This means that it gives permission to user to navigate through the site and is expected to purchase image products. If not, users could just log off if they do not desire to purchase anything. A new user can be added by registering where user will be directed to the registration page.

- Registration – For new users, they have to register in order to get a customized page. Users will be inquired about their name, email address, preferred login ID and password of their choice.
- Shopping cart – The shopping cart stores a list of items a user has selected to purchase and computes the order subtotal. Users can save their shopping carts so that they can return to the site and do the payment at a later date or time. Users can also delete items from their shopping carts, which they do not want, but also which they have not paid. Shopping carts enables users to view their contents. When user adds images into the cart, user will be directed to the shopping cart page.
- Checkout – The checkout functions as to process the order after users have added items to their shopping carts. The process begins when the user clicks on the Checkout button provided at the shopping cart page. A summary of the complete order will be displayed to the user. Users will then be directed to the purchase order page.
- Goods Received Notes – This is produced when the user has received the purchased images or services. It is as an acknowledgement to let administrators know that the images are already received.
- Payment – This functions as to provide the facility for payment. When user is directed to the purchase order page, users are required to enter their information.
- Catalogue – This provides mechanism for browsing and searching through the catalogue. User is allowed to click on an item to add to their shopping cart.

- Auction – This function to let users bid on the product where users can select any image and will transport them to a bidding form.
- Customer Service – This is divided into two parts, which are the Customer Profile and the Customer Order. In the Customer Profile, users profile would be displayed and it also allows users to edit or update their profile. After editing, their new profile will be saved. As for the Customer Order, it allows users to view the list of their orders and the details of the specific orders. Besides that, it also displays the list of their existing orders and past procedures.
- Change Password – Enables user to change their password.
- Address Management – This function as to manage user addresses. The administrators handle this when users wants images or services that they purchased to be sent to their email address.
- Web Building Service – This function as to let users send emails to ask for the service to help users build their web site.

4.2 Non-functional Requirements

Non-functional requirements describe the restrictions on the system that limits one choice for constructing a solution to the problem. The non-functional requirements are as follows:

- Accuracy – Information displayed is precise and up-to-date.
- Attractive interface – So that users will enjoy surfing the site.

- Security – Only administrators are allowed to access the database, maintain database and handle reports. They are given login ID and password. Besides that, for users, there are two types of services where new users could register while users who are already registered will be able to login. Users will also be able to change their password in order to keep their customized interface private.
- User friendly – Enable users to navigate the web site without problems.
- Interactive – Allows communication between users and administrator.
- Efficiency – Enables to retrieve information within reasonable time.
- Response time – Downloading time for the images has to not take such a long time.
- Robustness – System should be able to check the input validation before processing to avoid unnecessary error and prompt error message and show solution.
- Reliability – Many users can access system simultaneously.
- Learn ability – Meaning on how fast the user can learn to use system.

4.3 Software Requirements

4.3.1 Server Platform

4.3.1.1 Microsoft Windows 2000 Server

The Microsoft platform delivers scalability and value, and enables organizations to design their environments to scale via two methods: scale-up and scale-out. Typically, both scale-out and scale-up architectures are employed by organizations to address the capacity needs of web applications, databases, and business applications. The Microsoft platform has been designed to scale-up and scale-out in response to the dynamic processing requirements demanded of today's enterprise, regardless of where they happen in the architecture.

Whether it's handling Web site traffic on the front end, query processing, or large-scale database applications on the back-end, the Microsoft platform delivers levels of scaling flexibility for the most demanding IT environments. As demonstrated by industry-standard benchmarks, Microsoft Windows 2000 and SQL Server 2000 offer on-demand scalability to meet the demanding requirements of commerce and enterprise applications. The Microsoft platform has achieved world-record performance in benchmark tests with the lowest total cost of ownership on the market.

Scaling Up and Scaling Out: Two Deployment Architectures

"Scaling Up" and "Scaling Out" are terms, which are used to describe two methods for scaling server infrastructure. Scale-out or scale-up scenarios may be deployed depending on the types of applications being used and on the type of functionality needed. These methods are complementary, and both can be used together to effectively build highly scalable infrastructure.

Scaling Up

Scaling up refers to running a single application or image on a single server, and having the ability to incrementally add system hardware resources (processors and memory) to increase overall system performance.

Scaling Out

Scaling out is distributing the computing workload among multiple servers by clustering or load balancing, with the ability to add or subtract servers to increase or decrease capacity. By distributing the workload, processing resources are spread among multiple servers, which improves both performance and the availability of the overall service.

Key Scale-Out Features and Technologies

Windows 2000 Advanced Server and Application Center 2000 provide the features and technology, which enable the design of scale-out environments, which are

easy to deploy and manage. The following are key scale-out features and technologies, which have been implemented in the Microsoft platform:

- Network load balancing (NLB) is for balancing and distributing client TCP/IP connections over multiple servers. Up to 32 servers can be supported via NLB.
- Component Load Balancing (CLB) for load balancing logic across a cluster of application servers.
- N-Tier Architecture, A Hybrid of Scale-Out and Scale-Up Technologies.

  With the rise of Internet-centric computing, many organizations are choosing to deploy an architecture known as the n-tier architecture. Microsoft's n-Tier Architecture is a 3-tiered enterprise computing model leveraging scale-out technologies in the front-end and business logic layers and scale-up technologies (Microsoft Clustering Services on Windows 2000 Servers, for instance) in the back-end, offering a highly flexible, powerful, and scalable distributed computing paradigm to Internet-enabled enterprises.
- Microsoft Platform Benchmark Performance Leadership

  Industry standard benchmarks measure performance and price for various types of workloads. Major application vendors have their own respective performance benchmarks as well. These benchmarks can simulate the maximum load of concurrent users that a system can tolerate with an acceptable response time. These tests assess the performance of hardware, software components, and relational database management systems. Benchmarks can be used as a source of comparison for various hardware and software platforms.

Here are the minimum system requirements for running the Windows® 2000 Server operating system:

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

4.3.2 Web Servers

4.3.2.1 Microsoft Internet Information Server

Internet Information Server is an application server. In many ways it is like a virtual operating system, because many ASP and ISAPI applications execute in the process space.

IIS uses an I/O thread pool to process all incoming requests. Requests for static files (.htm, .jpg, etc.) are satisfied immediately, while requests for dynamic content are dispatched to the appropriate ISAPI extension DLL. The Active Server Pages extension uses a worker thread pool to execute ASP pages. Because ASP is COM-based, all sorts of components end up executing in the process. It makes ASP marvelously flexible, and has made ASP and IIS a big success.

To run IIS 5.0, the minimum amount of RAM a dedicated Web server needs is 128MB, but 256 MB to 1GB is often better. Additional memory is particularly beneficial to e-commerce sites, sites with a lot of content, and sites that experience a high volume of traffic.

Balancing performance with users' concerns about the security of Web applications is one of the most important issues that will be faced, particularly if I am running an e-commerce Web site. Since secure Web communication requires more resources than non-secure Web communications, it is important that to know when to use various security techniques, such as the SSL protocol or IP address checking, and when not to use them. For example, ordinary home page or a search results page most likely doesn't need to be run through SSL. However, when a user goes to a checkout or purchase page, users will want to make sure that page is secure.

In addition to all security techniques having performance costs, Windows 2000 and IIS 5.0 security services are integrated into a number of operating system services. This means that monitor security features can't be separated from other aspects of those services. Instead, the most common way to measure security overhead is to run tests comparing server performance with and without a security feature. The tests should be run with fixed workloads and a fixed server configuration, so that the security feature is the only variable. During the tests, users would want to measure the following:

Processor Activity and the Processor Queue: Authentication, IP address checking, SSL protocol, and encryption schemes are security features that require significant processing. If the processors in the server are not sufficient to handle the increased load,

queues are likely to develop. Custom hardware, such as cryptographic accelerators, may help here.

Use Secure Sockets Layer (SSL) only when necessary. Using the HTTPS protocol is much more expensive than standard HTTP. To enhance database-driven performance in a production environment, use Microsoft SQL Server 2000. Because both IIS and SQL Server perform best with plenty of memory, try storing the database on a separate server from the Web service. In this situation, communication across computer boundaries is frequently faster than communication on a single computer.

In IIS 5.0, the performance of out-of-process applications has improved, especially for ASP. Some performance degradation remains, however, in comparison with IIS 5.0 in-process applications. In addition to improved performance, the concept of running applications out of process has been expanded.

We can increase the performance of the web server by reducing the sizes of the files being served. Image files should be stored in an appropriate compressed format. Cropping images and reducing color depths will also reduce file sizes. Limit the number of images and other large files where possible. File size can also be reduced by tightening up HTML and ASP code.

4.3.3 Programming Languages

4.3.3.1 Active Server Pages (ASP)

ASP is the server – side execution environment in Microsoft Internet Information Server (IIS) that enables to run Active X scripts and Active X server

components on the server. By combining scripts and components, developers can create dynamic content and powerful web based applications easily. Organizations use ASP to create an entirely new web based application since ASP provides a very open development environment with support from Visual Basic, Scripting Edition (VBScript) and Jscript, organization can leverage the investments they already to these scripting languages.

ASP is a component of Internet Information Server, and thus uses Windows NT Security. ASP files can be easily restricted to just certain users through secure Windows NT authentication, basic web authentication or client-to-server communications can be secured with Secure Sockets Layer (SSL). An ASP application can integrate with any ODBC compliant databases including Microsoft SQL Server, Oracle, Sybase, Informix, and DB2 databases. Any OLE 2 application, such as Lotus Notes or Microsoft Excel, can also be scripted to access or process information.

Feature of ASP

- ASP can develop a new generation of web based applications, including extending sales and customer service to the web, and providing access to corporate databases and applications to any browser on an Internet.
- ASP allows organization to extend the power of scripting on the server with Active X server components. These components can be created using Microsoft Visual Basic, Visual C++, Java, and other languages.
- ASP provides native support for both Microsoft Jscript and VBScript. Active X scripting plug-ins are available for PERL, REXX, and Python.

- ASP can work with any web browser. The output of an ASP file is plain HTML, the content of which can be customized for the capabilities of the client.
- ASP allows you to define application and session variables that can be carried across multiple pages in a web site. This can be as simple as remembering a users name, and it is necessary in applications such as online shopping to track product selections.
- ASP makes it easy to bring legacy database applications to the web.

ASP compare to CGI

- ASP provides all of the functionality of CGI applications in an easier to use and more robust environment.
- ASP an easier way for your server to access information in a form not readable by the client (such as SQL databases) and then act as a gateway between the two to produce information that the client can view and use.
- With CGI, the server client as many processes as the number of client requests received the more convenient requests there are, the more concurrent processes created by the server. However, creating a process for every request is time consuming and requires large amounts of server RAM. In addition, this can restrict the resources available for sharing from the server application itself, slowing down performance and increasing wait times on the web.
- ASP runs in the same process as the web server, handling client requests faster and more efficiently. It is much easier to develop dynamic content and web applications with ASP.

ASP Compare to ISAPI Applications

- ISAPI applications require all of the programming and layout to be contained in a .dll file written in C++. ISAPI applications are thus more difficult to create and maintain with ASP files, a HTML writer can script an external component and format the output ASP separates the layout and design from the business logic

ASP Compare to PERL

- PERL and other scripting languages are not robust development tools by themselves. ASP provides a familiar framework and objects for building complex applications that require data from relational databases and legacy sources.
- ASP supports virtually any scripting language to build these applications. Third parties are currently developing additional scripting engines, such as PERL, which we will announce when they are ready.

4.3.4 Databases

4.3.4.1 Microsoft SQL Server 7.0

Microsoft SQL Server 7.0 raises the bar for next generation databases. This product offers a number of benefits:

- Can run SQL Server on a wider range of operating systems – Windows NT Server or workstation, as well as Windows 95 and Windows 98. This makes SQL Server 7.0 useful as a development platform.

- Supports a variety of database transaction interfaces, including OLE DB, ADO, and ODBC 3.5. By default, SQL Server 7.0 uses OLE DB for its internal and external operations, such as cross-over replication and other server-to-server tasks. The high – performance interface also makes it easy to plug in OLE DB providers for various tasks. The ODBC 3.5 driver includes support for the OLE DB provider for ODBC.

Hardware and Software Requirements

To install SQL Server 7.0, should have the following hardware:

- Alpha AXP, Intel or compatible platform
- Pentium 166 MHz or higher
- 32 MB RAM (minimum), 64 MB RAM and more
- 180 MB (full installation), 170 MB (typical), 65 MB (minimum)
- 90 MB (management tools only) plus 50 MB for OLAP Services and 12 MB for the English Query

SQL Server 7.0 can work under Windows 95, Windows 95 OSR2, Windows 98 and Windows NT Server/Workstation 4.0 with Service Pack 4 and Windows 2000. Besides it also requires Internet Explorer 4.01 with service Pack 1 or higher version.

4.4 Hardware Requirements

4.4,1 Development Environment

- Intel Pentium 133 MHz Processor
- 16 RAM main memory
- 1.996 GB hard disk storage
- SVGA monitor
- Keyboard & mouse
- sound card
- 48X CD-ROM driver
- compact disk-read only memory (CD-ROM)

4.4.2 Run – Time Environment

- At least 16 MB of RAM
- Minimum 150 MB Hard Disk
- Key board
- Mouse

4.5 Summary

Microsoft Windows 2000 Server functions to manage desktop configuration and changes using the Active directory and associated IntelliMirror. It also manages data storage and retrieval. As for the web server, I will be using Microsoft Internet Information Server. As for the programming language that I will be using is Active Server Pages where as for the database, I will be using Microsoft SQL Server 7.0.

Chapter 5

System Design

CHAPTER 5 : SYSTEM DESIGN

5.0 About System Design

This is the process of transforming the problem into a solution, which then can be incorporated into the system.

5.1 System Architecture Design

The Online Design Auction system is designed to leverage the traditional client/server architecture and extents it to the Internet and web technology. A 3-tier web client/server architecture is deployed for this Online Design Auction system to achieve requirements specification. Basically, this 3-tier web client/server architecture can be divided into three distinctive tiers. The first tier is known as the application tier. It consists of all the necessary applications. Web browser such as the Internet Explorer is the main component that appears to the users. Besides that, the Hypertext Markup Language (HTML) and Visual Basic Script (VBScript) components are included in this tier to provide interactive and dynamic pages or interfaces to the users. All the input will be processed by using HTML to publish all the data in this level. In this level, there is certain component that is used to gather input variables or query for analysis. There is also a component to display the results of different system users.

The second tier is the service tier, which is also known as web server that is responsible to link the first and third tier. The components reside in this tier are Internet Information Server (IIS) and Microsoft SQL Server. Request and response are

controlled by written code specifying its business rules. For the administrator at this second tier, all the data can be manipulate as in deleting, adding and editing by interacting with the database.

The third tier is the data repository that acts as the main storage of the system's data. This layer includes the Microsoft SQL Databases. This is available to support the work performing the users request.

The first tier and the second tier communicate by using Hypertext Transfer Protocol (HTTP) through the network or Internet. As the server receives the HTTP request from users, it will then retrieve the required information from the databases server in the third tier through Open Database Connectivity (ODBC) connection. The requested information is then being constructed into a HTTP message containing the web page and is sent back to the user. When the server's message arrives back at the requesting user, the browser recognizes the HTML file and displays the page on the screen. On the next page, is Figure 5.1 that is an overview of the system architecture of this system.

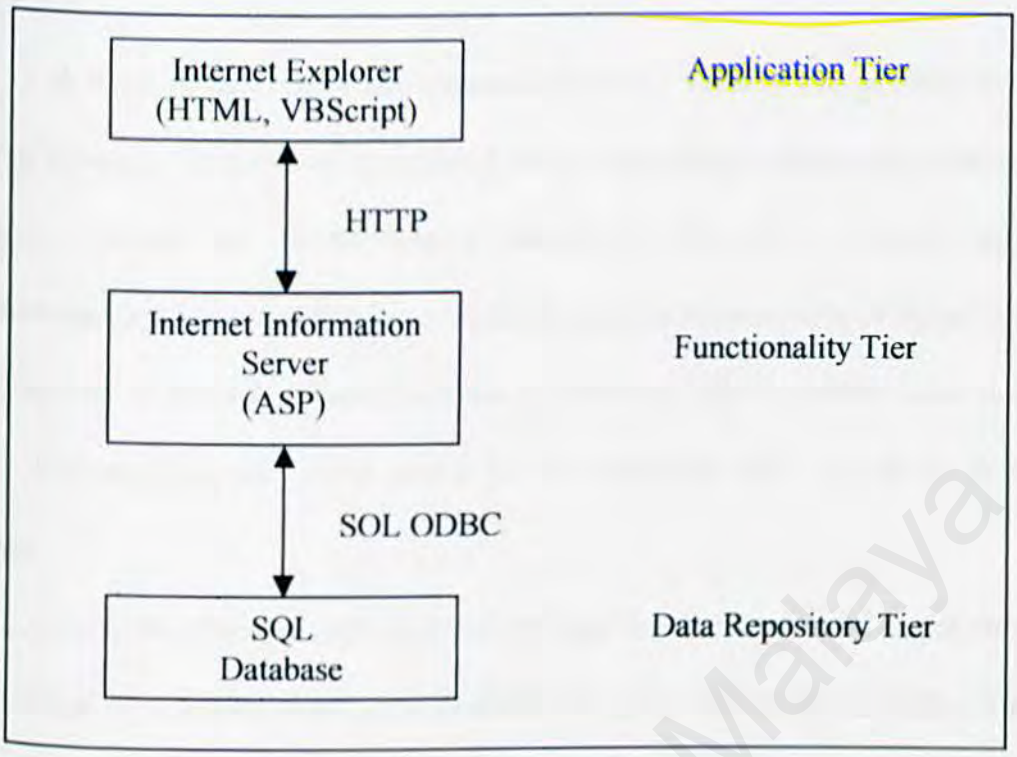


Figure 5.1: Overview of Online Design Auction System Architecture

5.2 Process Design

Process design depicted and mentioned in two approaches:

- Structure chart
- Data Flow Diagram

5.2.1 Structure Chart

A large system can be decomposed into sub – systems that provide some related set of services. Thus, system structuring in the initial design process of identifying these sub – systems and establishing a framework for sub – system control and communication is so that developer could get an overall overview of the whole system. The system is structured into a number of principle subs – system is an independent unit. Decomposing the system into a set of interacting sub – system is an important phase.

Structure chart is used to depict the high level extraction of a specified system. The usage of structure chart is to describe the interaction between independent sub – system. Structure chart is a treelike diagram that depicted modules containing in the system. Modules are decomposed, from top – down into sub modules.

Below is the system architecture for this Online Design Auction system:

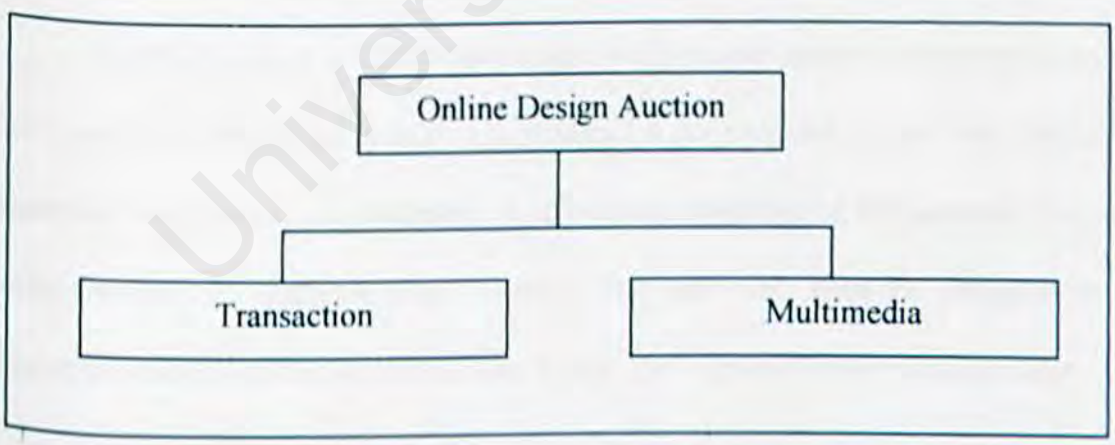


Figure 5.2: Overview of Online Design Auction that consists of two subs – system, which is Transaction and Multimedia.

This Online Design Auction system is divided into two subs – system, which is the Transaction sub – system, and the Multimedia sub – system. I, Beverley, will be handling the Transaction sub – system where as my partner Melanie will be handling the Multimedia sub – system.

In the Transaction sub – system, it is divided into two sections, which are the Customer section, and Administration section as shown in Figure 5.3.

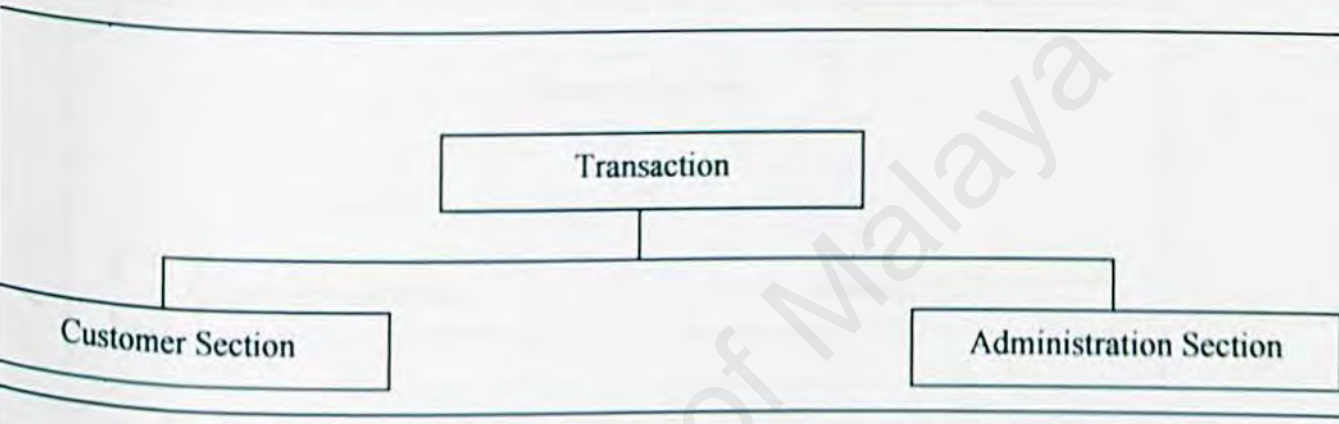


Figure 5.3: Structure of Transaction sub – system

On the next page are the modules for the Customer section shown in Figure 5.4. Every user that enters the system is considered a general user. If user has the role as registered customer or administrator, is allowed in reaching to the secured zone after going through the authentication control. The user will then be assigned to the appropriate module according to the user's role. For a general user's modules are:

- Home – the main page for the Online Design Auction web site.
- Newsletter – the latest news on information technology and image technology.
- Registration – for users that are not registered yet.

- Product catalogue – Users can browse products and then place order online. User's that are registered can login to the catalogue and can have personalized pages.
- Registered Customer Login – Only for registered customers.
- Administration Login – Only for administrator to enable them to delete, add, and edit data.

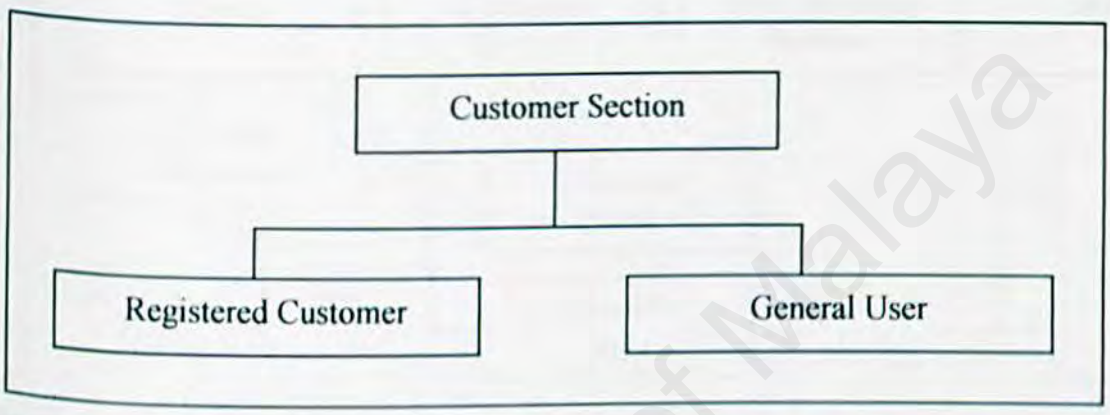


Figure 5.4: Customer Section is divided into Registered Customer and General User

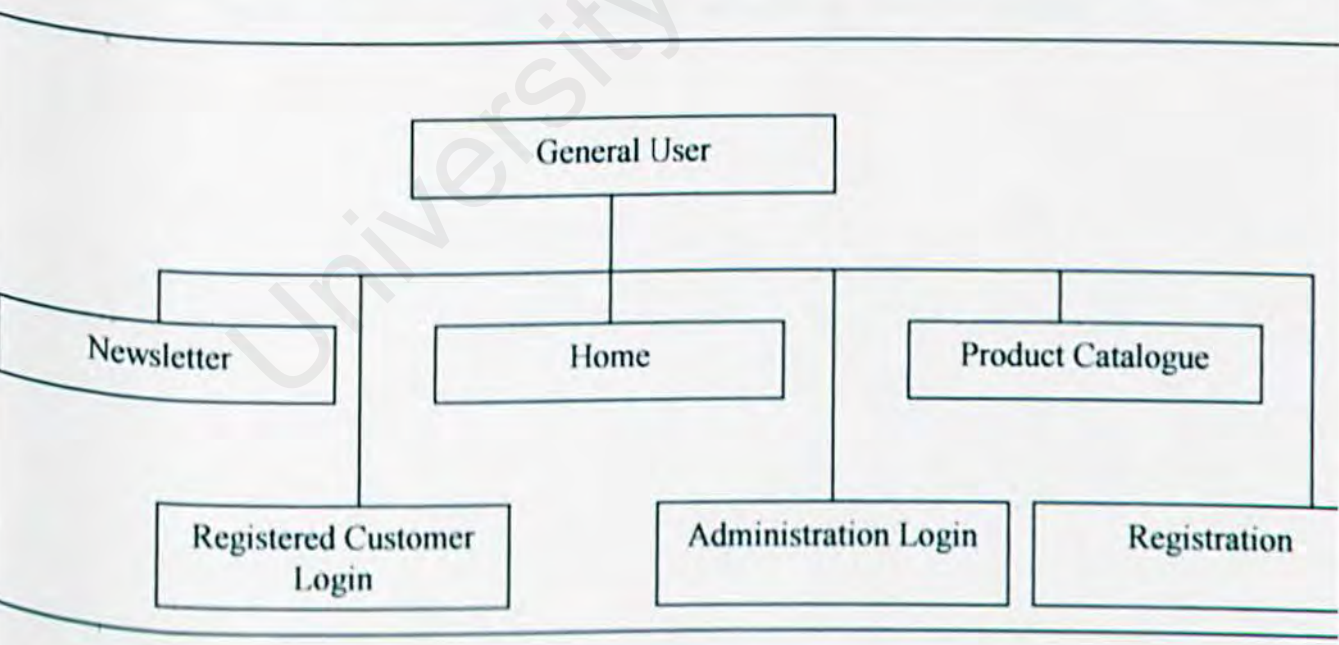


Figure 5.5: General User module

In the registered customer module, is has these sub – modules, which shown in Figure 5.6.

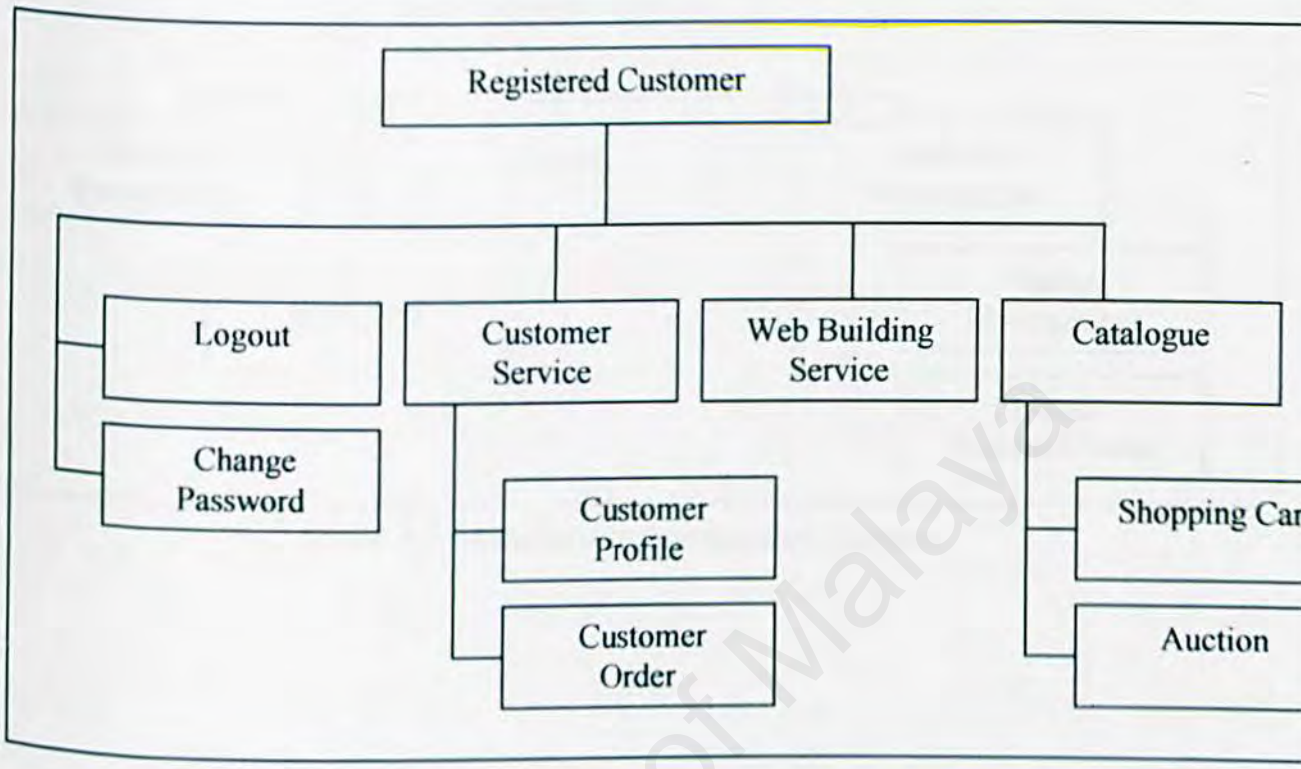


Figure 5.6: Sub – modules under the Registered Customer module.

As for the administrator, below are the modules shown in Figure 5.7.

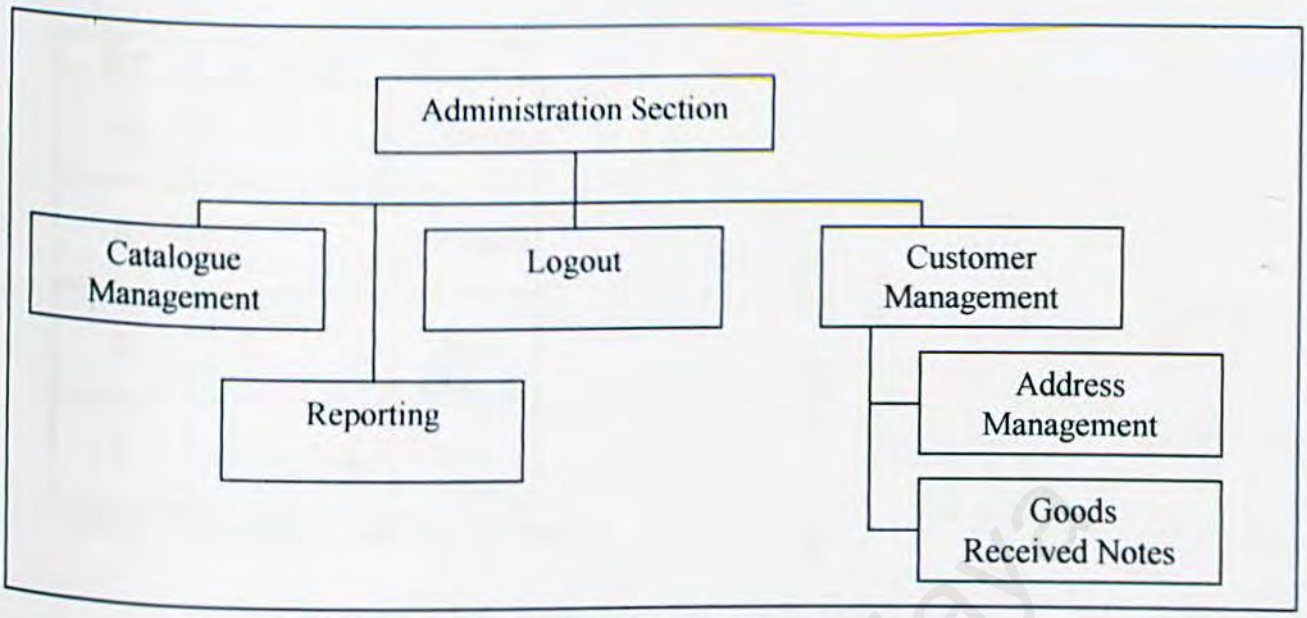


Figure 5.7: Modules of Administration Section.

5.2.2 Data Flow Diagram

Num	Convention	Meaning
A		Process
B		Out Agent
C		Data Storage
D		Data Flow

Table 5.1: Convention Table and its meaning

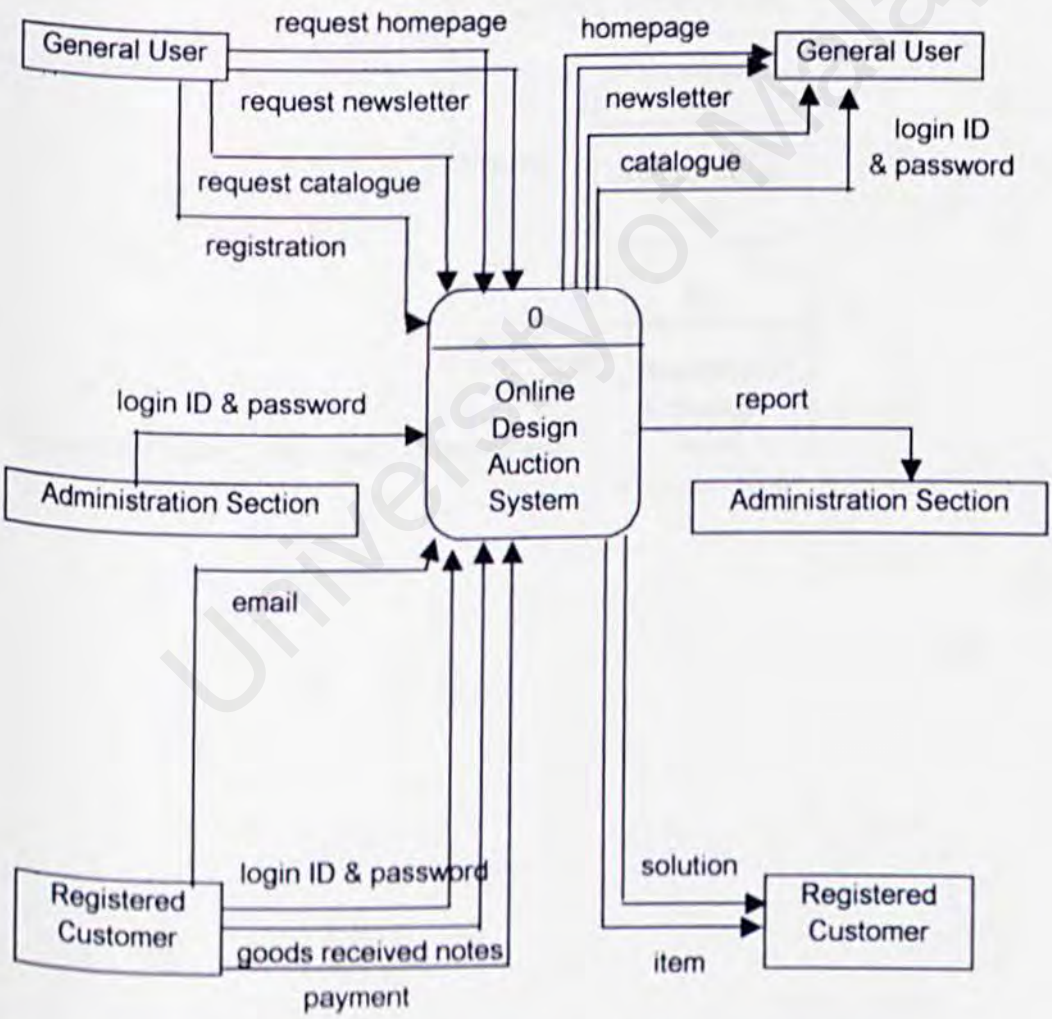


Figure 5.8: Data Flow Diagram for overall Online Design Auction system

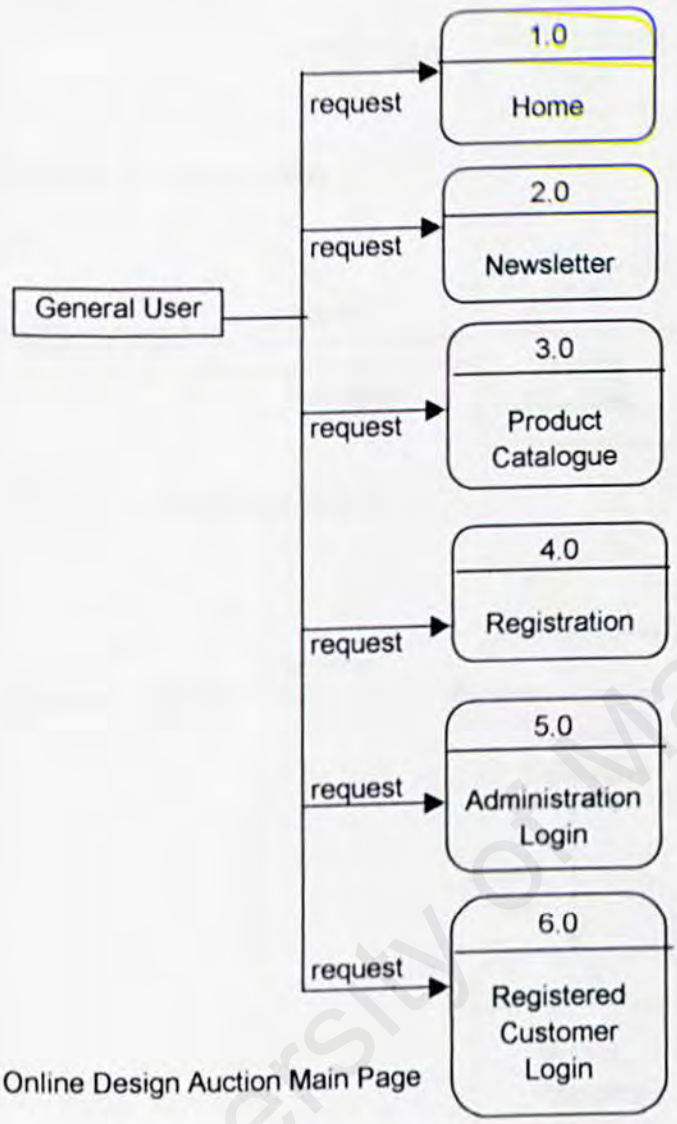


Figure 5.9: Online Design Auction Main Page

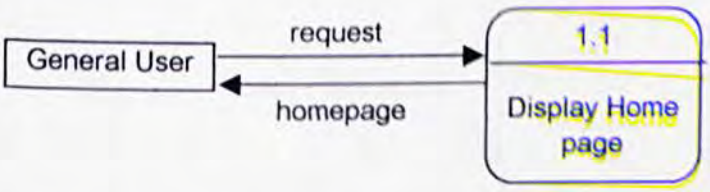


Figure 5.10: Home module

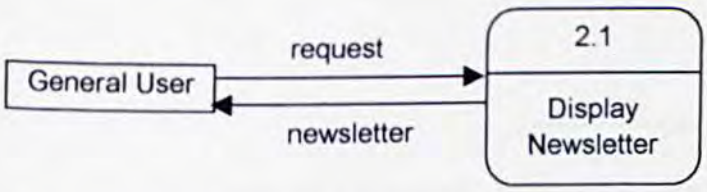


Figure 5.11: Newsletter module

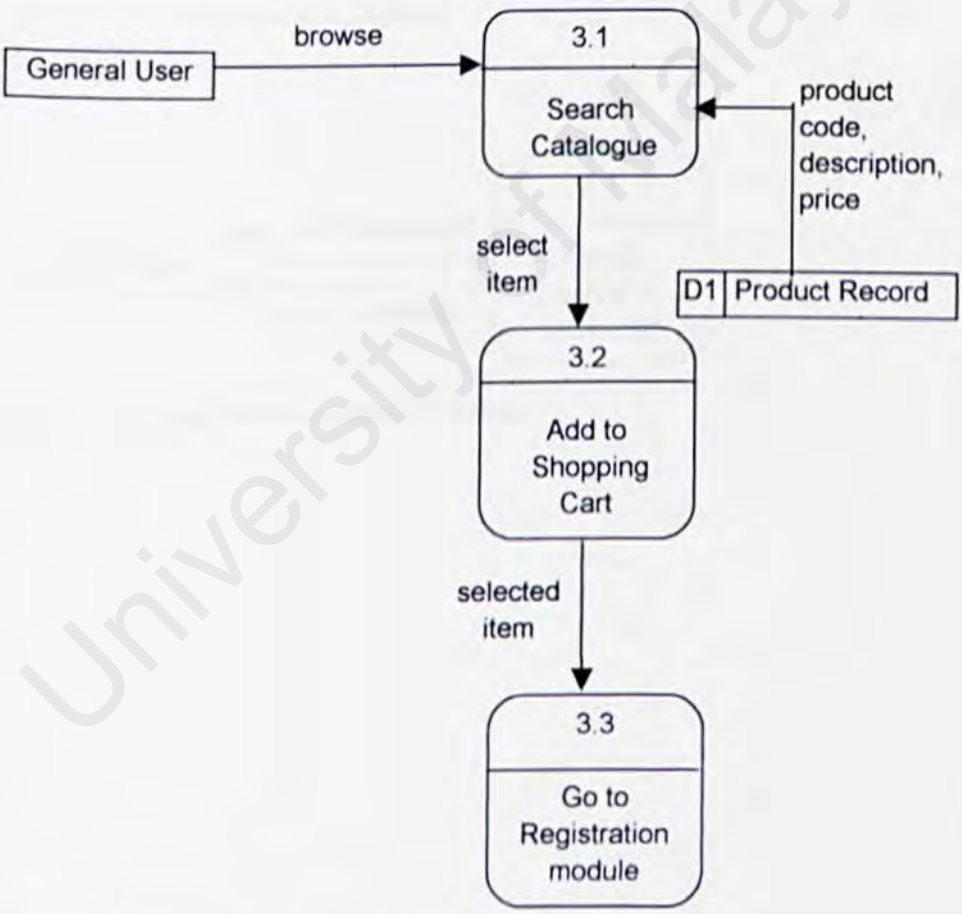


Figure 5.12: Product Catalogue module

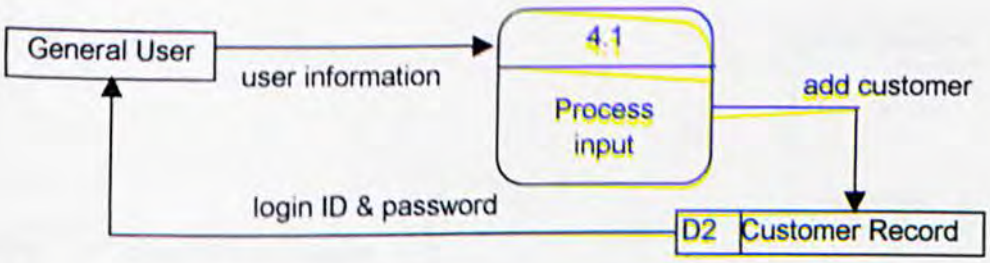


Figure 5.13: Registration module

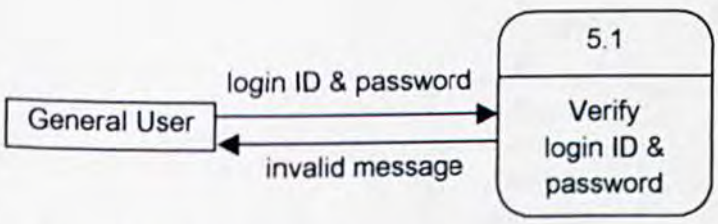


Figure 5.14: Administration module

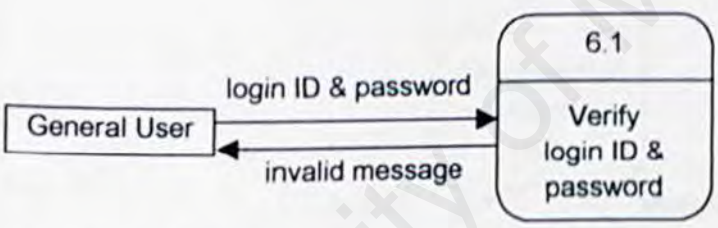
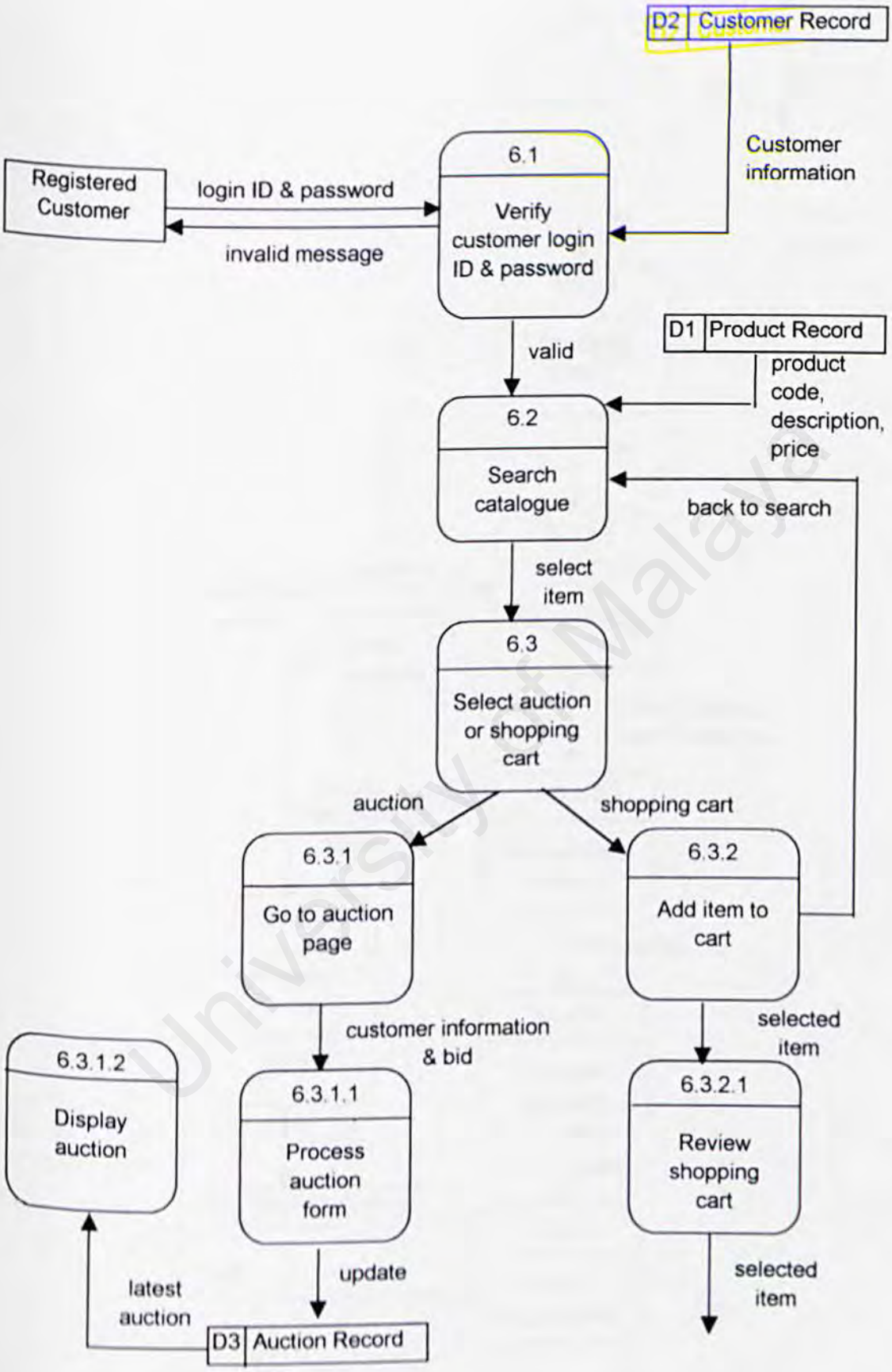


Figure 5.15: Registered Customer module



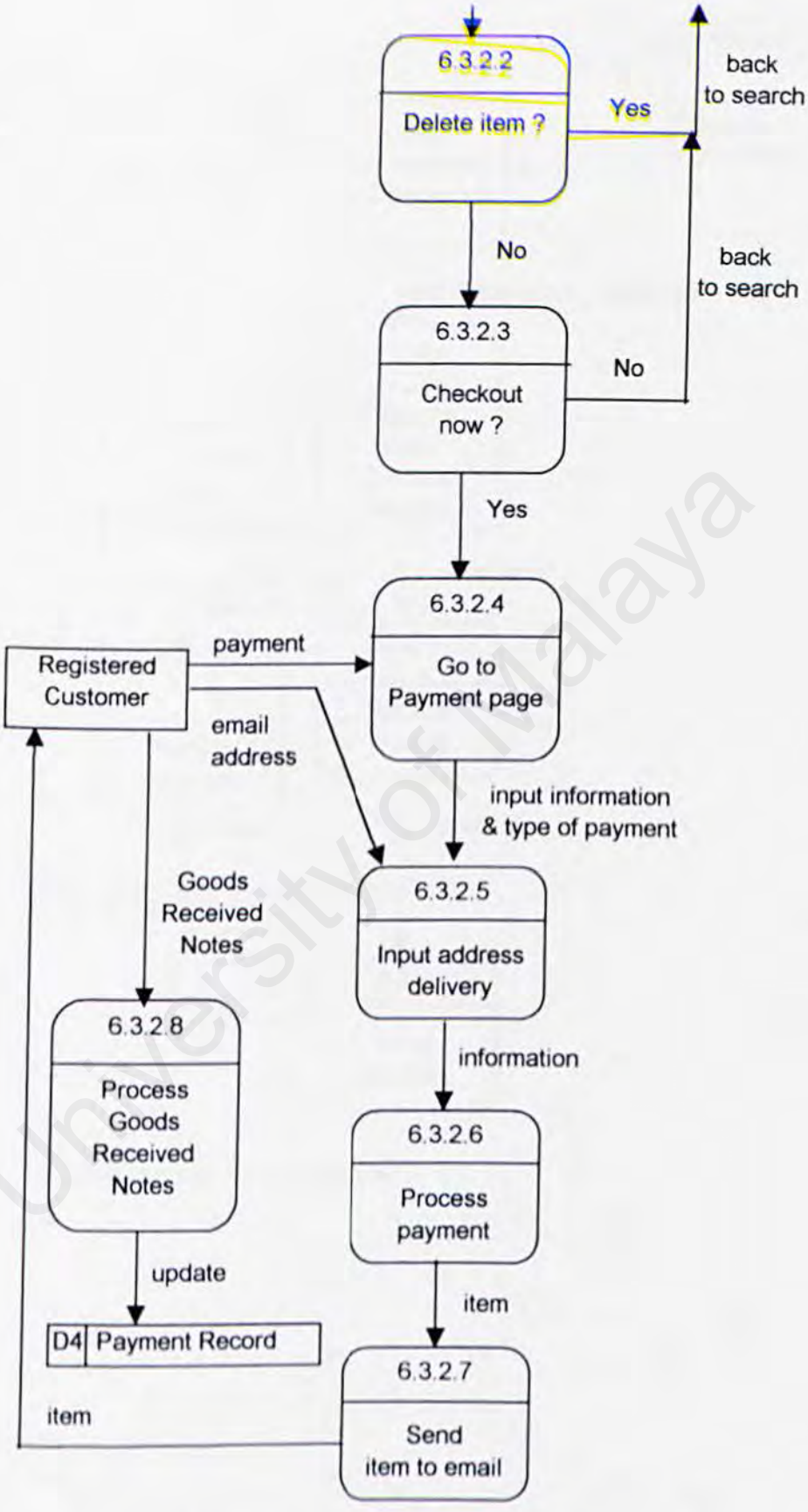


Figure 5.16: The Login, Shopping Cart, Catalogue and Auction module

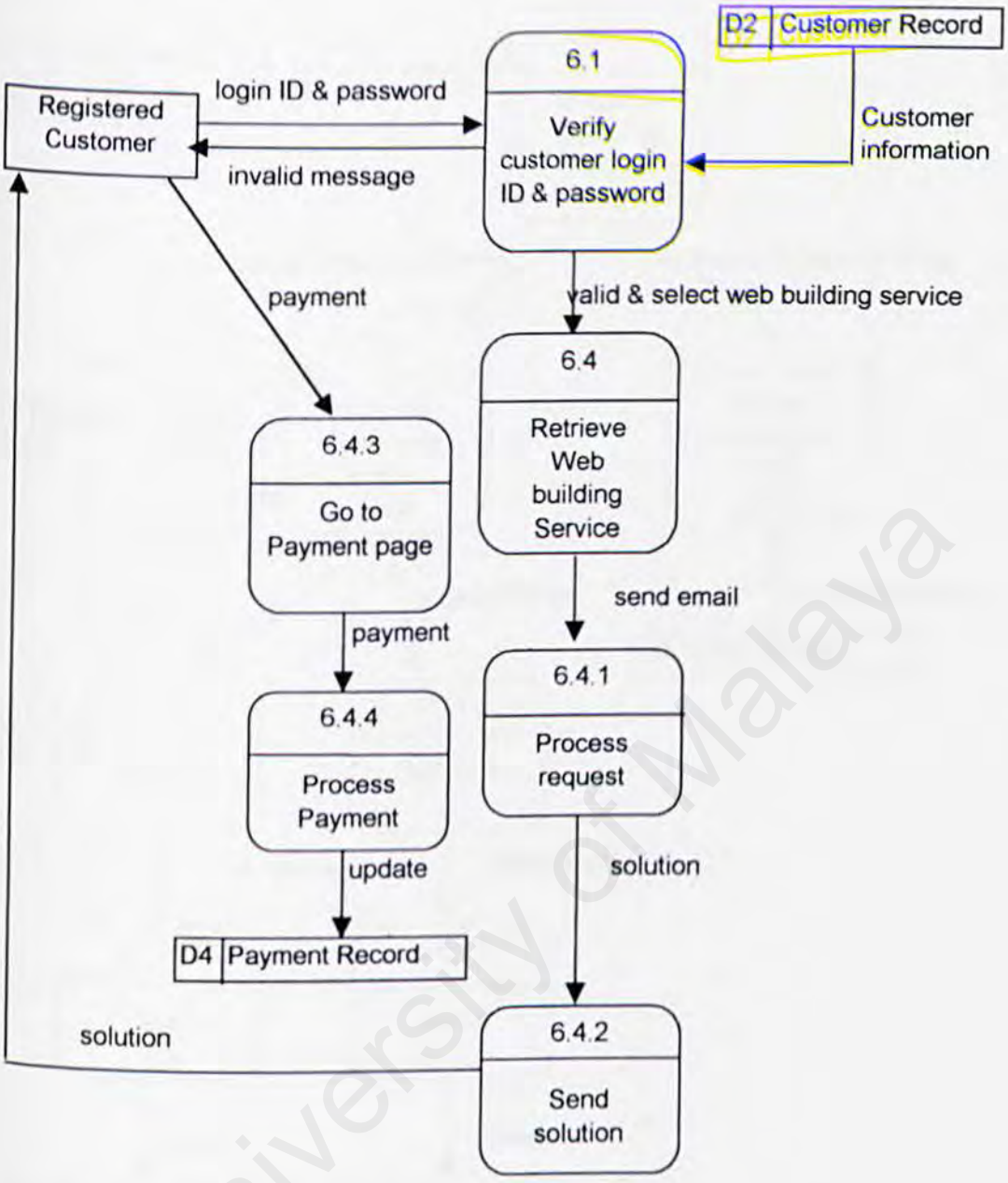


Figure 5.17: Web Building Service module

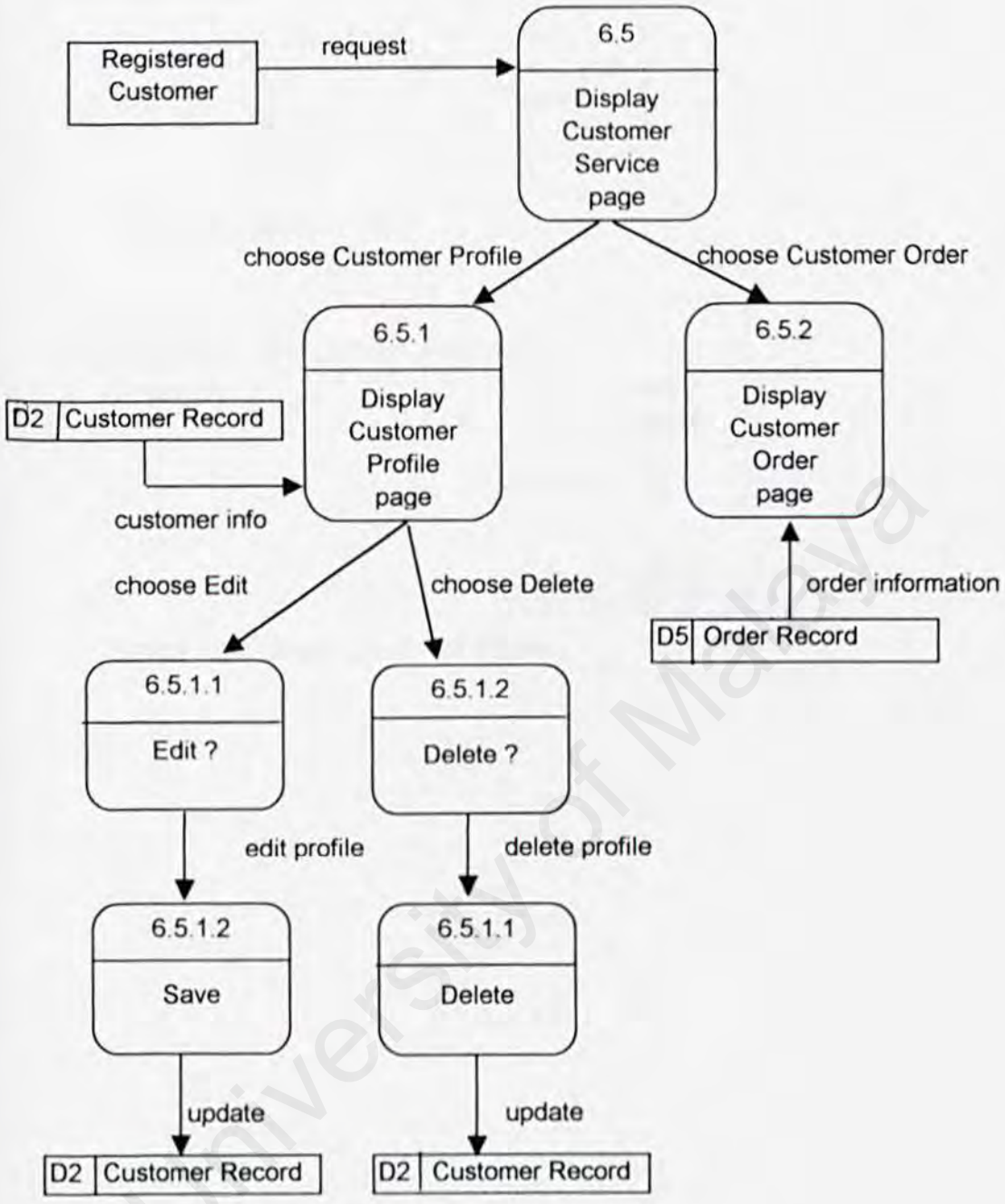


Figure 5.18: Customer Service modules

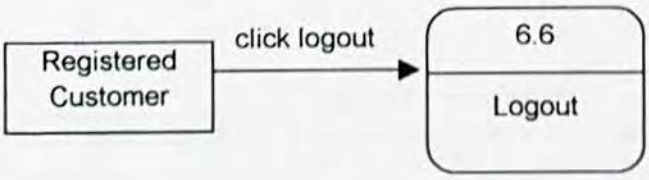


Figure 5.19: Logout module

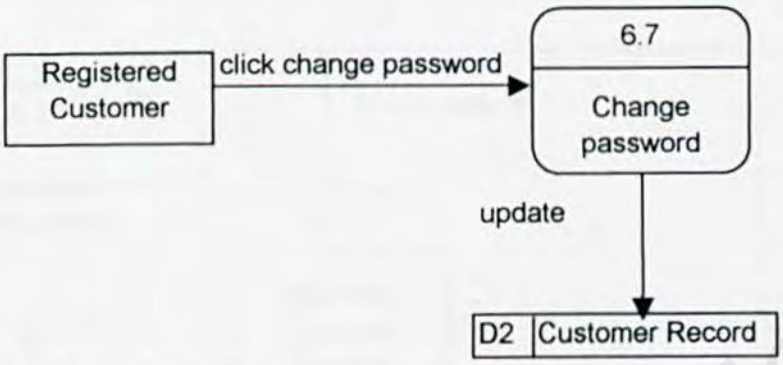


Figure 5.20: Change password module

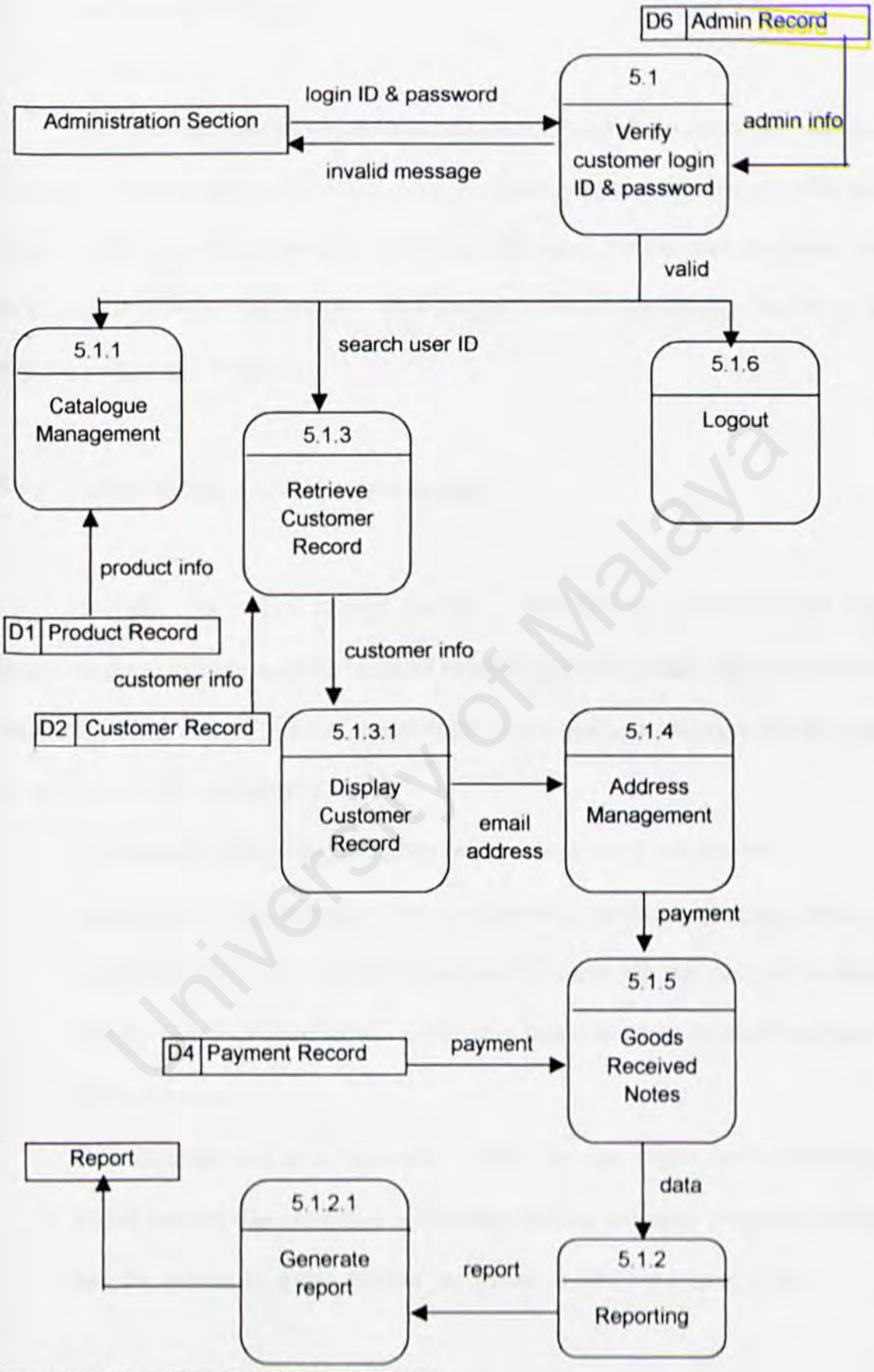


Figure 5.21: Administration's Section Modules

5.3 User Interface Design

User interface design is an important role in system development. Interactive and user – friendly interface enables users to interact with computers more efficiently. These simple and easy to navigate interfaces help users t solve their problems when they browse through the system. The design involves specifying, designing and implementing a user interface.

5.3.1 Online Design Auction Screen Design

Basically, the Online Design Auction is presented in a form of web pages. Screen designs are formatted in a standard layout to generate a better and user – friendly interface, so that various types of information, instruction and messages always appear in the same general display areas.

Below are the following guidelines that are taken into considerations:

- Consistency – The interface design is stressed on the consistency format for command, input, data display, menu selection, and placing the control objects. Besides that, user interface has to be consistent in the font selection and also the color selection.
- Error checking and error messages – This is for the invalid input. System must enable users to take corrective action once an error has been recognized. Besides that, the system must also prevent users from causing the system to fail.

- Provide information feedback – System must let user know the detail in processing stage in the system.
- Provide reverse action – It allows users to return to the previous page.

Below is the user interface for the Online Design Auction in the development stage:

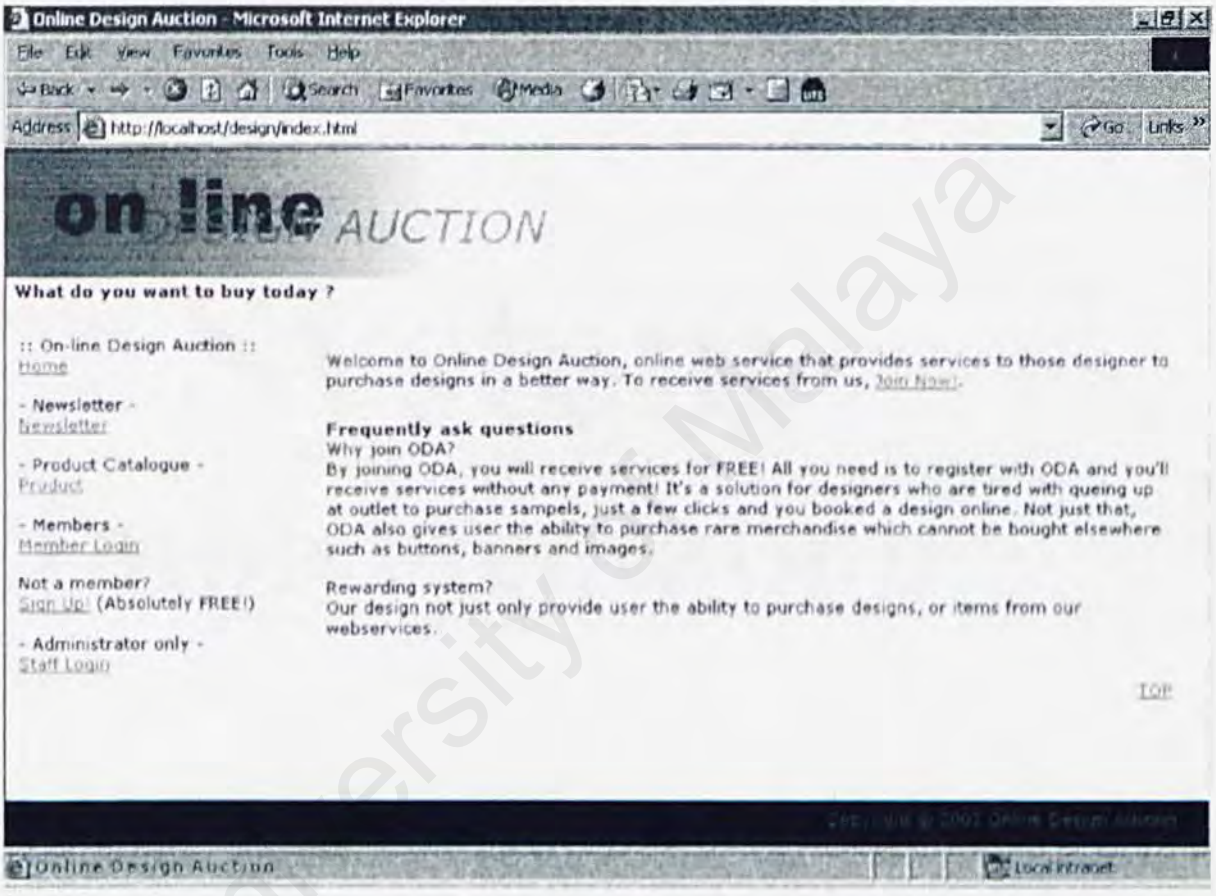


Figure 5.22: The user interface for Online Design Auction

Chapter 6

System Implementation

CHAPTER 6 : SYSTEM IMPLEMENTATION

6.0 About System Implementation

System implementation is an activity where the construction of the new system and the delivery of that system into production. It involves the translation of the software representation produced by the design phase into a computer – readable form. This stage of implementation brings to the final stage of the project. This phase at times involves some modifications to the previous designs.

A lot of careful planning and control is required at this stage, as the impact will be disastrous if not done so.

6.1 Implementation Principles

The following principles were followed during the implementation phase of Online Design Auction:

6.1.1 Software

The final software implementation environment used for the system is summarized as below.

Operating System	:	Microsoft Windows 2000
Database Management System	:	Microsoft Access 2000
Web Server	:	Personal Web Server
Web Technology	:	ASP

Web Application Language	:	Hyper Text Markup Language
Web Application Development Tools	:	Microsoft Visual Interdev 6.0
Scripting Language	:	ASP
Preferred Web Browser	:	Microsoft Internet Explorer 5.0

There are some changes in the implementation environment in terms of software usage after thorough considerations were made. The changes is the usage of the database management system. As for lack of time to further the studying of great features in Microsoft SQL Server 7.0, it is more easier and non time consuming to create database using Microsoft Access 2000. The changes is the usage of the web server from Internet Information Services to Personal Web Server. This is because the computer that was booked at the lab offers the operating system of Microsoft Windows 2000. It is more compatible for Microsoft Windows 2000 to use Personal Web Server.

Besides that I also use Microsoft Visual Interdev to develop the web site. It is because Microsoft Visual Interdev supports programming format in ASP, VBScript, Java Script and lots more. The easy presentation of the tools such as the drag and drop components makes programming much less a hassle.

6.1.2 Hardware

The hardware configuration used to host the application is stated below. This is the hardware used at the lab faculty that was booked beforehand in order to develop the system. As referred below:

Computer Processor	:	Intel Pentium 133 MHz Processor
Hard Disk Space	:	1.996 GB hard disk storage
Memory	:	16 RAM main memory
Drives	:	48X CD-ROM driver
Display	:	15" Monitor
Peripherals	:	Keyboard & mouse

6.2 Database Development

Databases is used to store information in order that information is safely kept in an efficient way. A database can be manipulated in displaying up-to-date information through the website.

The database for ODA system is created using Microsoft Access 2000. Modification through this software is easy what more of the creation of databases. To connect the database to the website, a Data Source Name(DSN) is created by specifying the name of the DSN. This can be done through the ODBC administrator. A DSN stores information that tells Web applications how to access a specific database. The data

source name will then be included in the ASP programming to be specified to connect to the database.

6.3 Program Coding

Program coding that was use are ASP, VBScript, HTML and JavaScript. JavaScript was use to create the moving text at the bottom bar of the browser. ASP was used to generate the functionality of the components. Where as VBScript is used to enable certain functions in the web to be done such as the validation of the password, the generation of error messages, the calculation of the transaction and others. Since ASP is embedded in HTML, the presence of HTML is important to display information from the generation of functions and calculation. The design must be translated into the form that can be understood by the machine.

6.3.1 Coding Style

Several programming style have been employed in writing the program to ensure system consistency, maintainability and readability. All the programming style are as following:

- Use meaningful variable names, constants names, procedure names and parameter variable names help a program to be "self-documenting" without excessive use of comments.

- Layout program source code to improve its readability. Each sentence is begun on a new line; statement following control structure is indented; white space is used to set off related blocks of code.
- Indent the code. Although it is not necessary to indent the code to insure that the code work correctly, it will be easier to read and detect error if the code are indented. It will be more useful especially in control structure such as for loop, if else, do while and select case.
- Sub procedures are very useful to optimize the code. Instead of repeating the code again, the repeated can be put into sub procedure and then call it again when it is needed.

6.3.2 Server-Side Scripts

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

6.3.3 Coding Principles

Several principles are applied during the development of the system to ensure that the quality and proper structure in the code generated. These principles include of the following:

- *Readability*
    - It is very important when it comes to the future enhancement of the system by other people. Code should be easily read and understood. To achieve this, comments can be used to explain the module or code. Meaningful variables and labels will also be helpful in reading the code.

- *Maintainability*
    - Code should be to read, corrected and revised. Codes that perform functions for one module should be grouped together and try as much as possible to achieve high cohesion and loose coupling.

6.4 Security

For the implementation of the security, it is stated that SSL is used to secure the website. Below are the steps that was followed to install SSL given by VeriSign:

6.4.1 Install Web Server Software

- Generate a CSR from your server

Submit a Certificate Signing Request (CSR) with a request for a Test SSL Certificate. A CSR is an encrypted file that contains an organization's public key, name, locality, and URL. To generate a CSR, the Web server software is used. When generating a CSR, a Web server creates two files: a private key, and a CSR. Below are the steps to generate a CSR:

1.Start the Key Generation Process

Under Administrative Tools, open the Internet Services Manager. Then open up the properties window for the website that is wanted to request the certificate for. Right-clicking on the particular website will open up its properties.

2.Open Directory Security Folder

In the Directory Security folder click on the "Server Certificate" button in the Secure communications section. If this option is not used before the "Edit" button will not be active.

3.Select "Create a new certificate"

4.Prepare the request

Prepare the request now, but only submit the request (CSR) via our online request forms. Verisign don't accept CSR's via email.

5.Enter a certificate name and the certificate strength

Decide what encryption strength the private key and CSR will be set at. It would be a good idea to choose the highest you are allowed to go. If you are outside the US you may want to generate a Server Gated Crypto certificate. Merely choosing this option will not mean that you'll automatically get issued with an SGC certificate. You'll still have to go through our SGC verification process. You have now created a public/private key pair. The private key is stored locally on your machine. The public portion is sent to VeriSign in the form of a Certificate Signing Request. You will now create a Certificate Signing Request (CSR). This information will be displayed on your certificate, and identifies the owner of the key to users. The CSR is only used to request the certificate. Certain characters must be excluded from your CSR fields, or your certificate may not work. Do not use any of the following characters:

! @ # $ % ^ * ( ) ~ ? > < & / \

6.Enter your Organization Information

You should enter in these fields what appears on your official company registration documents.

7.Enter your common name

The term "common name" is X.509 speak for the name that distinguishes the certificate best, and ties it to your web site. In the case of SSL web server certificates, enter the host plus domain name (i.e. secure.verisign.com) .

8.Enter the geographical details

Your country, state or province and locality or city.

9.Enter contact information

This is not that important as we do not receive this information. You'll have to enter this type of information via our online forms during the request process.

10.Choose a filename to save the request to

Select an easy to locate folder. You'll have to open this file up with Notepad. The CSR must be copied and pasted into our online form. Once the CSR has been submitted, you won't need this CSR.

11.Confirm your request details

12.Finish up and exit IIS Certificate Wizard

- Submit CSR

  When you generated the CSR in Step 1: Generate CSR, your server software either e-mailed the CSR to you, or created a request file on your hard disk (such as key.req). Open the CSR file with an ASCII text editor such as NotePad. (Do not use a word processor such as Word that inserts formatting or control characters.)

- Complete Application

  Review and confirm the information drawn from your CSR. If any of the information is incorrect, please generate a new CSR with the appropriate information.

- Install Test CA Root
- Install your Test Server ID

6.4.2 Proxy Settings

VeriSign's enrollment is Web based, and uses SSL to protect the information that is submitted. Proxy settings is made sure that connections outside the firewall is permitted.

6.4.3 Review Legal Agreement

You will be asked to agree to the VeriSign trial Subscriber Agreement before completing your application. If you (or your legal counsel) need to review this agreement before enrolling, a copy may be found here

6.5 Summary

System implementation is the most important phase in the life cycle of development of software. This is where the developer knows his or her limitations on the project. However changes are apt to happen because of the difference of the installations of software in the computer. Through out the development of this system, here and there are changes made such as the choice of web server from Internet Information Services to Personal Web Server, the choice of database management from Microsoft SQL Server 7.0 to Microsoft Access 2000, as to the choice of choosing the web development software which is Microsoft Visual Interdev 6.0.

In order to develop the system, coding of program is one of the way to develop it. Good programming techniques are needed in order to display a tidy program code. This is also important so that developer can easily spot the error. Microsoft Visual Interdev is a useful software because it provides three types of preview for the system that is the design view to see the display of the system , the source view to edit and create new functions and the such and the Quick View to view the outcome of the codes through the browser.

However, as for the security settings, the steps that were to be followed were stuck because of some failures in submitting the SCR that was generated. So sad to say that the website was to operate without the presence of SSL.

Chapter 7

System Testing

CHAPTER 7 : SYSTEM TESTING

7.0 About System Testing

System implementation is an activity where it is carried out before any implementation procedure commences. This stage is carried out to ensure that the system works accurately and efficiently before it is put into full operational. System testing includes all clerical and computer aspects.

The system is tested on several levels, and throughout the life project life cycle. All programs should be tested individually and later on groups to verify that all links between the programs are correct. The program is then tested as a complete system once all program links are validated.

The objectives of testing are stated below:

- *Error tracking*
    - Find and correct the cause of the error as it is to fix the error itself.
- *Error detection*
    - Involves identifying errors.
- *Error removal*
    - Involves debugging and other strategies for identifying where the error occurs in the code. This process is necessary to identify what in the code causes the error and removing it.
- *Regression testing*

Testing to see if the fix or rework to the code actually fixes the error, fixes it in one place and breaks it in another, or breaks the code in other places without actually fixing it at the point in the software where the fix was attempt.

7.1 Testing Method

Before testing is done, a method should as chosen to follow. These methods provide a systematic approach to testing. More important, methods provide a mechanism that can help to ensure the completeness of test and provide the highest likelihood for uncovering errors in software. Only one type of testing was used to test this system:

7.1.1 White-box Testing

White-box testing sometimes called glass-box testing. It is a test case design method that uses the control structure of the procedural design to derive test cases. Using white-box testing methods, the developer can derive test cases that.

- Guarantee that all independent paths within a module have been exercised at least once.
- Exercise all logical decisions on their true and false sides.
- Execute all loops at their boundaries and within their operational bounds.
- Exercise internal data structures to ensure their validity.

This testing was carried out at the early stages of the testing process to ensure that the internal operation of the system performs according to specification.

7.2 Types of Testing

The testing process is implemented throughout the development of ODA. It is implementation in the stages because the system itself is composed modular. Testing conducted include unit testing and integration testing.

7.2.1 Unit Testing

Unit testing is done to uncover errors in each module. In this system, each module is coded and tested separately. Functions and procedures in each module are examined carefully for errors after coding. If they are found to be error free after manual examination, they are computed and run with test date to search for other errors. This unit concentrates on the smallest unit of software design and the code. It basically compares the code with the specifications and the design to make sure that all the relevant cases have been considered. There are 3 ways to do unit testing:

- Examining the code
- Code walk through
- Code inspections

After each program unit has been tested, the interaction of the components that have been integrated would be tested again. Therefore, module testing is the following phase after the unit t The unit testing carried out involved :

- Testing the interfaces to ensure that information flows properly into and out of each program unit.
- Testing boundary conditions to ensure each component is operation correctly at the boundary values.
- Make sure that all independent paths in a control structure are tested at least once.
- Testing of all error handling paths.

7.2.2 Integration Testing

Integration testing is a systematic technique for constructing the program structure while at the same time conducting test to uncover errors associated with interfacing. The objective is to take unit-tested modules and build a program structure that has been dictated by design.

The integration testing that was done was to connect the two modules between the transaction module and the multimedia module.

7.3 Summary

System testing is a series of different tests whose primary purpose is totally exercise the computer-based system. Although each test has a different purpose, all work to verify that system elements have been properly integrated and perform all functions. System testing is to ensure that the entire system is validates, it must be combined with other system element such as hardware, end user and database. The objective here was to ensure the software meet its requirements.

Throughout the development of ODA, unit testing was done after the development of each component and not at the end of development of the whole system. Testing was done with all sorts of ways to check for errors. If it was tested to be functioning correctly, development of next functional will be carried out. Or else, debugging is carried out to identify the error before having it tested again. This is to ensure the components are operating correctly and without errors. Many tests were involved during the unit testing.

Lack of experience in developing web-based application is also a reason where developer is not that familiar with the usage of programming in ASP, since it is new to developer. Developing a web-based application is very different from developing a traditional standalone application. This is due to the difference in technology and approach used. Besides, the browser limitations have to be considered while developing a web-based application. However, this problems has been solved through reference in Internet, self studies and discussion with friends.

Discussion

DISCUSSION

All in all, after the development of this system, though unsuccessful in installing the SSL for the purpose of the security system, experience is gained while going through the process of developing the system. Though much can be done to improve the functions and add more features, the experience through out the stages of the life cycle of software is much more important.

The modules for the system are all met. Based on the objectives outlined (refer to section 1.4.1 and 1.4.2), the following are achieved by ODA:

1. To retrieve latest information technology update through news
2. To choose desired image and purchase it
3. Ask for our service to invent logo, banner, animation and such for users'
4. Enable administrator to maintain information in database
5. Enable add, delete and edit functions on web applications
6. Enable administrators to handle with errors

User Manual

USER MANUAL

1. Software and Hardware Minimum Requirements

- PC
- Mouse and keyboard
- Monitor
- Windows 2000 Professional and Personal Web Server

2. Getting started

- Type http://localhost/design/index.html in the address combo box of the browser.
- There are possibly 2 reasons if this site could not be started.
  i. There is no web server in the system
  ii. The files have not been saved in the correct root directory
  C:\Inetpub\wwwroot\design\

Below are the guidance for the discussed module in this project: -

1.The main page

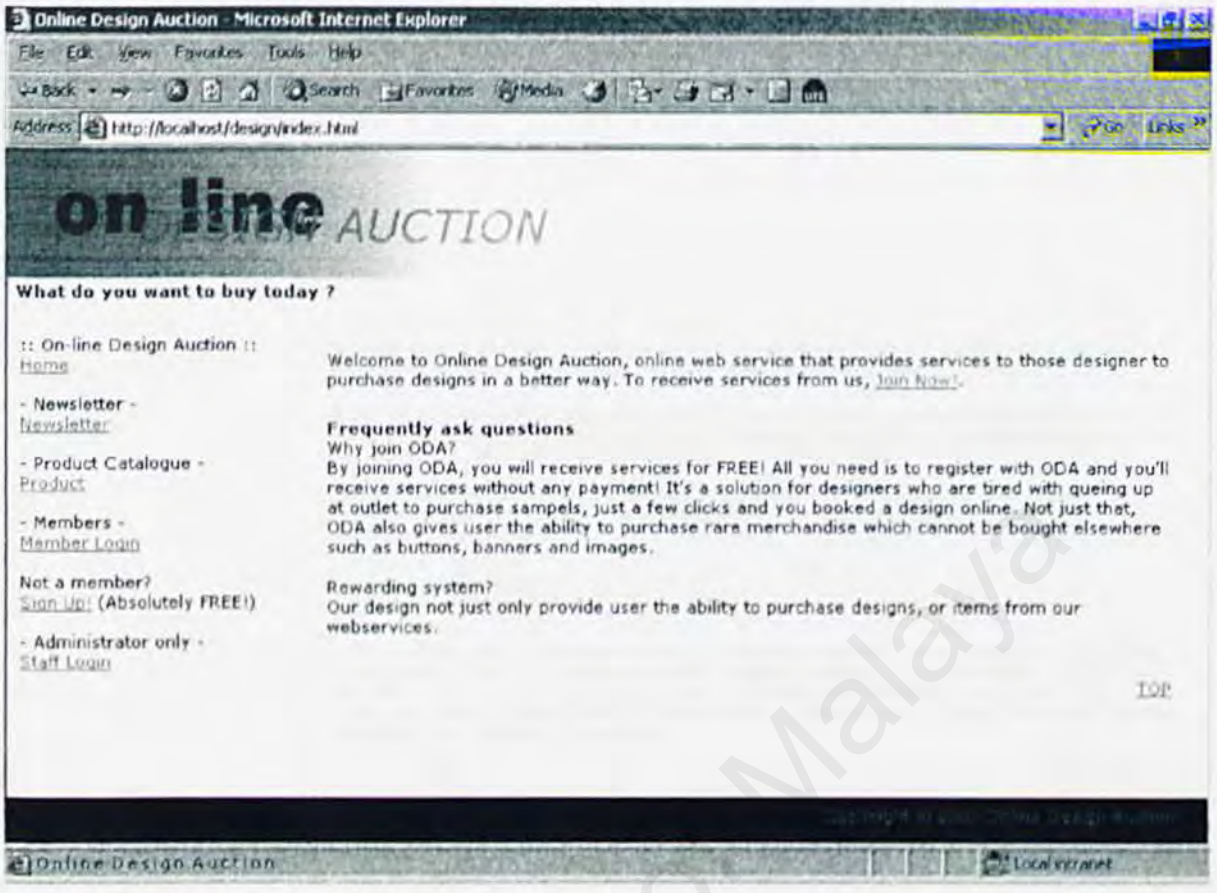


Figure (a): The interface of main page

When user successfully access to the website, the main menu will appear. User will have a few options as seen in the interface. Newsletter provides the latest technologies for general information to the customers. The rest are like Product Catalogue, Sign Up and Staff Login for administration

2.The newsletter page

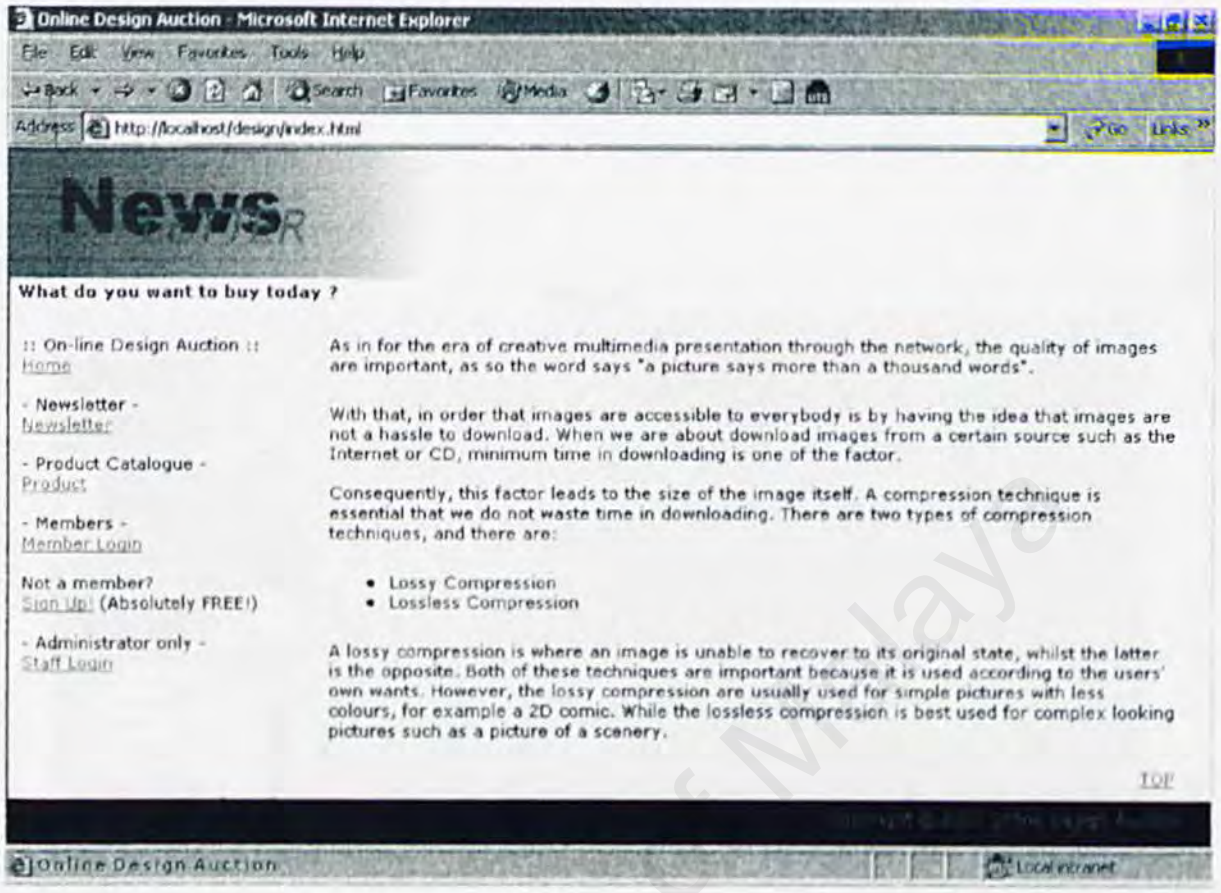


Figure (b): The interface of newsletter page

When the user clicks on the newsletter menu, this is the page where the user will be transported to. To go back to the previous page, user clicks on the Back button on the browser. All the menus on the left hand side can be entered too.

3.The product page

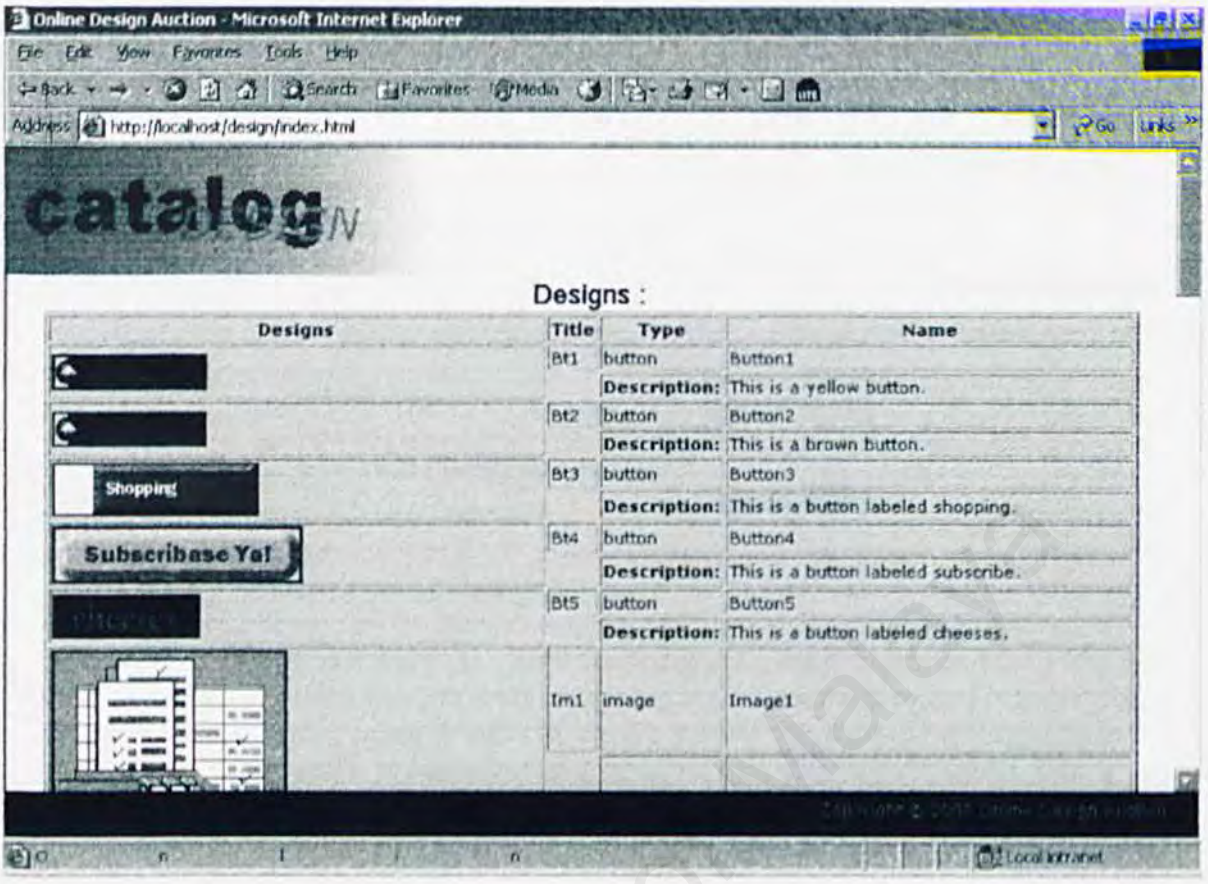


Figure (c): The interface of catalogue page

When user click "Product " from the main menu this interface will appear where user can view the design's details like title, type, name and description. From here user can actually make their decision as the first step which designs they wanted to buy. Images, banner or button that they like would be clearly presented here.

4.The member login page

Figure (d): The interface of member login page

When user click "Member Login " from the main menu this interface will appear where user that have already registered have to type in their login name and password in order to enable transactions or viewing of products with the ability to purchase the designs. After typing in the login name and password, users click on the red Log In button below. If the user wish to clear the inserted details, click on the Reset button beside the Log In.

5.The catalogue page

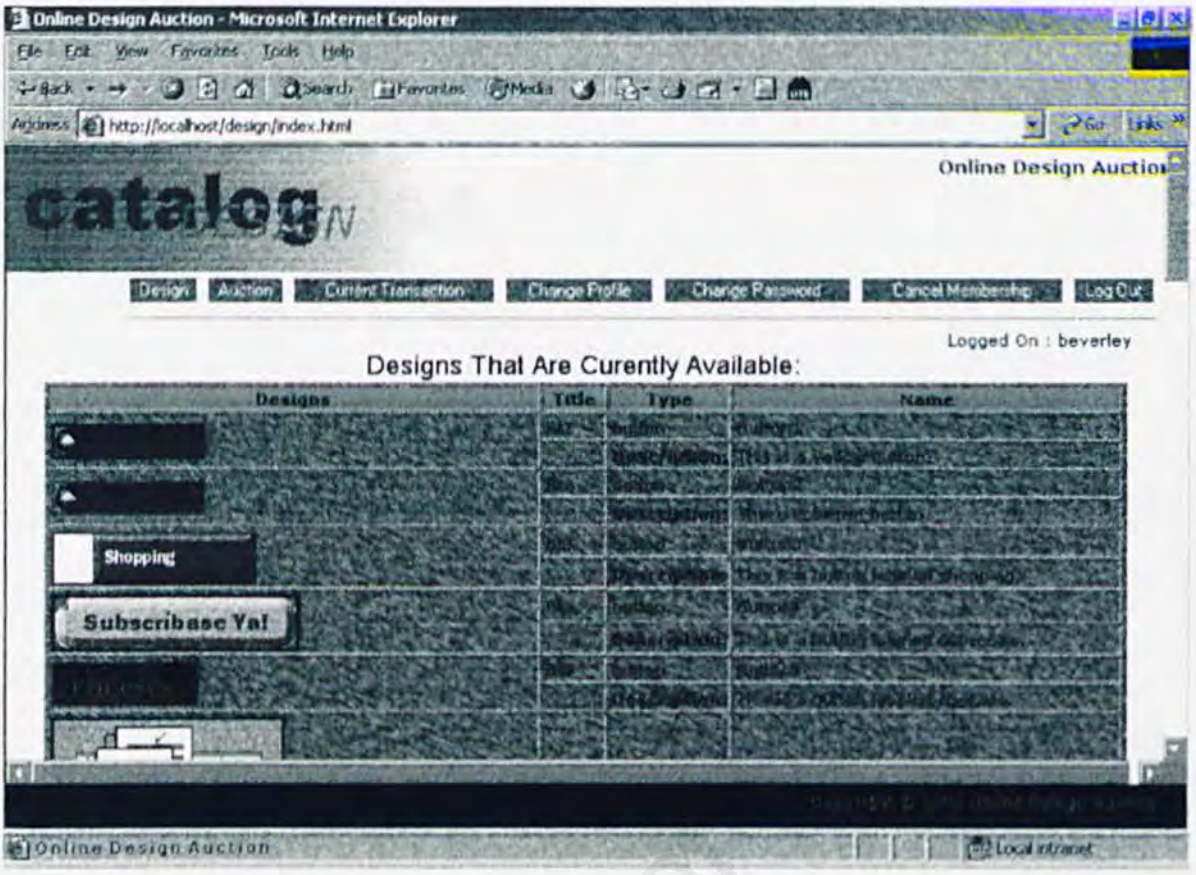


Figure (e): The interface of catalogue page

If the member Log In page is successful, the above interface would appear, where the users are directed to the catalogue page. Here it shows the designs in a table. When user clicks on the picture of the designs, a pop up window would appear to show how does the design looks like. To purchase the design, click on the highlighted blue word that says Design. This would transport users to the purchase page. At the purchase page, users are asked to type in the quantity of the design that they want and their credit card number. The credit card number would then be validated through the banks and if it is successful, the design would be sent to the users email.

6.The current transaction page

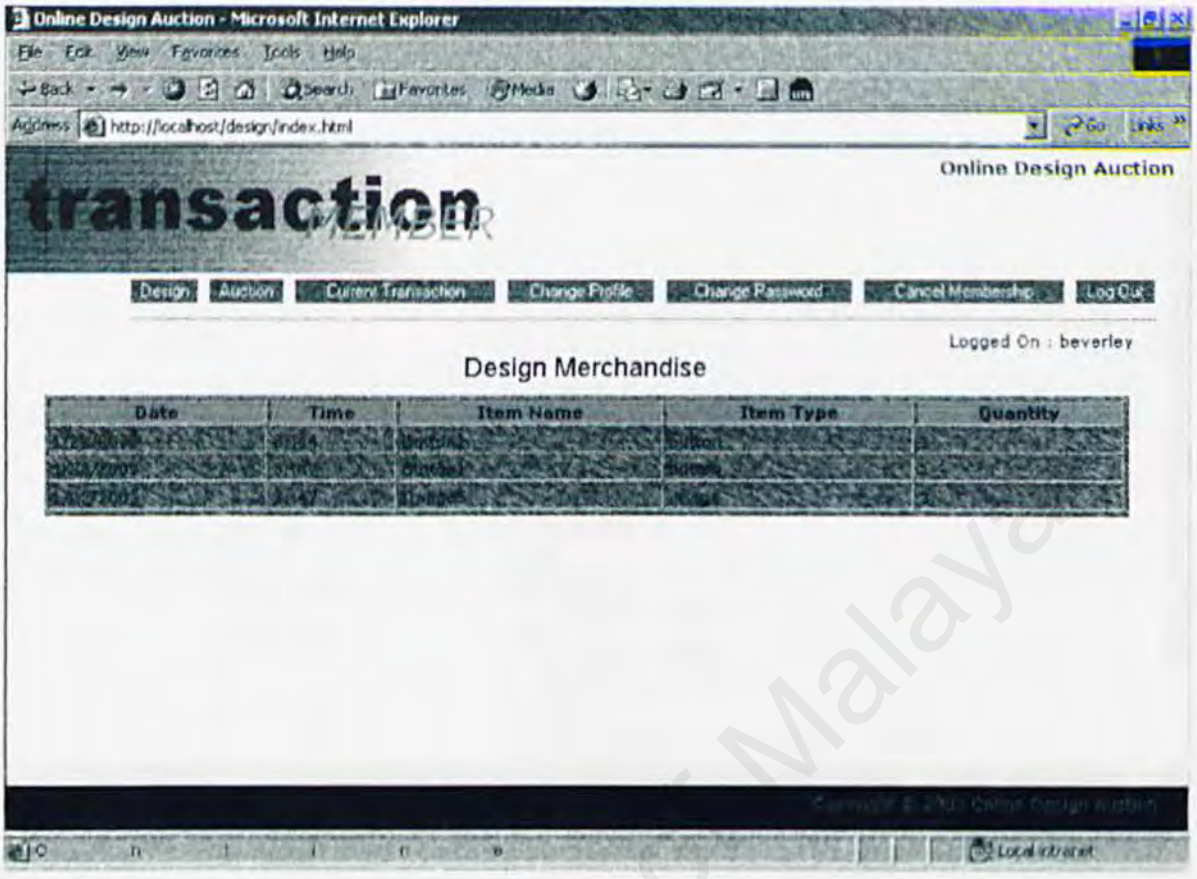


Figure (f): The interface of current transaction page

When the users click on the menu bar on top at the Current Transaction, users would be transported to this page. It displays the design merchandise that the user recently bought. Here it displays the details in a table where it shows the date, time, Item Name, Item Type and the quantity of the designs that was purchased. To go back to the catalogue, user can click on the Design button on top. To go to the other pages, users can click on the different menus on the top bar.

7.The Change Profile page

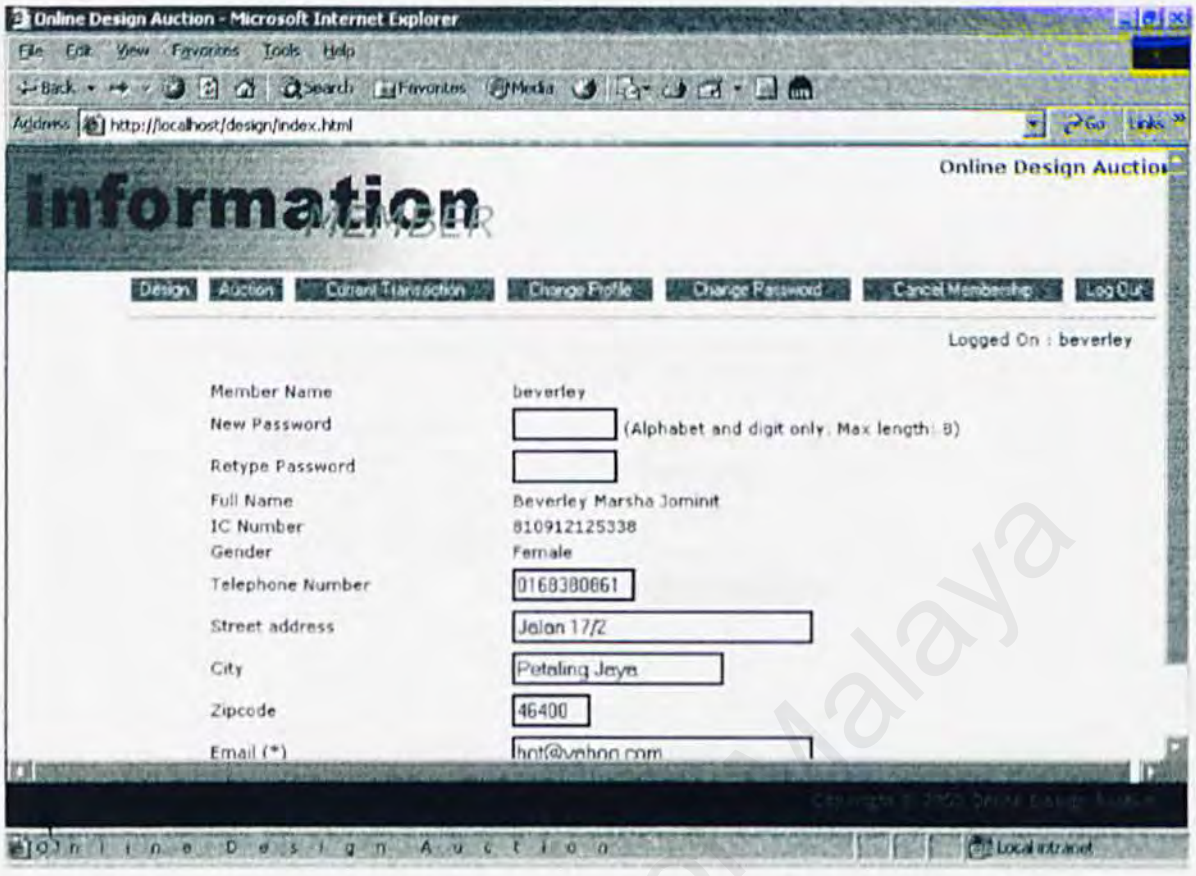


Figure (g): The interface of change profile page

When the users click on the menu bar on top at the Change Profile, users would be transported to this page. It displays the areas of the profile of the user that users want to change such as the telephone number, address and email. Besides that, users also have to type in their password to validate the user. To submit the form, user clicks on the Submit button below to process the page. If the user feels like clearing the form, they can click on the Reset button below the page.

8.The Change Password page

Figure (h): The interface of change password page

When the users click on the menu bar on top at the Change Password, users would be transported to this page. It displays input boxes to where the users can change their password. The first box indicates the users to key in their current password. The second box tells users to key in their new password that they wish to have. At the third box needs the user to re-key in the password that was keyed in at the second box. If the user do not key in the same password in the new password, an error message would be display to tell the user to key in again. If the current password is wrong, an error message would be displayed to re-key in the data. Users be directed to this page again.

9.The Cancel Membership page

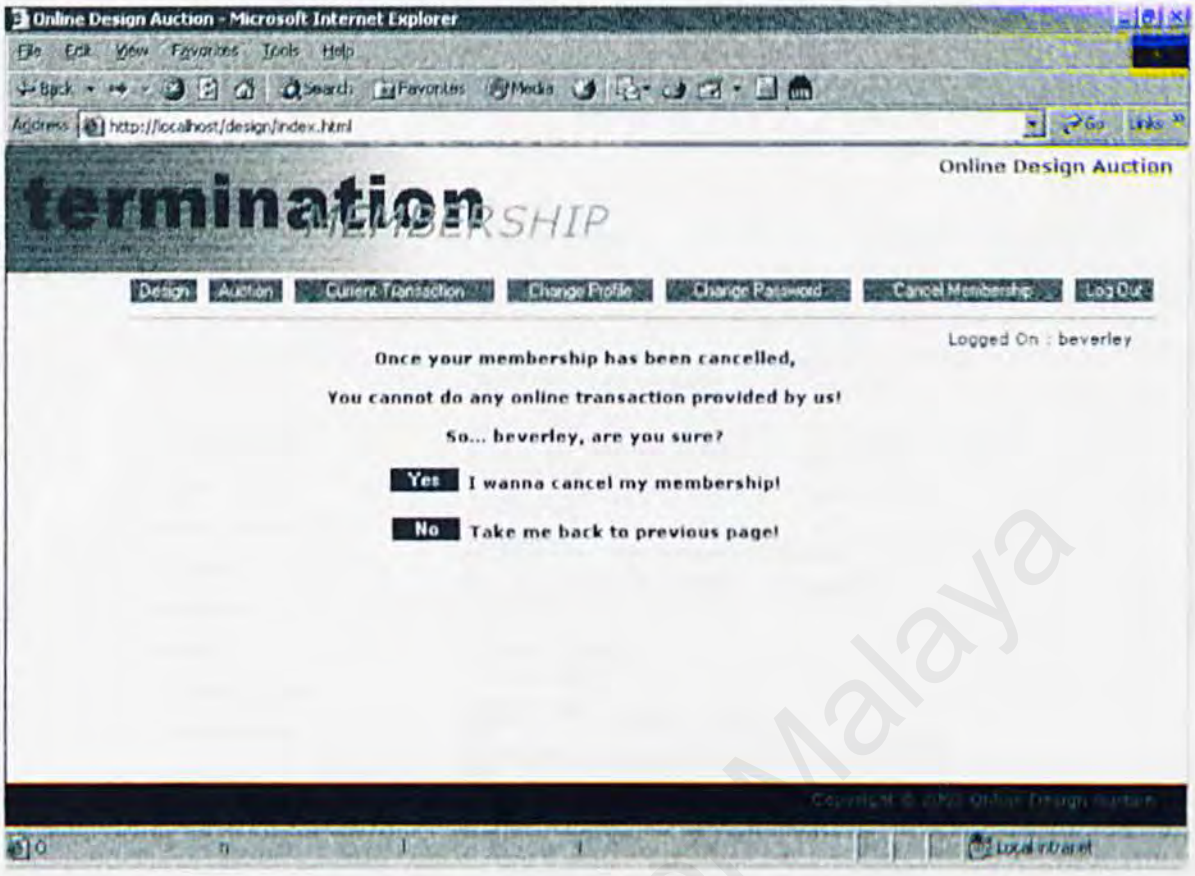


Figure (i): The interface of cancel membership page

When the users click on the menu bar on top at the Cancel Membership, users would be transported to this page. It displays a choice for users if they want to cancel their membership or not. There are two buttons here, the Yes button and the No button. If users click on the Yes button, their membership would be terminated which would then display a page that their membership is terminated. If users click on the No button, users would be transported back to the catalogue page.

10. The Registration for Member

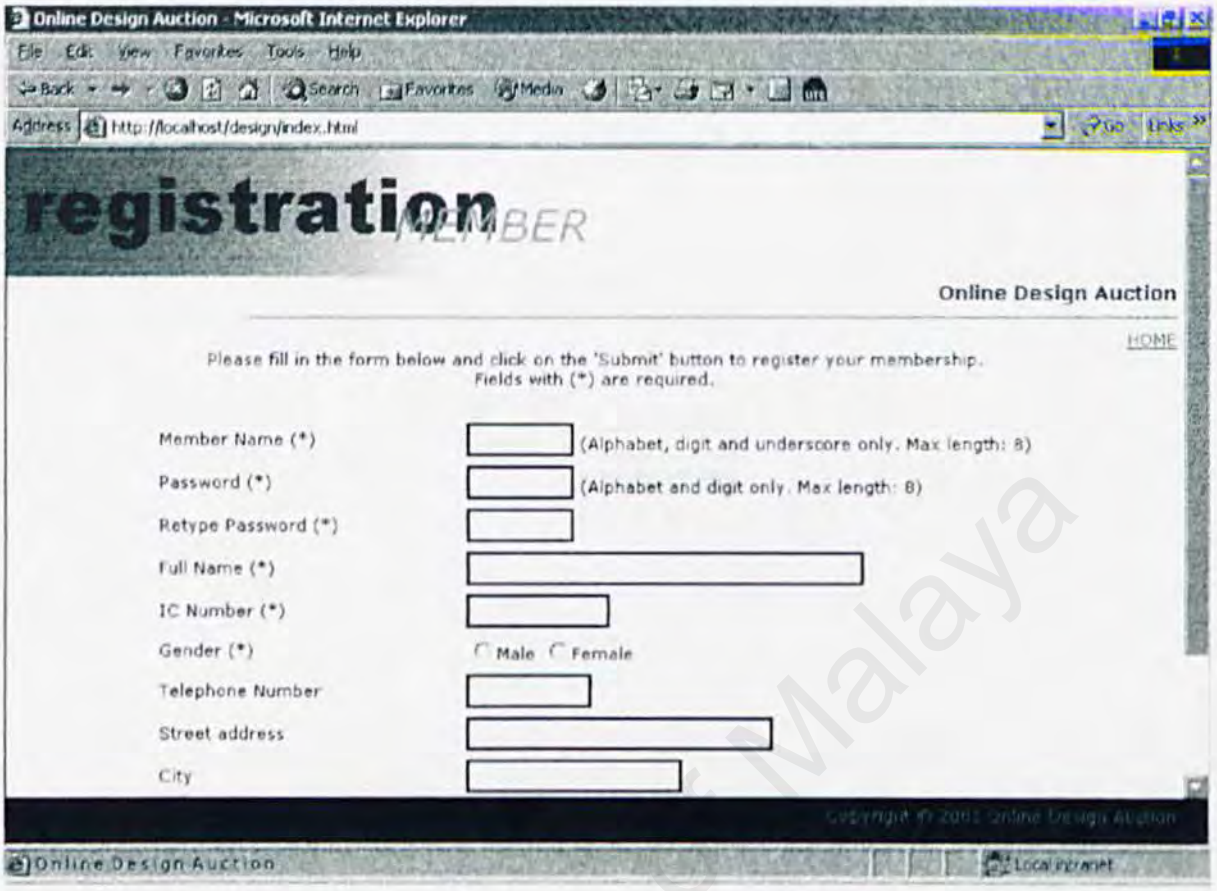


Figure (j): The interface to register a member

If user clicks the "Sign Up!" this interface will appear. Here user needs to fill in all their personal particulars. If they don't, error messages will appear that will prompt them to re-enter the particulars that are wrong or not being fill.

11. The Login Staff

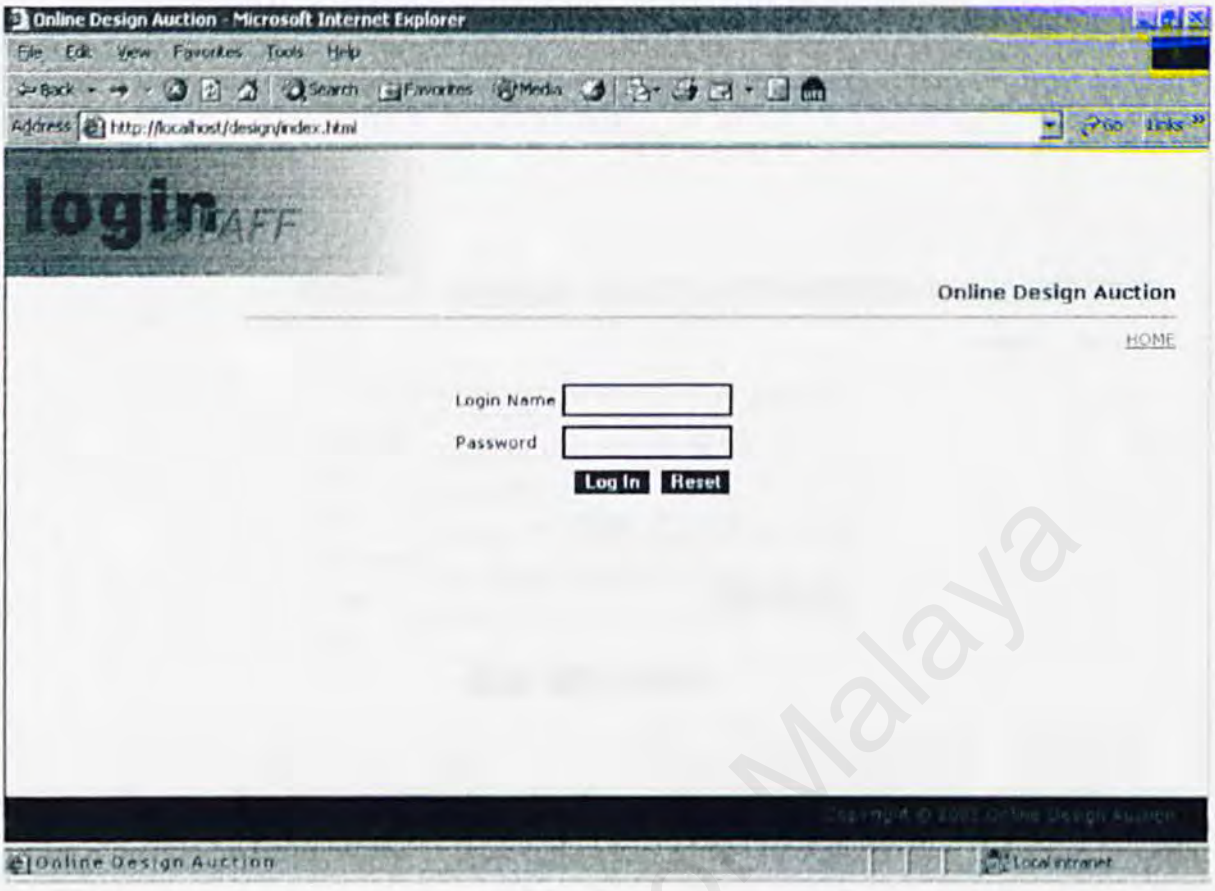


Figure (k): The interface of staff (admin) to login

The login staff is meant for administrator to login into the website. From here later updating and deleting will be done. Just type the login name as what has been kept recorded in the database. After that press "Log In" button to enter or "reset" to reset again.

12. Adding a design

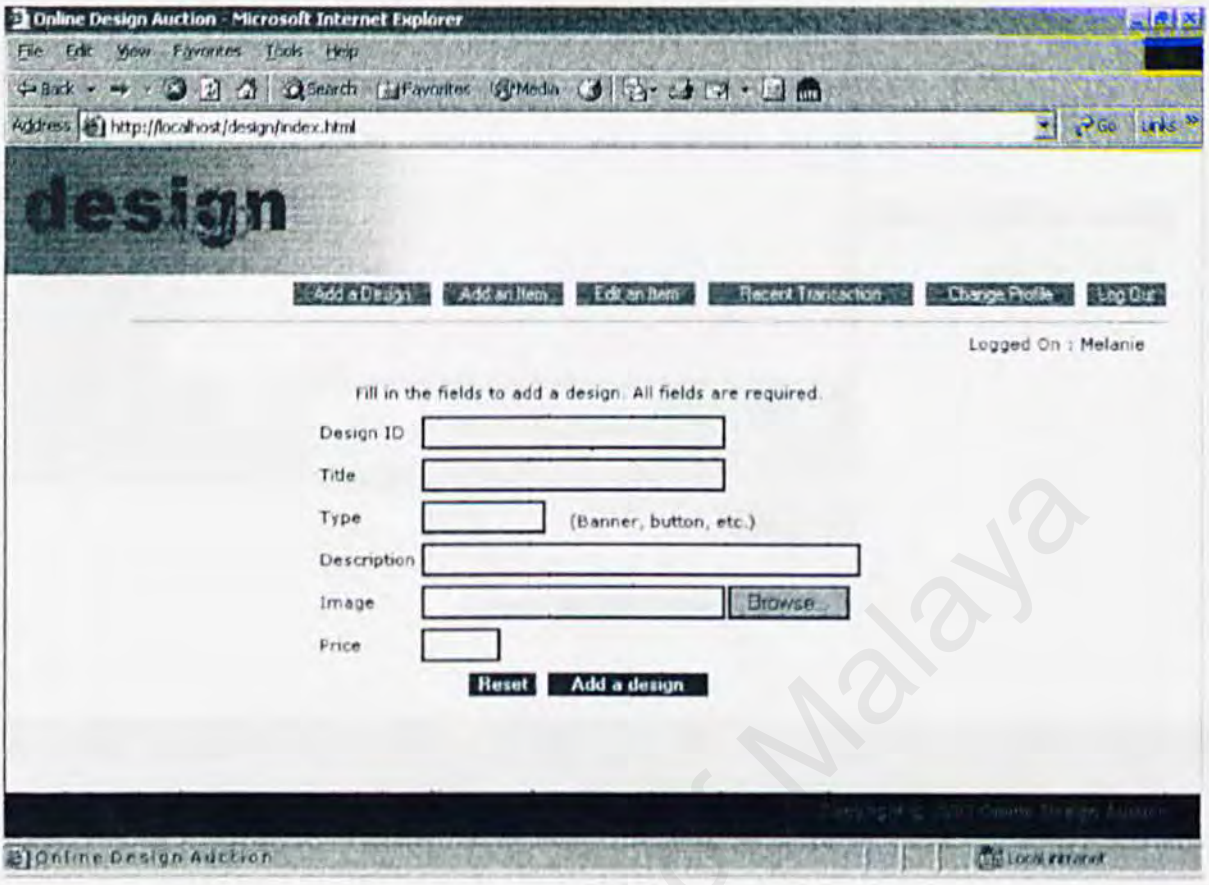


Figure (l): The interface of adding a design from the admin site.

After successfully login, admin will be able to see few options just like in the interface above. As to add a design admin must add all the particulars. From Design ID, Title, Type, Price and Description. For Images, admin should browse from the files they have keep the images. Then, admin can click the button "Add a design". Admin can also click the "Reset " button.

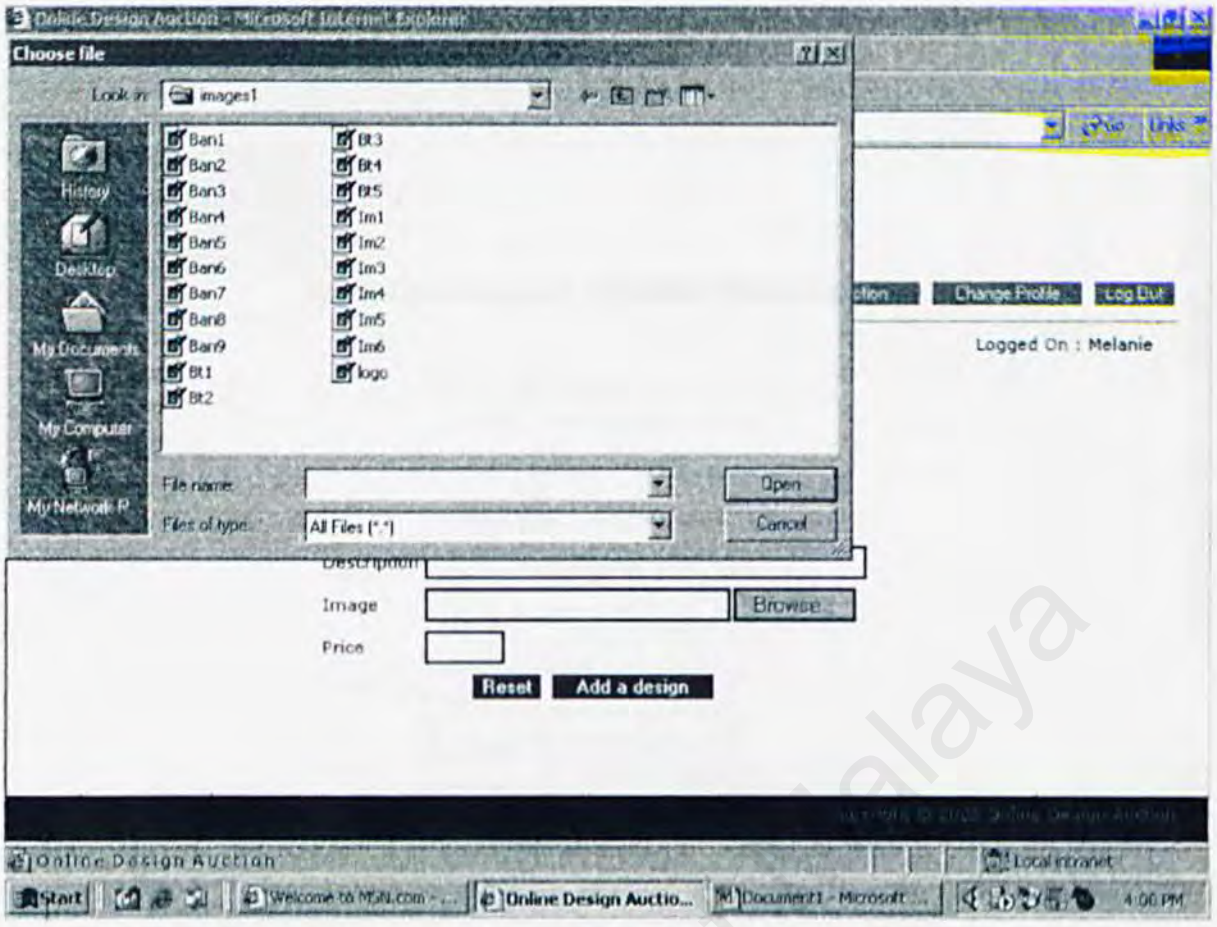


Figure (m): The interface of adding a design from the browser.

Admin need to click the "Browse" button in order to add images. From there, can identify and choose the images. So it will automatically be inserted to the website.

Figure (n): Error messages prompts when input required are not inserted.

The error messages indicate that admin needs to enter the required input box.

13. Adding an Item

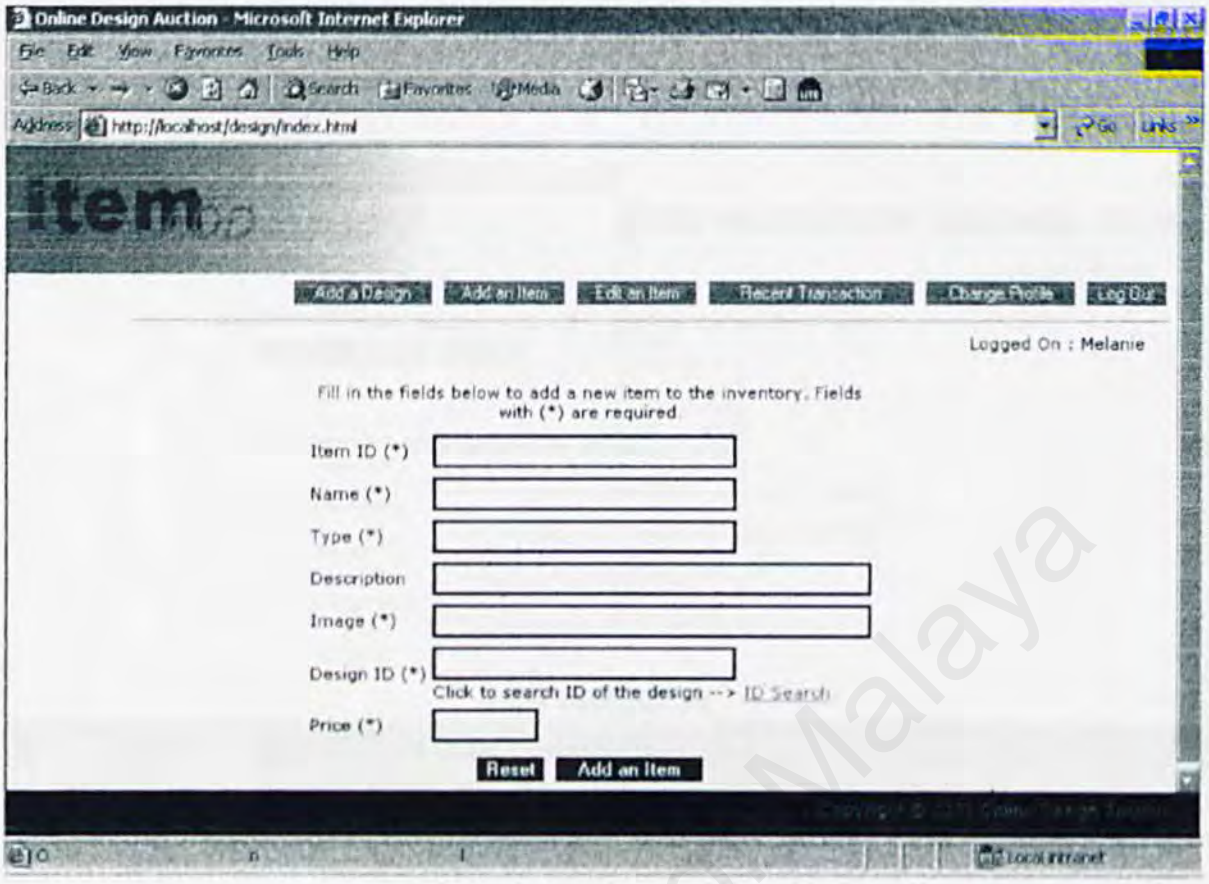


Figure (o): Adding the item interface.

When admin wants to add an item all of the particulars are required to be fill. "ID Search" is meant for the admin to search ID of the design that has been recorded at the database. When admin is done with that, click the "Add an Item " button to add to the details in the database. Button "Reset" should be clicked when admin need to change some errors in the details.

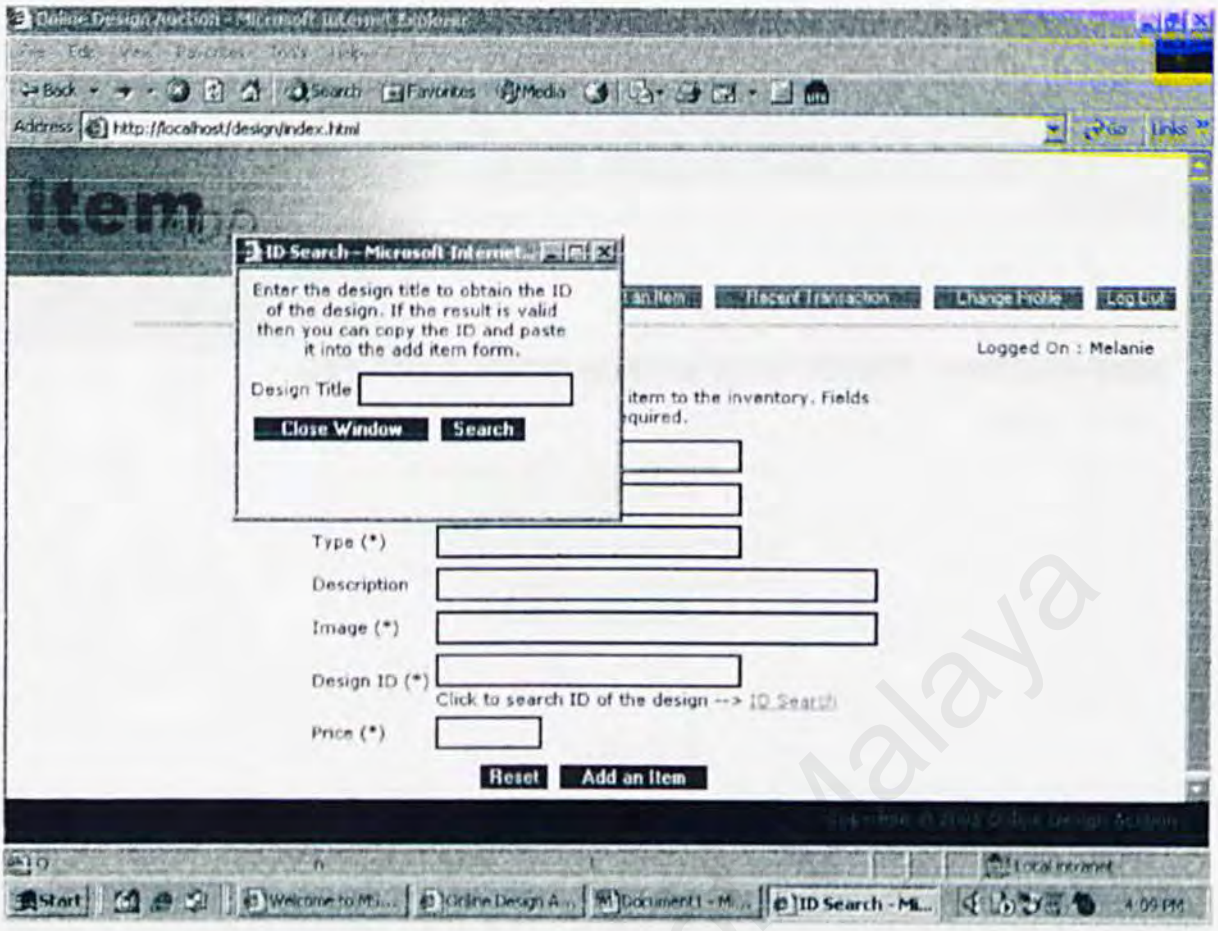


Figure (p): The pop-up window for ID Search

Admin needs to trace back the item id, so the "ID Search" will prompt a pop-up window for admin to enter the design title. From there it admin can obtain the ID of the design. If the result is valid admin can copy the ID and then paste it into the add item form.

14. Editing an Item

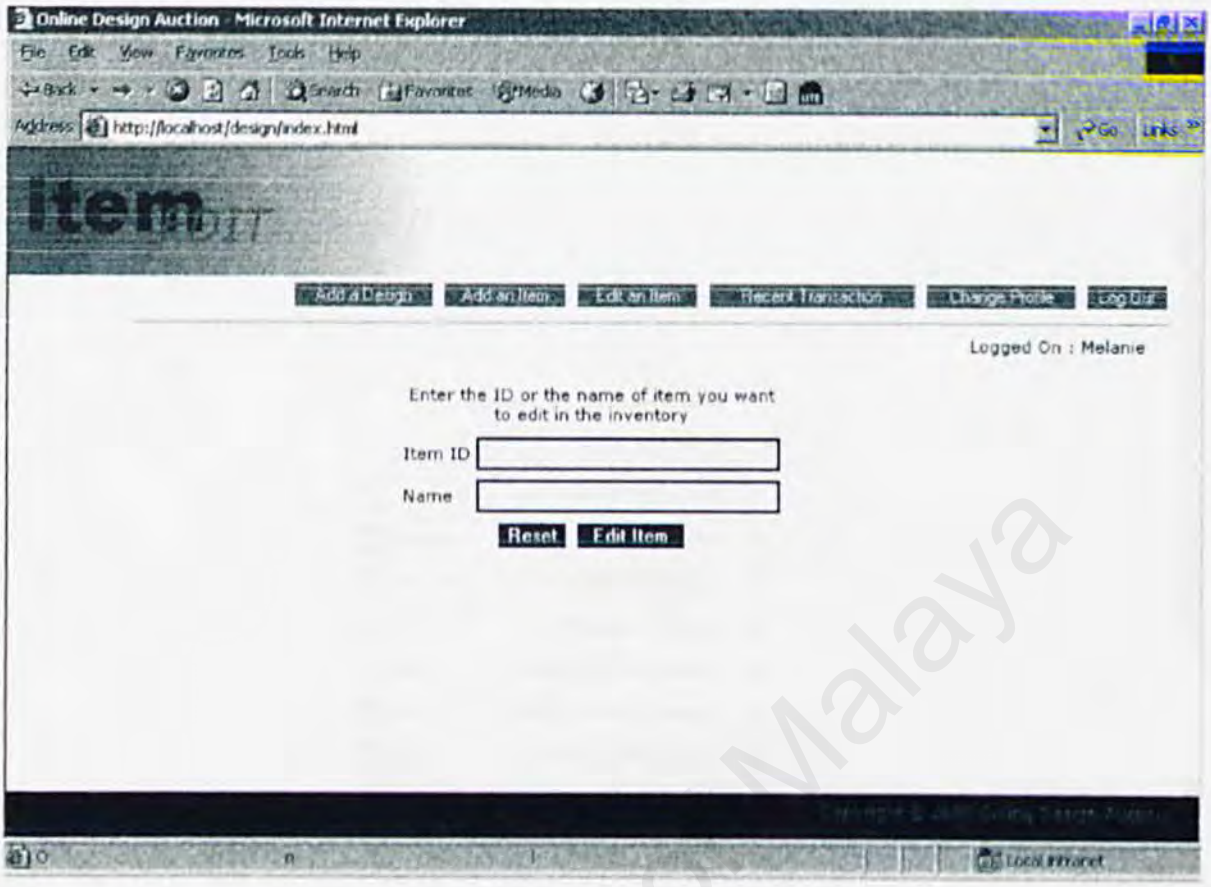


Figure (q): Editing an item interface

In editing an item, where admin will be able to some updating towards the product, admin need to enter the ID or the name of the item. Two options were given so that it will be easier for the admin to their updating records. After filling either input box, click the "Edit Item" button to start the editing process. Error messages will appear to indicate if the input is wrong.

15. Recent transaction

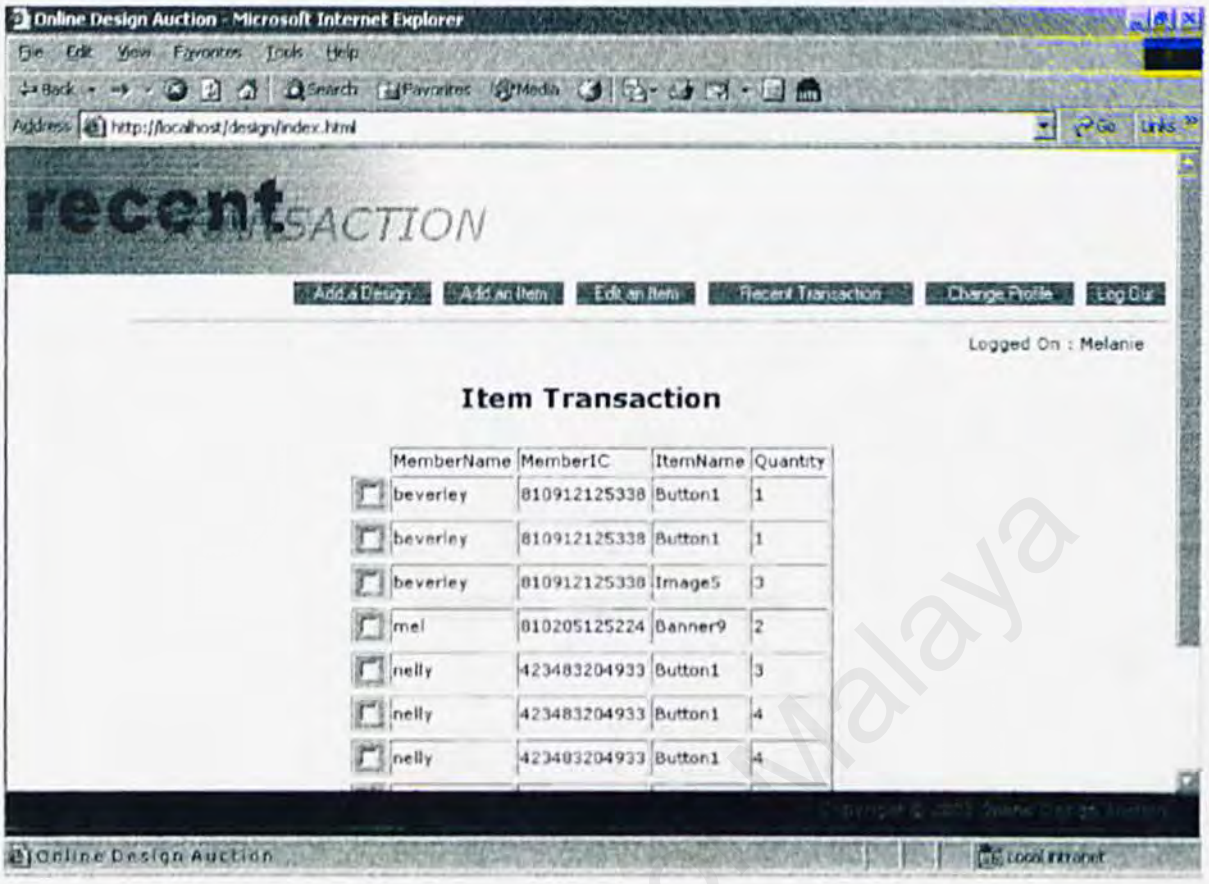


Figure (r): The item transaction table

When member catalogue has login and did their transaction, the web will generate automatically the details. So admin can have a view. To delete the member's transaction, just click the "Delete" button.

16.Changing the administrator profiles

Figure (s): The Change Profile page

Admin can change their particulars by selecting "Edit Profile" button, also if they would like to change their password just click "Change Password" button. Then if admin are satisfied with everything, just click the "Log Out" button to log out.

Reference

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