

ABSTRACT

Universal Sdn. Bhd. is a financial company. It is located in Jalan Teh Ewe Lim, Penang.

Perpustakaan SKTM

The aim of this project is to build an e-Accounting system for Universal Sdn. Bhd. to replace its existing system in order to upgrade the businesses. The objectives of this

system are to build a web page, to create a user interface, to create electronic forms, to provide bookkeeping services and to develop a database for the accounting system.

Decisions were made to get a better view of the old system. The chosen methodology to build the project development.

E-ACCOUNTING SYSTEM

SESSION 2002/2003

WXES3182 PROJEK ILMIAH TAHAP AKHIR II

GAN CHAUR CHAN

WET 000067

SUPERVISOR: MR. TEH YING WAH

MODERATOR: MR. AMIRRUDIN KAMSIN

DATE OF SUBMISSION: 26TH FEBRUARY 2003

The user interface and the user interface for the administration module are to upload

system, update price, service information, authentication and feedback

and more. When the user requirements for the user module are to register

the user interface and get account for authentication user, browsing

the system are Active Server Pages (ASP), Microsoft Internet Information Server (IIS), Microsoft FrontPage and

Microsoft Access. Besides that, the hardware involves are the PC with 256 MB of RAM, at least 1 GB of hard disk space,

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Universal Sdn. Bhd. is a financial company. It is located in Jalan Teh Ewe Lim, Penang.

The aim of this project is to build an e-Accounting system for Universal Sdn. Bhd. to replace its existing system in order to upgrade the businesses. The objectives of this system are to build a web page, to create a user interface, to create electronic forms, to provide bookkeeping services and to develop a database for the e-Accounting system. Documents analysis and observation have been done at Universal Sdn. Bhd. to get a better view of the old system. Waterfall methodology was the chosen methodology to assist in the project development.

This system is divided into two modules, *i.e.* the administrator module and the user module. The functional requirements for the administration module are to upload services, update price rate, retrieve information, authentication and feedback maintenance. Where as, the functional requirements for the user module are to register for non authentication user, login and edit account for authentication user, browsing capabilities and feedback. The non-functional requirements are performance, information, economy, control (and security), efficiency and service

The development tools for this system are Active Server Pages (ASP), Microsoft Access, Visual Studio 6.0, Internet Information Server (IIS), Microsoft FrontPage and Windows 2000 Professional. Besides that, the hardware involves are the PC with Pentium II (300 MHz or higher), 128 MB of RAM, at least 1 GB of hard disk space,

VGA or higher-resolution monitor; Super VGA recommended and peripherals –
Microsoft Mouse or compatible pointing device.

First of all, I would like to express my most gratitude to my supervisor, Mr. Teh Ying
To produce the best result, the system is tested to confirm that the objectives of the
system are fulfilled and fully operational.

Not forgetting the manager and staffs of Universal Sdn. Bhd. for their co-operation and
information given.

Besides that, I would like to express my thankfulness to my partner, Tan Siew Siew in
building this system together who handle some parts of the user module. And I also
would like to thank my friends for their moral supports and sincere encouragement
through out this period.

Last but not least, I would like to express my heartiest appreciation to my beloved
family members for all their confidence, moral supports and encouragement along
this period. I surely appreciate the things that they had done for me. Their kindness
will always be in place in the bottom of my heart.

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Not forgetting the manager and staffs of Universal Sdn. Bhd. for their co-operation and information given.

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1.1 INTRODUCTION

The Internet gets a greater than ever part in the world of business. To some small and midsize enterprises, the variety of software programs and Internet services can be threatening. Like it or not, all of us living in the "information age" environment and in terms of organization a successful business, we have to sustain with the technology. This project is taken up with the target to introduce an e-Accounting System to small and midsize enterprises.

Chapter One: INTRODUCTION

Universal Sdn. Bhd. is a financial company which is located in Penang. This company starts its business since January 2002. Currently, the accounting system of Universal Sdn. Bhd. is runs manually by an administrator, Mrs. Huen. Every time when a transaction occurs she has to keep all the records inside a record book and will be retrieved later. End of every day, she has to update those records in relevant account books manually. In short, she also has to balance all the accounts one by one. By that she will know the debt amount of each customer, total amount of the receivable payment on that day and how many days still leave for each customer to clear their payment. Then, she has to update customer's details when there have some changes.

The problems for this current system are among others the low competence in checking available accounts and delaying the time for the company's business. Besides that, a lot of time is needed when compile all the records and update all the accounts. At present,

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The Internet gets a greater than ever part in the world of business. To some small and midsize enterprises, the variety of software programs and Internet services can be threatening. Like it or not, all of us living in the “information age” environment and in terms of organization a successful business, we have to sustain with the technology. This project is taken up with the target to introduce an e-Accounting System to small and midsize enterprises.

The entire definition for e-Accounting system is a large program that is associated through the Internet and provides surroundings for enterprises to drill down financial reports and data through that program.

Universal Sdn. Bhd. is a financial company which is located in Penang. This company starts its business since January 2002. Currently, the accounting system of Universal Sdn. Bhd. is runs manually by its administrator, Mrs. Hum. Every time when a transaction occurs she has to keep all the records inside a record book and will be retrieved later. End of everyday, she has to update those records in relevant account books manually. By that, she also has to balance all the accounts one by one. By that she will know the debt amount of each customer, total amount of the receivable payment on that day and how many days still leave for each customer to clear their payment. Then, she has to update customer’s details when there have some changes.

The problems for this current system are among others the low competence in checking available accounts and delaying the time for the company’s business. Besides that, a lot of time is needed when convalesce the records and update all the accounts. At present,

there is not any efficient system put into practice to the existing one. Based on surveillance and contemporary discussion, it is found that there is a need to build up an efficient system for the Universal Sdn. Bhd. in order to upgrade its business.

d. To provide bookkeeping services

1.2 AIM

The aim of this project is to develop an efficient e-Accounting System for small and midsize enterprises and to reinstate their existing manual system in order to save their time and money.

1.3 OBJECTIVES

The objectives of this project are listed below:

a. To develop a web page

By developing a web page, all the information of services about an accounting company can be broadcast in the Internet. It will give the outsiders a better idea on what kind of services those are obtainable.

b. To create a user interface

User interface acts like a point of contact between user and computer. User interface will provide some utility features to user to input data that needed for bookkeeping.

c. To create electronic form

There are two electronic forms involve in this system. Those are the registration form and feed back form. The registration form is for non authentication users to

1.5 register a new account to store their data. The feed back form is for the users to send any suggests or comments or inquiries to the administrator.

d. To provide bookkeeping services

There are some bookkeeping services involve in this system. Those are general ledger and other accounts which are related to general ledger.

e. To develop a database

The manipulation of the database is to store data given by the users such as invoices, so that users can review their information online. In addition, the database can retrieve data that stored inside it. The database has the facility to update the information itself such as data users have been modified or added.

1.4 RELEVANCE

This project is relevant because information technology (IT) become a channel which is essential for everyone to get any information through the Internet in this century. Because of via Internet can save time, money and also manpower, so an accounting company can introduce an e-Accounting system to users to sustain the original manual system which lots of manpower, time and money to be involve in those transactions everyday.

The budget of the company will totally decrease through this system. Because some small and midsize enterprises not need to hire accountants to do bookkeeping, what their need to do is just gain access to the Internet. With this system, they need not prepare a large space of hard disk to store their data but they can access this system anytime anywhere daily to update and retrieve their data.

1.5 SCOPES

This project only focuses on the accounting management system and not the whole management system of a company. The front end and the back end of the office would be included. The scope of the project has divided into two parts which is the system administrators and users or customers of that accounting company.

a. Administrators' scope

All the updating works can be done by this module. Here, the system's administrators can upload all the latest information into their web site such introducing a new service. Besides that, the administrators can repossess the data which are stored inside the database in order to generate a report. Besides that, administrators also can retrieve user's details to approve they registration and provide those new users a new account space and interface.

b. Users' scope

The process involved in the users' module is simple. The web page will present some information about those services provided by that accounting company. For non-authorize users, there is a registration form for them to apply to. For authorize users, they can retrieve and change their own data which stored in database. The database will update all information that have been changed by authorize users. In this module also, the flow of the accounting process will be depicting clearly. The system will depict when user key in some data to update, how those data will be retrieved by others accounts which are related to those data. All updates and changes will store in database.

1.6 ASSUMPTIONS

There are two assumptions that related to characteristics of this project:

- The word of **users** or **user** used in the context of the proposal report is referring to anyone or enterprises that will be using this system.
- The word of **company** used in the context of the proposal report is referring to the accounting company that develops this system.
- Assume that all of the user of this system should have basic skill and knowledge of computer. That means they should know how to start computer, enter login ID, password and etc.

1.7 ADVANTAGES

Here are some of the advantages of the e-Accounting system that will be implemented for the accounting company.

a. Anytime/ Anywhere access

All users can real-time access to their accounting system and data by using any Internet-connected computer they are secured — at their office, at home, at a customer's office, or on the road — at any time which means day or night.

b. Operational efficiency

Database will keep all the data that was send by users and it also easy to be retrieved. The staffs need not to check the records from the beginning to get those

data users need but the database will assist them to monitor those records. Comparing with the current manual system, the users can save more times and manpower in doing those accounting.

c. Save time

Save precious time and money by trying to carry on with new legislation, computer programs or software etc. It is save money and time by not extra staff, giving payment for extra space or equipment, or setting up other manual systems to support the existing manual system.

d. Negligible cost and increase profits

Besides that, the online advertising costs are less compared to brochure distributing and online advertising will get a higher reaction rate for the accounting company. In addition, web-based system is a paperless project and can save the printing cost.

e. User-friendly and easy

Virtual tours of their services are provided or provide an easy to use interface for those users who are not familiar with computer.

f. Real-time retrieve

This e-Accounting system is one of the systems which are delivered real-time retrieve for the users' of small or midsize enterprise — anytime and anywhere. When users key in their data into the system, from wherever location they are, it is instantly distributed to all relevant records to those related accounts and

- o ledgers, usually (which is depending on those users' workflow processes) it need not to involved any further human intervention. Thereafter, users can be confidently check over and stage-manage from any Internet-connected computer, it also allowing users to know everything in real-time which they need to know about their business's financial state.
- o Microsoft Access 97 or higher
- g. Exciting cost savings or higher
 - o Users just need to "log in and access". There are no new computers or servers that need to buy or add-on, they also no need to install or organize any software, and of course there are no contributed IT networks to build up — which make users to spend less time on routine technical details but they just let users more on running their business. It makes users save a marvelous amount of money.
- h. Document sharing
 - o Create a multiple controlled access for selected users and groups of users separately.
- i. Communications – internally and externally
 - o It can co-ordinate users' message across a wideness range among themselves.

1.8 HARDWARE AND SOFTWARE REQUIREMENTS

The hardware that required for this project are:

- o PC with Pentium II (300 MHz or higher)
- o 128 MB of RAM
- o At least 1 GB of hard disk space

- VGA or higher-resolution monitor; Super VGA recommended
- Peripherals – Microsoft Mouse or compatible pointing device

The software that required for this project are:

- Windows 98 or higher
- Microsoft Access 97 or higher
- Internet Explorer 5.5 or higher
- Visual Studio 6.0
- Microsoft FrontPage 97 or higher

1.9 EXPECTED OUTCOME

In this project, the expected outcome is an e-Accounting system that can improve or replace the current manual system in accounting company. This system must be allowed users to login and access, edit, retrieve data etc. It should be able to satisfy all the users' accounting requirements and provide an ease-to-use environment to them to use and access.

Besides that, this system could reach those objectives that have been set in this proposal report. Each module in this system must be clearly recognized and can provide a high-quality user interface and clear utilities to users. This system can be easily to maintain by management.

1.10 SCHEDULE

In order to reduce essential uncertainty in formative time estimates, the predictable time of all the activities will be estimated optimistically. Figure 1.1 depicts the project schedule for the e-Accounting system. It shows how those stages and duration at each

stage of the task have been conducted, feasibility study, literature review, methodology, system analysis, system design, system coding, testing and maintenance, system implementation and documentation.

Task Name	Duration	Start	Finish	2002								2003		
				Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan			
Feasibility Study	2 weeks	10/6/02	23/6/02	■	■									
Literature review	3 weeks	21/6/02	12/7/02		■	■								
Requirement Analysis	3 weeks	8/7/02	15/7/02		■	■								
System Design	3 weeks	14/7/02	11/8/02			■	■	■						
System Development	8 weeks	29/7/02	10/9/02			■	■	■	■					
Testing & Maintenance	4 weeks	20/12/02	17/1/03										■	■
System Implementation	3 weeks	20/12/02	10/1/03										■	■
Documentation	36 weeks	21/6/02	27/1/03	■	■	■	■	■	■	■	■	■	■	■

Figure 1.1: Project Schedule

1.11 SUMMARY

- Chapter 1

This chapter contains the overview for the whole project where the background of the project is described as well as the objectives, scope, advantages and requirements of hardware and software used to develop this project.

- Chapter 2

Chapter 2 reviews on the existing e-Accounting system. This will give an insight of the ongoing research that is related to the project.

- Chapter 3 is the evaluation on the system, which the strengths and limitation of
This chapter describes the methodology used and the information gathering techniques for the project.
- Chapter 4
This chapter describes the requirement analysis, the development tools and the system requirements and the user system requirements.
- Chapter 5
This chapter describes design for the whole system of this project. The designs include the process design, input form design, user interface design and database design. It also predicts the expected outcome of the project.
- Chapter 6
This chapter will contain the discussions on the system implementation of the e-Accounting system. It included the implementation of the database and system coding.
- Chapter 7
Chapter 7 is the testing on the system, which included the unit testing, module testing and the integration testing.
- Chapter 8

Chapter 8 is the evaluation on the system, which the strengths and limitation of the system will be evaluated. Besides that, it will discuss about the future enhancement of the system.

Chapter Two: LITERATURE REVIEW

University of Malaya

2.1 INTRODUCTION

2.1.1 Definition of Literature Review

A literature review is acts as summarizes, interprets and evaluates "literature" (for available material) in order to ascertain current knowledge of a subject.

2.1.2 Purpose of Literature Review

There are some reasons in spending time and attempt on a review of literature before go aboard on research. The main reason for doing this is listed below:

- a. To recognize the existing literature systems
- b. To prevent making the same mistakes as others
- c. To expand ideas from the existing platforms
- d. To recognize the research gaps
- e. To enlarge the scope of the study of the subject area
- f. To recognize logical trends in the subject area
- g. To present the intellectual perspective of the work
- h. To recognize differing views
- i. To place the work into viewpoint
- j. To recognize information and ideas that may be applicable to the project
- k. To recognize methods that could be applicable to the project

Chapter Two: LITERATURE REVIEW

2.1 INTRODUCTION

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2.1.2 Purpose of Literature Review

There are some reasons in spending time and attempt on a review of literature before go aboard on a research project, according to Bourner (1996). The reason for doing this is listed below:

- a. To recognize gaps in the literature-existing systems
- b. To prevent making the same mistakes as others
- c. To expand ideas from the existing platforms
- d. To recognize other people running in the same fields
- e. To enlarge the wideness of knowledge of the subject area
- f. To recognize seminal works in the subject area
- g. To present the intellectual perspective of the work
- h. To recognize differing views
- i. To place the work into viewpoint
- j. To recognize information and ideas that may be applicable to the project
- k. To recognize methods that could be applicable to the project

2.2 SYSTEMS REVIEW

2.2.1 Overview

There are a variety of sources that can facilitate in handling a literature review such as doing research from the journal articles, books, conference proceedings, government and corporate reports, newspapers, thesis and dissertations, Internet (electronic journals), CD-ROM and magazines. For this review, most of the existing system was taken from the Internet which provides the fastest growing source of information.

The only web browser that was chosen to navigate the web is Internet Explorer. Search engine was one of the Internet programs which are created to assist users to search information in the World Wide Web (WWW) in an easy and fastest way. The search engines that were used to find all the existing systems were:

- a. Google
- b. Yahoo

For information retrieval, a query that was used was listed below:

- a. e-Accounting
- b. e-Accounting system
- c. Online accounting system

A review on ten e-Accounting systems that were available on the Internet has been done. The web-based system that included in this review has similarities and related features with this project. Those related systems were e-Accounting system, online accounting system and bookkeeping system.

The focus in this section is the system's home page and services they offered. All the e-Accounting systems that were evaluated were from overseas countries.

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

Title: e-Accounting System of Account Wizard

Date referred: 9/7/2002

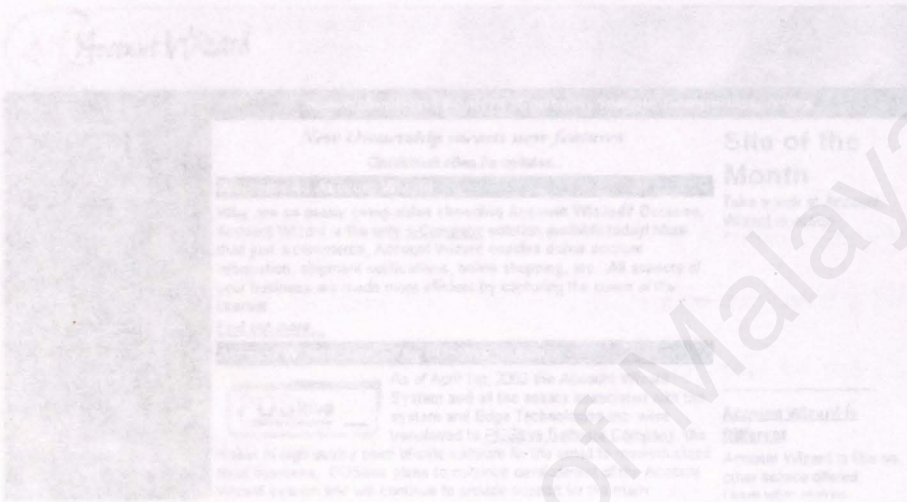


Figure 2.1: Account Wizard's Home Page

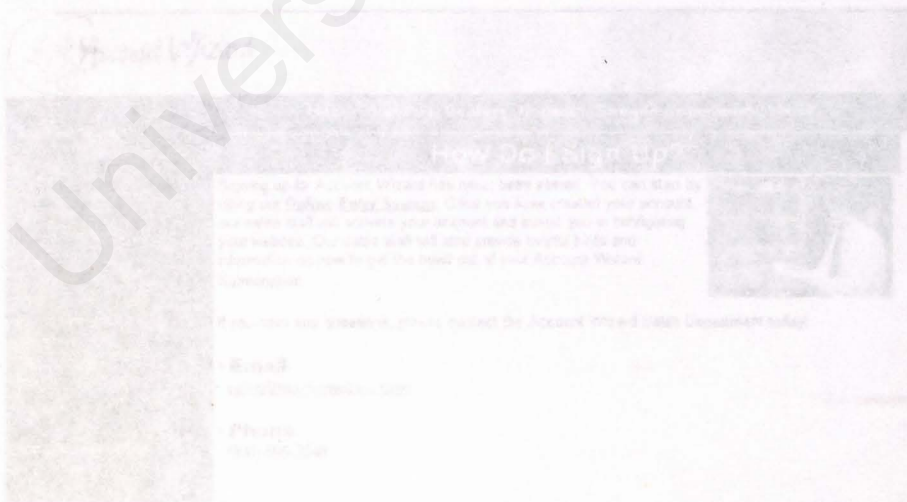


Figure 2.2: Account Wizard's Sign Up Page

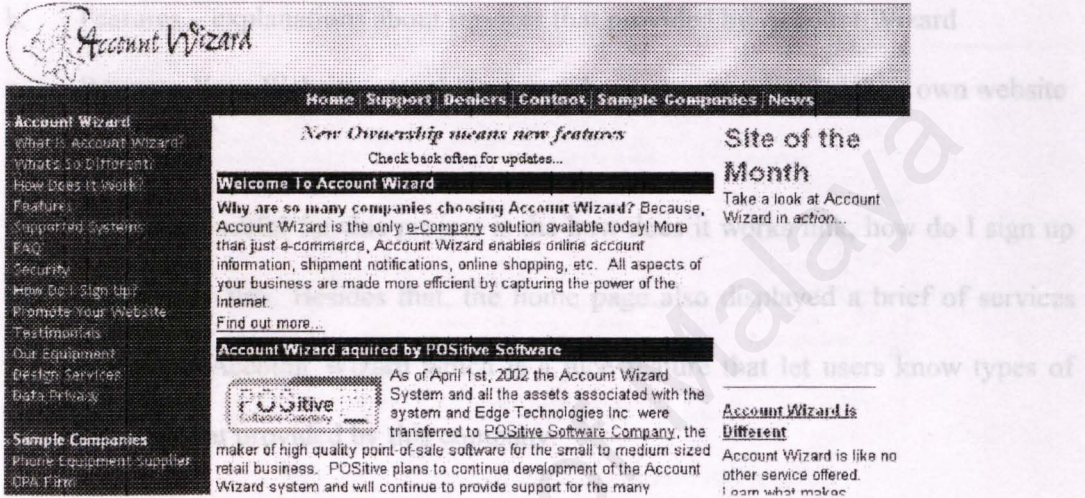
2.2.2 Systems Analysis

System 1:

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

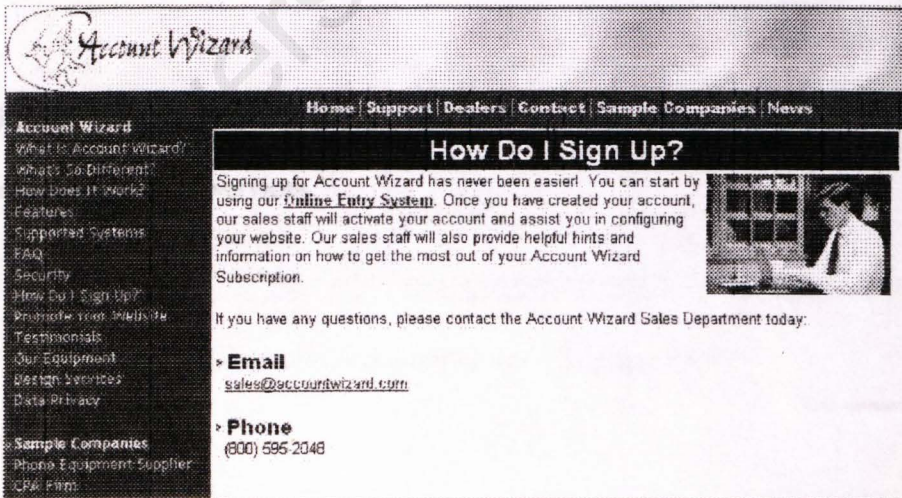
Title: e-Accounting System of Account Wizard

Date referred: 9/7/2002



The screenshot shows the Account Wizard website's home page. At the top left is the Account Wizard logo. A navigation bar contains links for Home, Support, Dealers, Contact, Sample Companies, and News. The main content area features a banner for "New Ownership means new features" with a "Check back often for updates..." message. Below this is a "Welcome To Account Wizard" section explaining why many companies choose Account Wizard, highlighting its e-Company solution and features like online account information and shipping notifications. A "Find out more..." link is provided. To the right is a "Site of the Month" badge. Below the welcome message is a section titled "Account Wizard acquired by POSitive Software", which includes a logo for POSitive Software and text stating that as of April 1st, 2002, the Account Wizard system and all associated assets were transferred to POSitive Software Company. A "Different" badge is also present. On the left side, there is a vertical menu with links to various sections: Account Wizard, What is Account Wizard?, What's So Different?, How Does it Work?, Features, Supported Systems, FAQ, Security, How Do I Sign Up?, Promote Your Website, Testimonials, Our Equipment, Design Services, Data Privacy, Sample Companies, Phone Equipment Supplier, and CPA Firm.

Figure 2.1: Account Wizard's Home Page



The screenshot shows the Account Wizard website's sign-up page. At the top left is the Account Wizard logo. A navigation bar contains links for Home, Support, Dealers, Contact, Sample Companies, and News. The main content area features a banner for "How Do I Sign Up?". Below this is a section explaining that signing up for Account Wizard has never been easier, and users can start by using the "Online Entry System". It states that once an account is created, sales staff will activate it and assist with configuration. A small image of a person at a computer is shown. Below the text is a "If you have any questions, please contact the Account Wizard Sales Department today:" message. Two contact options are listed: "Email" with the address sales@accountwizard.com and "Phone" with the number (800) 595-2048. On the left side, there is a vertical menu with links to various sections: Account Wizard, What is Account Wizard?, What's So Different?, How Does it Work?, Features, Supported Systems, FAQ, Security, How Do I Sign Up?, Promote Your Website, Testimonials, Our Equipment, Design Services, Data Privacy, Sample Companies, Phone Equipment Supplier, and CPA Firm.

Figure 2.2: Account Wizard's Sign Up Page

The above system is one of the existing e-Accounting systems used by Account Wizard to run its business. accountingplus.com

Title: e-Accounting System of eaccountingplus

The main page of this system is shown in Figure 2.1. This page also links to the other side such as the:

- a. What Is Account Wizard – services that provided by Account Wizard
- b. Features – explanations about services that provided by Account Wizard
- c. Promote Your Website – teaching users about ways to promote their own website

The links that is useful for this project is the how does it works link, how do I sign up link and security link. Besides that, the home page also displayed a brief of services that provide by Account Wizard which is a nice feature that let users know types of those services that provided by this company.

Figure 2.3: eaccountingplus's Home Page

Figure 2.2 is illustrates the sign up page of Account Wizard. It didn't provide online registration for users.

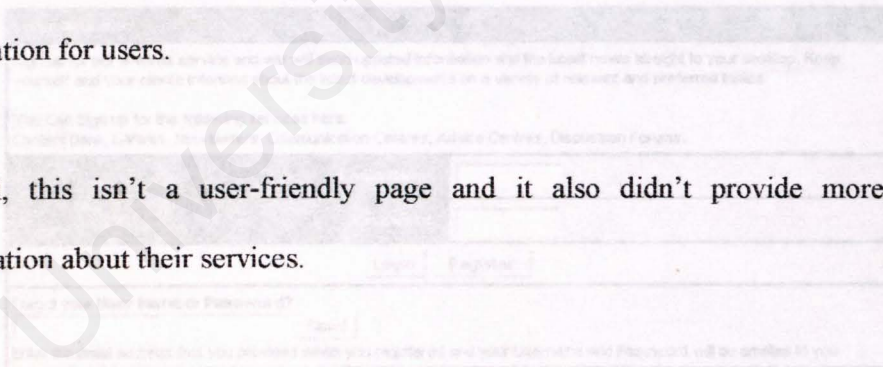


Figure 2.4: eaccountingplus's Register Page

System 2 is the e-Accounting system of eaccountingplus. This review is focused on the online accountant page and register page. Figure 2.3 is illustrates the home page of the eaccountingplus. The eaccountingplus provided many services such as online

System 2: online clinic, online advice, E-solution and etc. This is good electronic

URL: <http://www.eaccountingplus.com> services to users. This system also provides

Title: e-Accounting System of eaccountingplus by their customer is they sign up as a

Date referred: 26/6/2002 is also provides online support to help their customer to solve

their problems. This system provides its customer a portal to support their business.

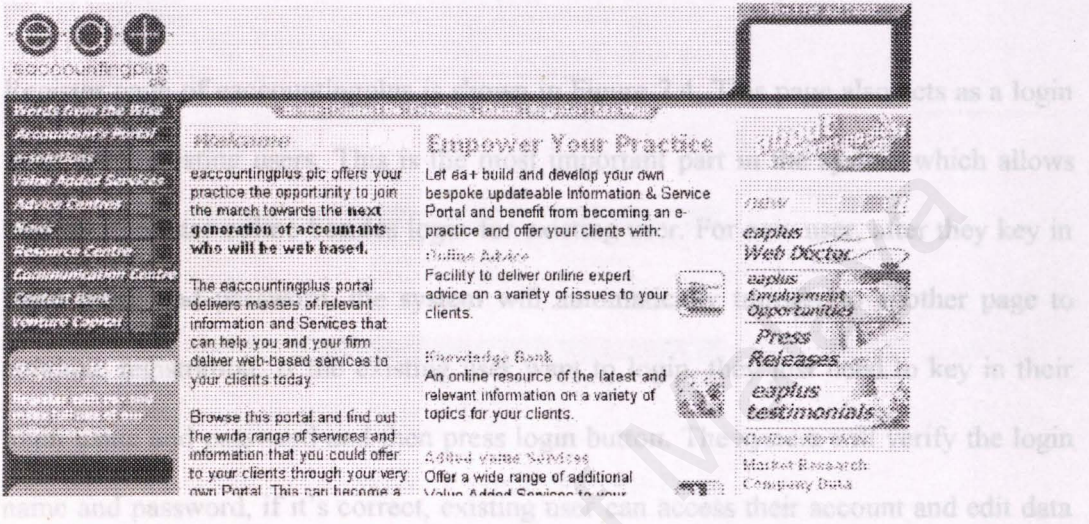


Figure 2.3: eaccountingplus's Home Page

Login/ Register	
Sign up for our e-wires service and we will send updated information and the latest news straight to your desktop. Keep yourself and your clients informed about the latest developments on a variety of relevant and preferred topics.	
You Can Sign up for the following services here: Content Bank, E-Wires, Newsletters, Communication Centres, Advice Centres, Discussion Forums.	
Login Name:	<input type="text"/>
Password:	<input type="password"/>
<input type="button" value="Login"/> <input type="button" value="Register"/>	
Forgot your User Name or Password?	
<input type="text"/>	<input type="button" value="Send"/>
Enter the email address that you provided when you registered and your Username and Password will be emailed to you.	

Figure 2.4: eaccountingplus's Register Page

System 2 is the e-Accounting system of eaccountingplus. This review is focused on the online accountant page and register page. Figure 2.3 is illustrates the home page of the eaccountingplus. The eaccountingplus provided many services such as online

accountant, online clinic, online advice, E-solution and etc. This is good electronic company that can provide many online services to users. This system also provides some information about benefits that can earn by their customer is they sign up as a user. The eaccountingplus also provides online support to help their customer to solve their problems. This system provides its customer a portal to support their business.

Register page of eaccountingplus is shown in Figure 2.4. This page also acts as a login page users existing users. This is the most important part in the system which allows new user register online besides login for existing user. For new user, after they key in login name and password, the system will automatically transfer to another page to continue registration. If the existing user want to login, they just need to key in their login name and password and then press login button. The system will verify the login name and password, if it's correct, existing user can access their account and edit data they want.

Overall, this is good system. It provides enough information and it also provided online registration for new user.

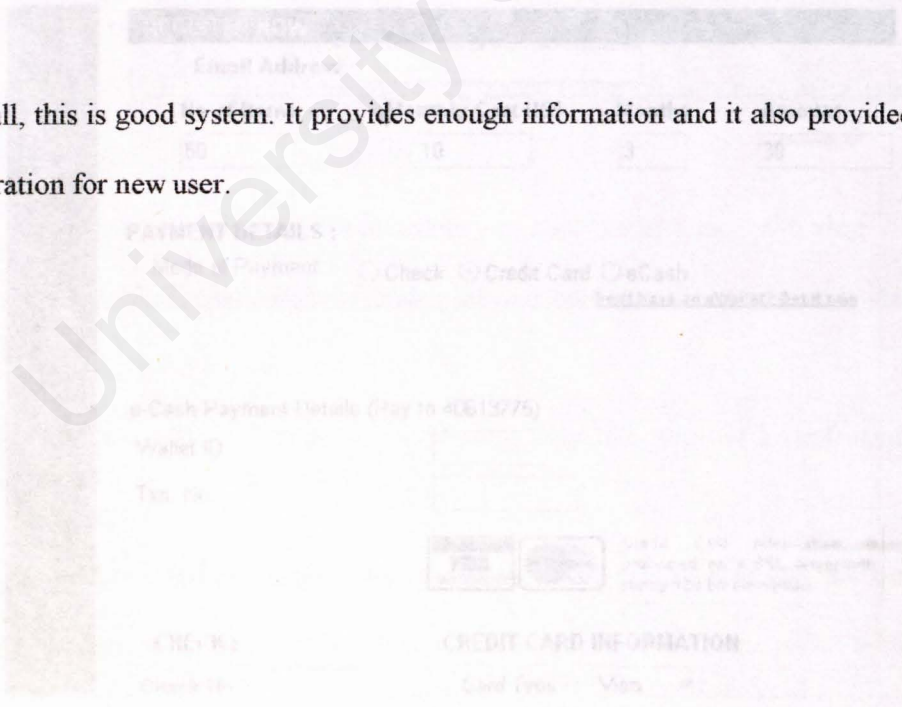


Figure 2.6. eBiz's Register Page

System 3:

URL: <http://www.ebizexp.com/index.htm>

Title: e-Accounting System of eBiz

Date referred: 9/7/2002

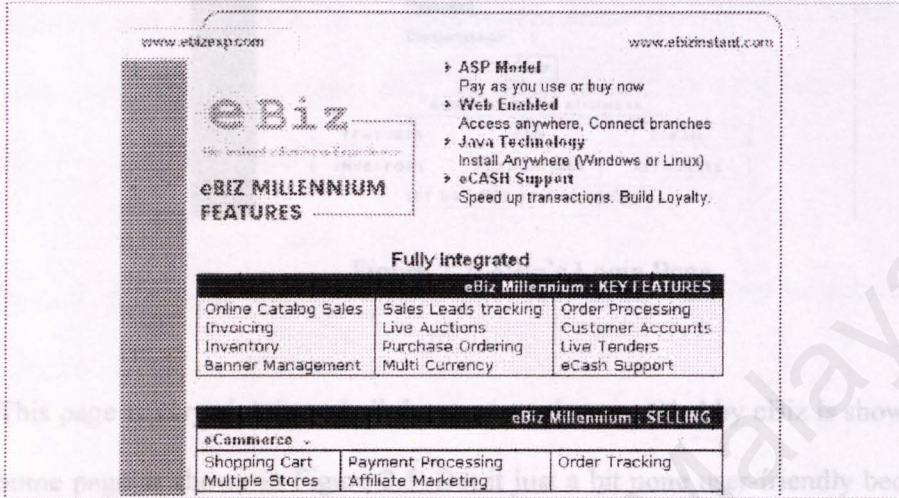


Figure 2.5: eBiz's Home Page

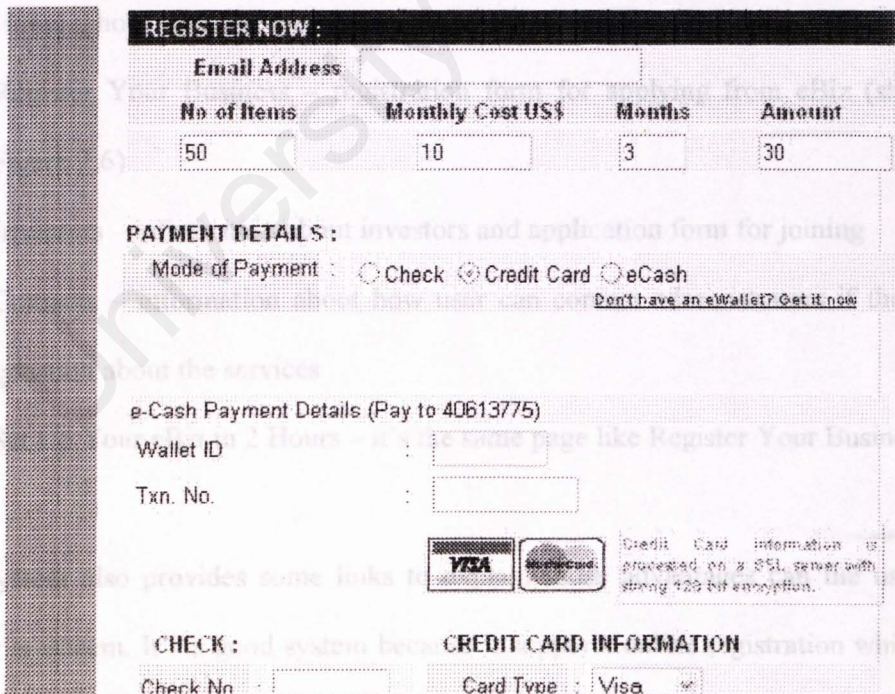


Figure 2.6: eBiz's Register Page

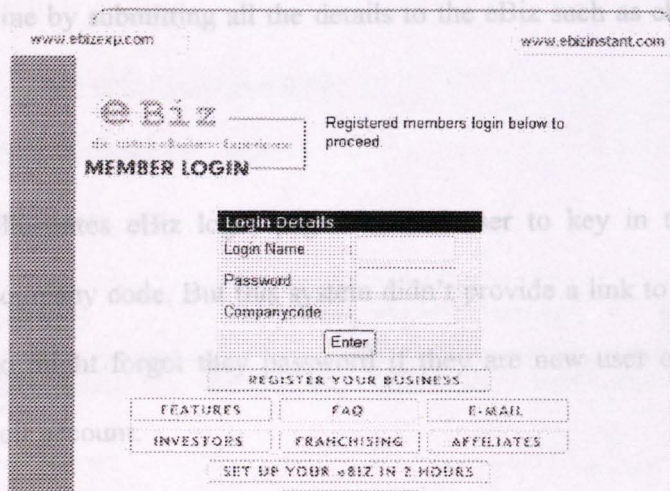


Figure 2.7: eBiz's Login Page

This page is very simple and all the services that provided by eBiz is shown clear in it's home page as shown in Figure 2.5. But it just a bit none user-friendly because all links is at the bottom of a page. The links were listed as below:

- a. Home – home page of the system
- b. Register Your Business – registration form for applying from eBiz (shown in Figure 2.6)
- c. Investors – information about investors and application form for joining
- d. Contacts – information about how user can contact administrators if they have question about the services
- e. Set Up Your eBiz in 2 Hours – it's the same page like Register Your Business

This system also provides some links to explain those advantages can the user earn from this system. It's a good system because it supports online registration which user

can register online by submitting all the details to the eBiz such as check number and card type. www.peachtree.com/epsachtree

Title: e-Accounting System of ePeachtree

Figure 2.7 illustrates eBiz login page. It needs user to key in their login name, password and company code. But this system didn't provide a link to hint question for those users who might forget their password if they are new user or long time they didn't access their account.

Overall, the system is very attractive because of the decorations of website. And can be concluded that it's a good system.

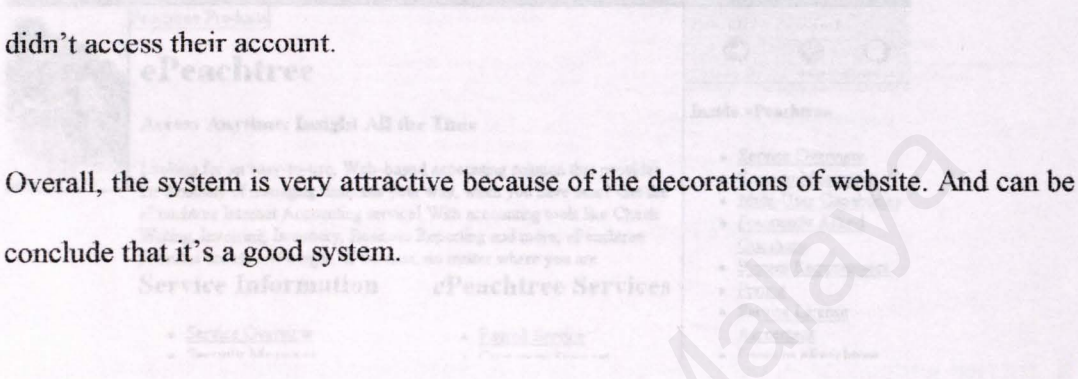


Figure 2.8: ePeachtree's Home Page

Product/Service	Quarterly	Annually
Server		BEST VALUE
<input type="checkbox"/> Peachtree Web Accounting (requires Peachtree 2002)	\$14.99/mo x 3	\$12.49/mo x 12
<input type="checkbox"/> Peachtree Web Accounting Multi-user Option	\$14.99/mo x 3	\$12.49/mo x 12
<input type="checkbox"/> Peachtree Accounting	\$14.99/mo x 3	\$12.49/mo x 12
<input type="checkbox"/> Peachtree Payroll Add-On	\$9.99/mo x 3	\$7.99/mo x 12
<input type="checkbox"/> Peachtree Multi-user Option	\$9.99/mo x 3	\$8.49/mo x 12
<input type="checkbox"/> Website Creator Pro with Website Trader	\$39.98/mo x 3	\$32.98/mo x 12
<input type="checkbox"/> Website Creator Pro	\$19.99/mo x 3	\$16.49/mo x 12
<input type="checkbox"/> Website Trader Add-On	\$19.99/mo x 3	\$16.49/mo x 12

Please select your preferred billing option: Quarterly Annually

Figure 2.9: ePeachtree's Register Page

System 4:

URL: <http://www.peachtree.com/epeachtree>

Title: e-Accounting System of ePeachtree

Date referred: 9/7/2002

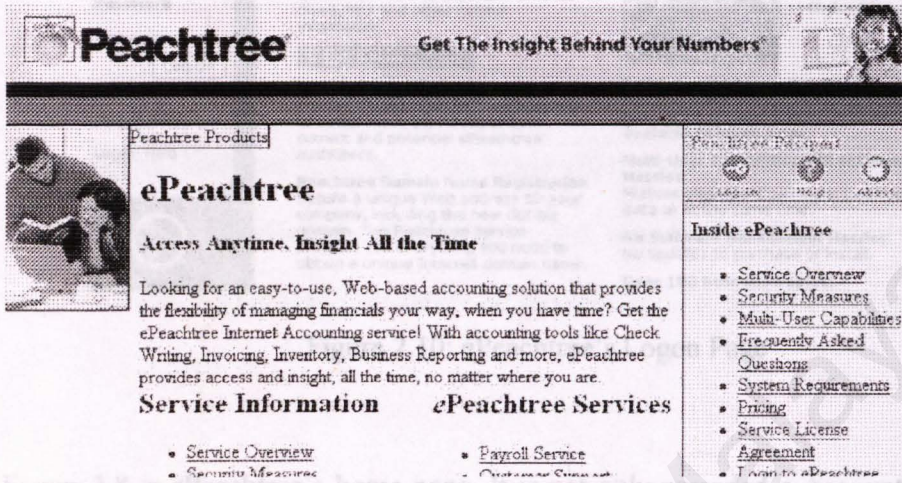


Figure 2.8: ePeachtree's Home Page

Product/Service	Quarterly	Annually
Services		BEST VALUE!
<input type="checkbox"/> Peachtree Web Accounting (requires Peachtree 2002)	\$14.99/mo x 3	\$12.49/mo x 12
<input type="checkbox"/> Peachtree Web Accounting Multi-user Option	\$14.99/mo x 3	\$12.49/mo x 12
<input type="checkbox"/> ePeachtree Accounting	\$14.99/mo x 3	\$12.49/mo x 12
<input type="checkbox"/> ePeachtree Payroll Add-On	\$9.99/mo x 3	\$7.99/mo x 12
<input type="checkbox"/> ePeachtree Multi-user Option	\$9.99/mo x 3	\$8.49/mo x 12
<input type="checkbox"/> WebsiteCreator Pro with WebsiteTrader	\$39.98/mo x 3	\$32.98/mo x 12
<input type="checkbox"/> WebsiteCreator Pro	\$19.99/mo x 3	\$16.49/mo x 12
<input type="checkbox"/> WebsiteTrader Add-On	\$19.99/mo x 3	\$16.49/mo x 12

Please select your preferred billing option: * Quarterly Annually

Figure 2.9: ePeachtree's Register Page

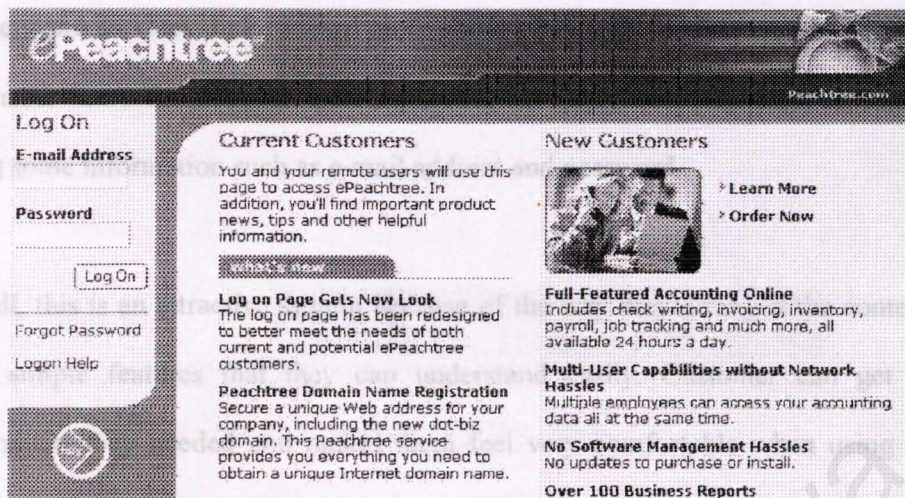


Figure 2.10: ePeachtree's Logon Page

Figure 2.8 is ePeachtree's home page. It is not only provided e-Accounting service, it also provided online support for their users on helping them to solve problems. Furthermore, this system also provides some information about system requirements such as monitor and display requirements. Can say that this system provides many services to customers such as payroll and tax service. Beside that, this system also provides information about benefits that can earn for customers.

Besides that, Figure 2.9 is illustrates register page of the system. This page also gives some information about payment and pricing about all the products and services that provided by ePeachtree. This system support online registration, this feature gives user an easy to order products and services from ePeachtree.

And the logon page is shown in Figure 2.10. This page also provide some information about what types of services can new users get if they register to be one of ePeachtree's

customer. In this page also the system publish some information about benefits of their products and services, link to learn more about ePeachtree's products and services and also latest news for existing users to know. For new user, they have to register by giving some information such as e-mail address and password.

Overall, this is an attractive system because of the way they arranged the contents and some simple features that they can understand easily. Customer can get all the information they needed and makes them feel very comfortable when using it. This may lure many customers to consider whether they want to stay there or not.

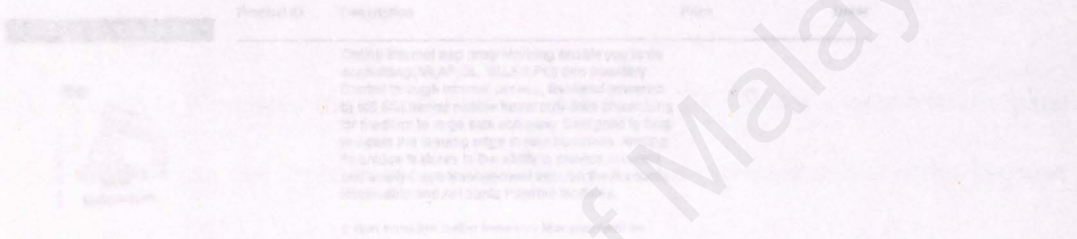


Figure 2.11: Greenery's Home Page

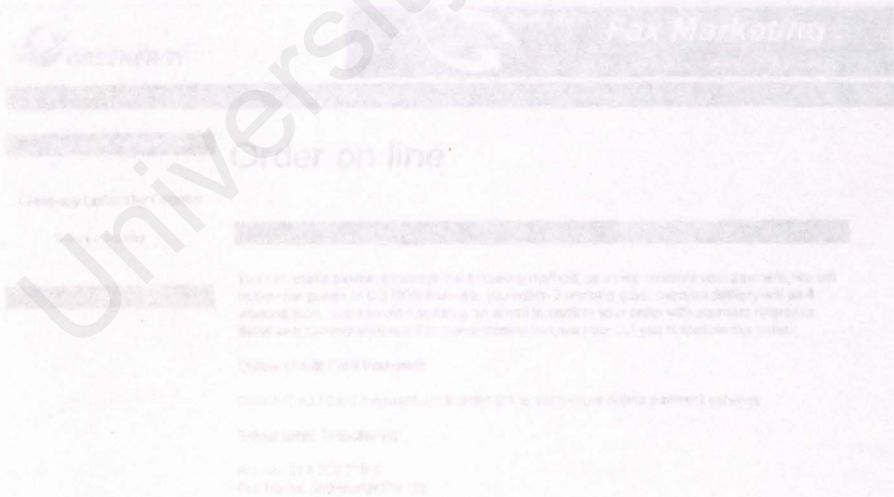


Figure 2.12: Greenery's Order Page

System 5: system is the e-Accounting system for Greenergy. The review for this URL: <http://greenergy.com.sg/ac.asp> Title: e-Accounting System of Greenergy Date referred: 9/7/2002

Figure 2.11: Greenergy's Home Page

Figure 2.12: Greenergy's Order Page

The above system is the e-Accounting system for Greenergy. The review for this system focused on the home page and order page. The home page is shown in Figure 2.11. This is a very simple page which design is simple but unattractive. Roughly it gives some description about its products but it didn't provide information about pricing and payment. This system has shown its contact number and e-mail address at the bottom of every single page, this feature make user easier to contact the administrators for more information about the products. Besides that, it has shown benefits of their products such as data recovery.

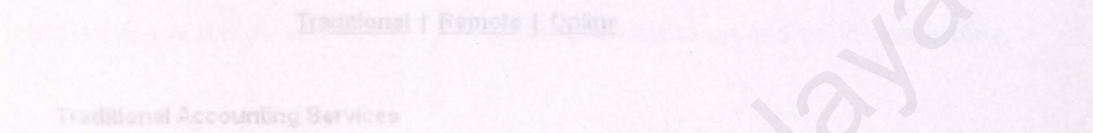


Figure 2.12 is illustrates the Greenergy's order page. This is not a user-friendly page because users can not register online although it says it provides online order because the order link still not active yet.



Overall, this is not a good page to refer because it still has many page haven't complete and fully operating. This make user feel that it's unfriendly and unreliable.

The above system is one of the existing e-Accounting systems used by Bill Hender, CPA. Figure 2.13 is illustrates the home page. This page also provides some information about services provided and the way to order or trial. This page introduces types of accounting system briefly. There are 3 types of accounting systems which are traditional, remote and online. It also explains what kind of services provided by the company based on each type of accounting systems. Besides that, it also explains the benefits of each type of accounting systems.

System 6: a good system because it didn't provide online register for users and no

URL: <http://hendercpa.com/acctgserv.htm> provide online registration, but it still let the user

Title: e-Accounting System of Bill Hender, CPA e-mail. This is because of the system

Date referred: 9/7/2002 in send e-mail to the administrator and user can write any query

in the mail to ask from administrator.



[Traditional](#) | [Remote](#) | [Online](#)

Traditional Accounting Services

Our firm offers a wide range of accounting and bookkeeping services. We have arrangements with our clients that provide for these services to be rendered on a monthly, quarterly and annual basis. Based upon our review of your needs, we can develop the best plan for you. We can assist you in developing monthly management reports that can be helpful in assessing your financial success. Our accounting services include:

- Financial statements prepared on a compilation or review basis
- Financial statements for all entities including individuals, corporations, partnerships and limited liability companies

Figure 2.13: Bill Hender, CPA's Home Page

The above system is one of the existing e-Accounting systems used by Bill Hender, CPA. Figure 2.13 is illustrates the home page. This page also provides some information about services provided and the way to order or trial. This page introduces types of accounting system briefly. There are 3 types of accounting systems which are traditional, remote and online. It also explains what kind of services provided by the company based on each type of accounting systems. Besides that, it also explains the benefits of each type of accounting systems.

This is not a good system because it didn't provide online register for users and no pricing is provided. Although it didn't provide online registration, but it still let the user knows how to order their services which is by e-mail. This is because of the system provides a link which can send e-mail to the administrator and user can write any query in the mail to ask from administrator.

Overall, this system is not an attractive and user-friendly system which can refer to. This system didn't include many links about accounting, but it did include links about the company and their services such as online business taxes and online tax e-filing.

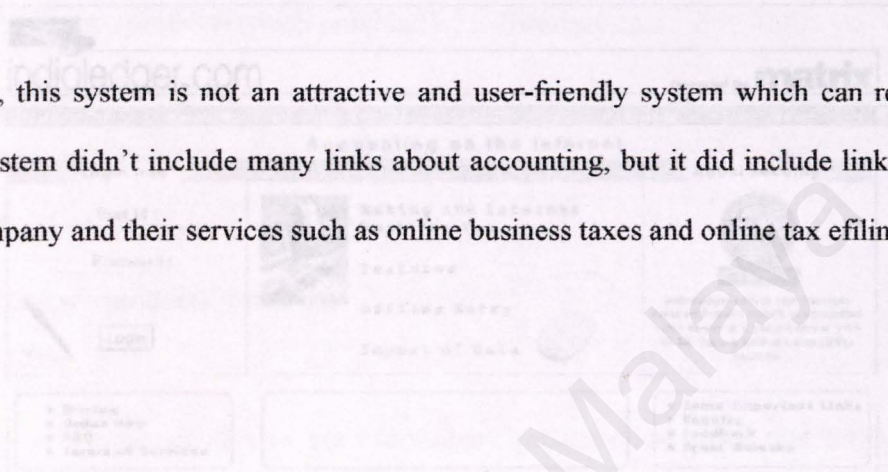


Figure 2.14: Indialedger.com's Home Page

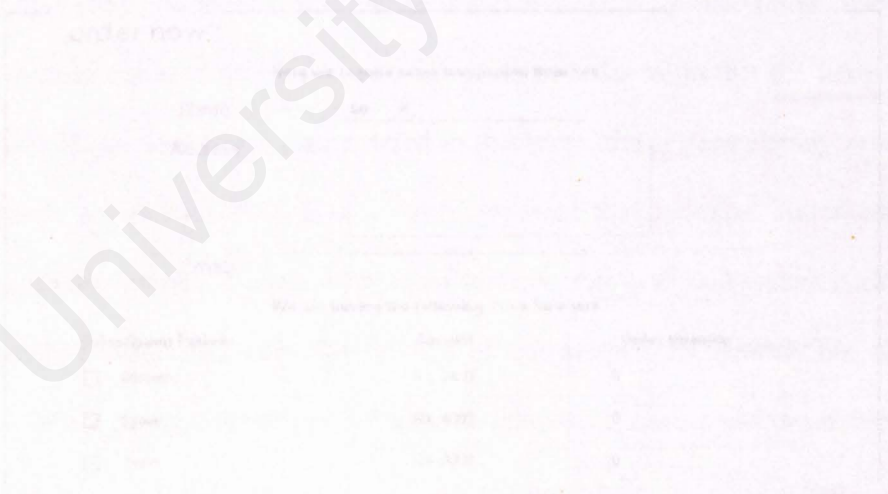


Figure 2.15: Indialedger.com's Order Page

System 7: system is one of the systems that can be classified in a good category

URL: <http://www.indialedger.com/home/default.asp>

Title: e-Accounting System of Indialedger.com

Date referred: 9/7/2002

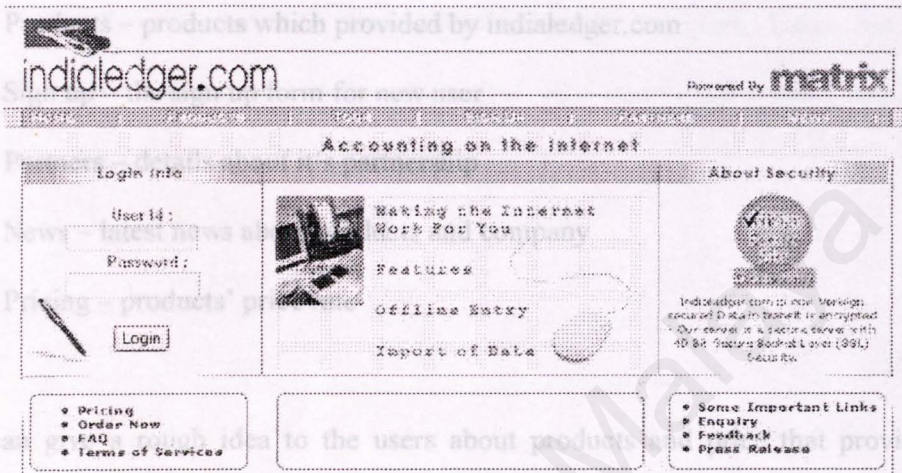


Figure 2.14: Indialedger.com's Home Page

order now :

Here we require some information from you

Name Mr.

Address

Email

We are having the following Price Structure

Subscription Period	Amount	Order Quantity
<input type="checkbox"/> 6Months	Rs. 2400	<input type="text"/>
<input type="checkbox"/> 1year	Rs. 4000	<input type="text"/>
<input type="checkbox"/> 2year	Rs. 9000	<input type="text"/>

Figure 2.15: Indialedger.com's Order Page

The above system is one of the systems that can be classified in a good category because of its user-friendly and secure environment. Figure 2.14 illustrates Indialedger.com's home page and also log on page. This main page links to the other side such as the:

Overall, the system is very attractive because of the way they arranged the contents and

- a. Products – products which provided by indialedger.com users. Users can get all
- b. Sign up – the sign up form for new user feel very comfortable when using it. In
- c. Partners – details about it's partnership
- d. News – latest news about products and company
- e. Pricing – products' price rate

This can give a rough idea to the users about products and price that provided by Indialedger.com. And the users can have more information about the company such as security and partnership. Indialedger.com uses a secure server with 40 bit Secure Socket Layer (SSL) Security which can secure data transfer by encryption. This means that the system needs to provide a secure a mode in order to protect the integrity and the privacy of the data. Once user entered to this page, the system already provided a secure mode to its user. SSL is a security protocol that provides communications privacy over the Internet. Compared to other systems, this is a good system because the secure mode protects not only the privacy of the credit card number but also the particular of the customers such as the address, telephone number and those data inside their accounts. This feature make user feel that it's more reliable and efficient.

The most important part is the online order that provided by Indialedger.com which shown in Figure 2.15. Besides that, it also has a Sign Up page which give a demo to

users about the flows of insert data in their accounts. It roughly tell user what they will meet if they register as an authentication user and user can know what kind of accounts and features can provided by this system.

Date referred: 26/6/2002

Overall, the system is very attractive because of the way they arranged the contents and some simple features that they can understand easily by users. Users can get all

information they needed and makes them feel very comfortable when using it. In conclusion, this is a very good system to refer to.

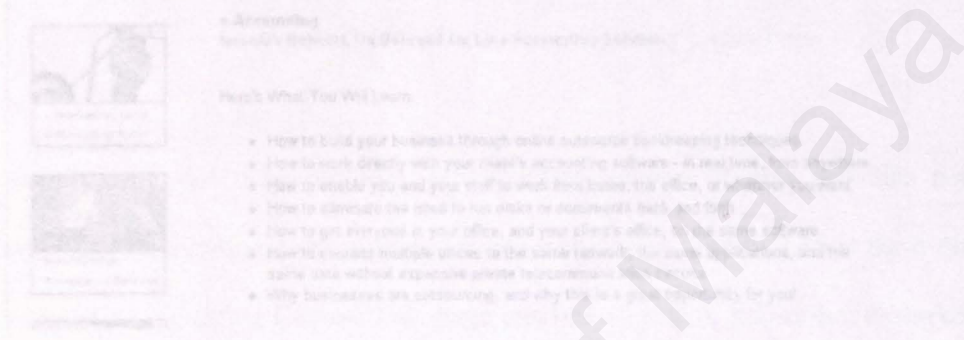


Figure 2.16: eAccounting Center's e-Accounting Page

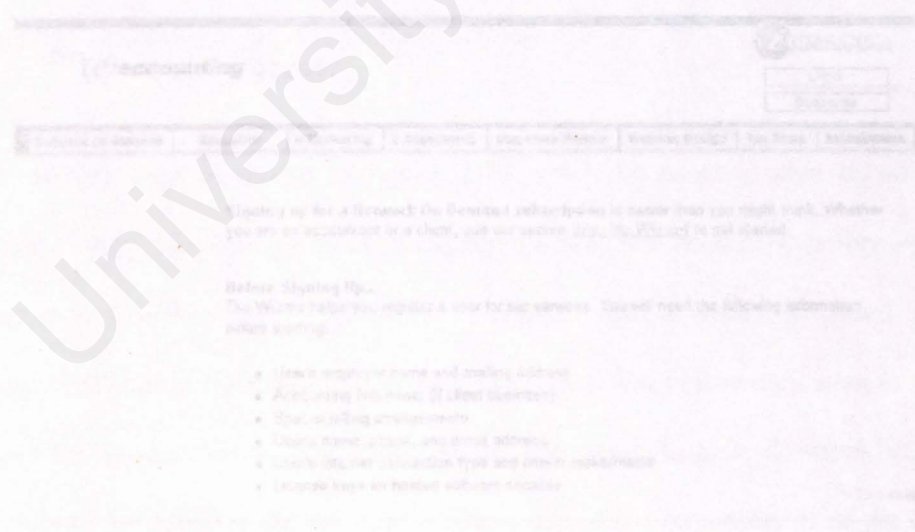


Figure 2.17: eAccounting Center's Sign Up Page

System 8:

URL: <http://www.medialegends.com/site/cpa-asp/Associations.html>

Title: e-Accounting System of eAccounting Center

Date referred: 26/6/2002

eAccounting
Introducing Network On Demand & On Line Accounting Solutions

Here's What You Will Learn:

- How to build your business through online outsource bookkeeping techniques
- How to work directly with your client's accounting software - in real time, from anywhere
- How to enable you and your staff to work from home, the office, or wherever you want
- How to eliminate the need to run disks or documents back and forth
- How to get everyone in your office, and your client's office, on the same software
- How to connect multiple offices to the same network, the same applications, and the same data without expensive private telecommunication circuits
- Why businesses are outsourcing, and why this is a great opportunity for you!

Figure 2.16: eAccounting Center's e-Accounting Page

Signing up for a Network On Demand subscription is easier than you might think. Whether you are an accountant or a client, use our secure **Sign Up Wizard** to get started.

Before Signing Up...
The Wizard helps you register a user for our services. You will need the following information before starting:

- User's employer name and mailing address
- Accounting firm name (if client business)
- Special billing arrangements
- User's name, phone, and email address
- User's internet connection type and printer make/model
- License keys for hosted software services

Figure 2.17: eAccounting Center's Sign Up Page

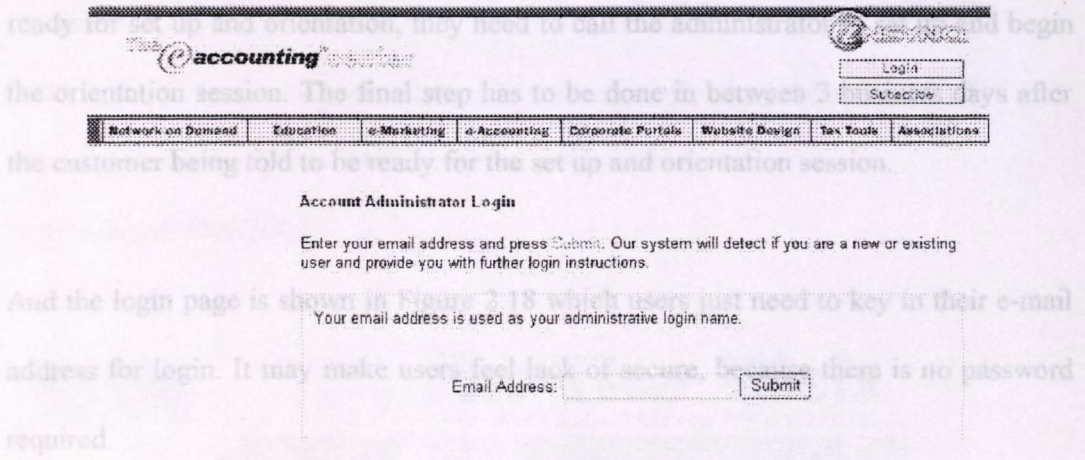


Figure 2.18: eAccounting Center's Login Page

This system not only provides e-Accounting service, it also provides network on demand, e-marketing, corporate portal and web design. Figure 2.16 is the e-Accounting page of eAccounting Center. This page can link to Login, Subscribe, e-Marketing, Tax Tools and etc. This page provides most of information that users needed about services them but it didn't provide price. This page explains what customer can learn from their services and benefits can provide by those services.

The Subscribe page is shown in Figure 2.17 which let users to sign up as a new customer of the eAccounting Center. It explain all steps that need to do before and after sign up, which makes users feel better in register with a wizard provided. First it explains what kind of information user needs to gather first before they want to register as a user for those services. After they sign up, user needs to go to download center of the system to download some software which is one of the requirements of the system. Then, they need to wait for most 3 business days for their order being processing which the system will build them a virtual desktop. Finally, after customers being told to

ready for set up and orientation, they need to call the administrator to set up and begin the orientation session. The final step has to be done in between 3 business days after the customer being told to be ready for the set up and orientation session.

Date referred: 25/6/2002

And the login page is shown in Figure 2.18 which users just need to key in their e-mail address for login. It may make users feel lack of secure, because there is no password required.

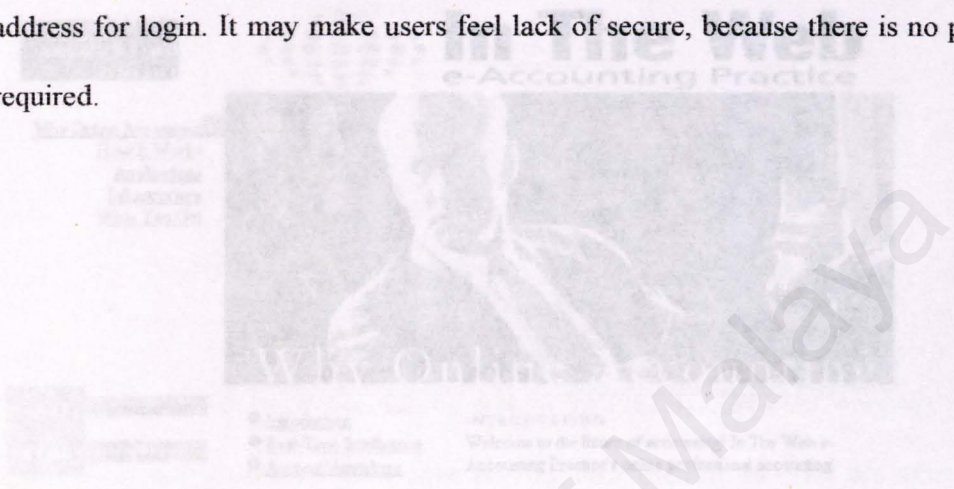


Figure 2.19 Home Page of Professional e-Accounting

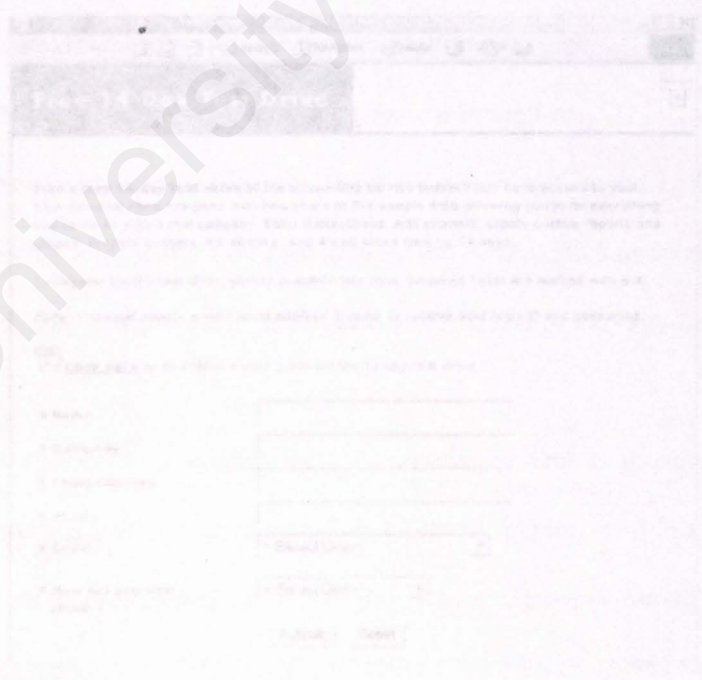


Figure 2.20 Professional e-Accounting's Registration Page

System 9:

URL: <http://www.visionaryaccounting.com/index.phtml?state=CA&pid=ITWVP>

Title: e-Accounting System of Professional e-Accounting

Date referred: 26/6/2002

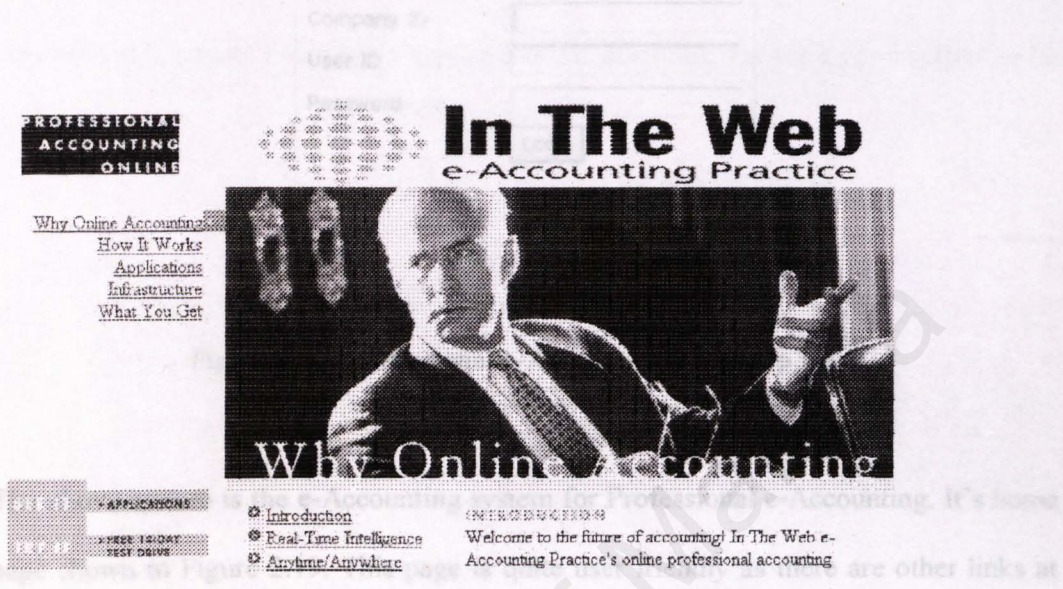


Figure 2.19: Home Page of Professional e-Accounting

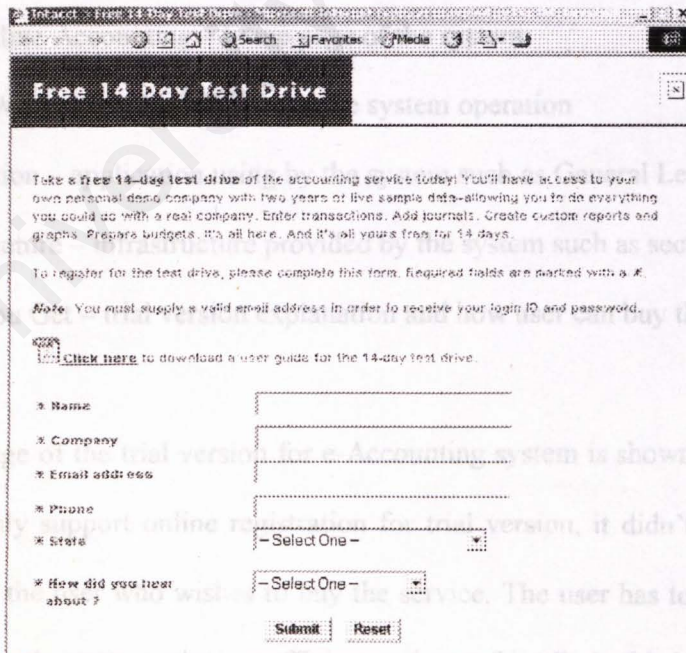


Figure 2.20: Professional e-Accounting's Registration Page

Accounting Professionals
Certified Public Accountants

Secure Sign-in [Privacy Policy](#) [Help](#)

Company ID :

User ID :

Password :

Figure 2.21: Professional e-Accounting's Sign Up Page

The above system is the e-Accounting system for Professional e-Accounting. It's home page shown in Figure 2.19. This page is quite user friendly as there are other links at left hand side of the page. The user can browse to the other pages very easily by clicking the links. The links were listed as below:

- a. Why Online Accounting – home page of the system
- b. How It Works – explanation about the system operation
- c. Application – application using by the system such as General Ledger
- d. Infrastructure – infrastructure provided by the system such as security
- e. What You Get – trial version explanation and how user can buy the service

The register page of the trial version for e-Accounting system is shown in Figure 2.20. This system only support online registration for trial version, it didn't provide online registration for the user who wishes to buy the service. The user has to call to buy the service. It makes the system a bit not efficient and user-friendly in this kind of feature.

Figure 2.21 illustrates login page of the system. User needs to enter company ID, login ID and password. Once again, the system shows it's not user-friendly which didn't provide hint question function for those users who might forget their password.

Date referred: 26/6/2002

This system is a quite functionary system and can conclude that it's a good system to be referred.

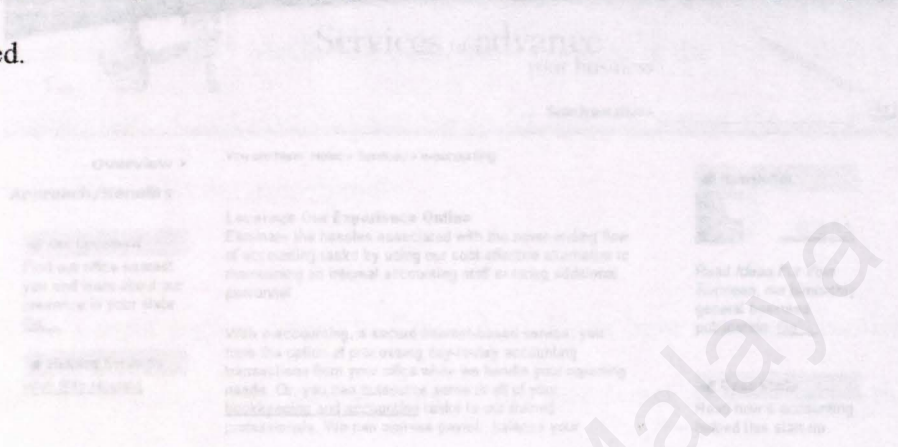


Figure 2.22: Home Page of RSM McGladrey

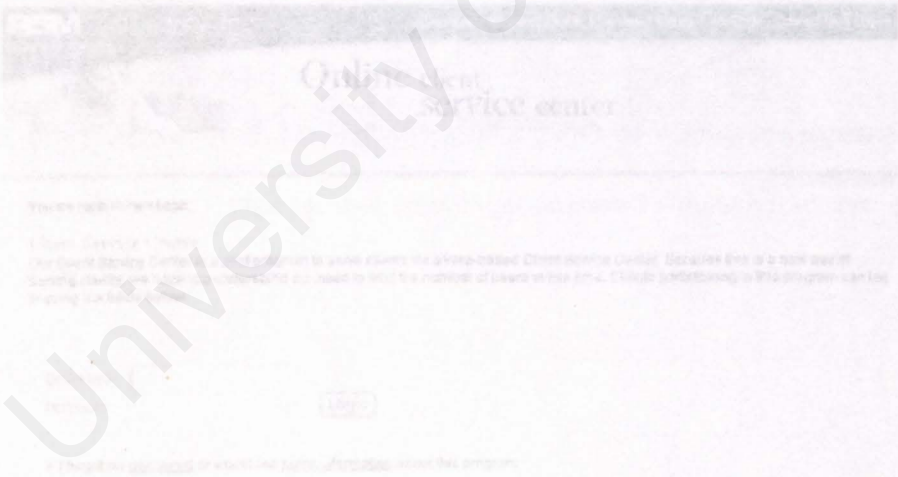


Figure 2.23: Login Page for RSM McGladrey

Figure 2.22 illustrates home page of the e-Accounting system which provided by RSM McGladrey. This page roughly explains some problems which facing by most of

System 10:

URL: <http://www.rsmmcgladrey.com/services/Details/eaccounting.html>

Title: e-Accounting System of RSM McGladrey

Date referred: 26/6/2002

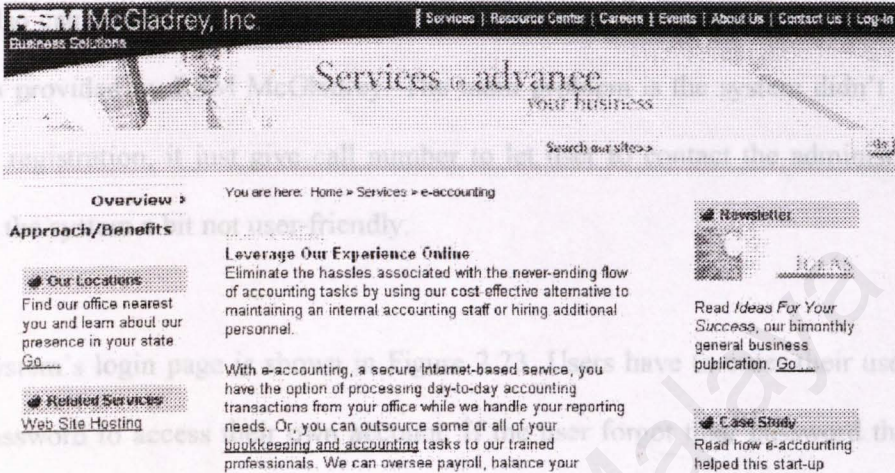


Figure 2.22: Home Page of RSM McGladrey

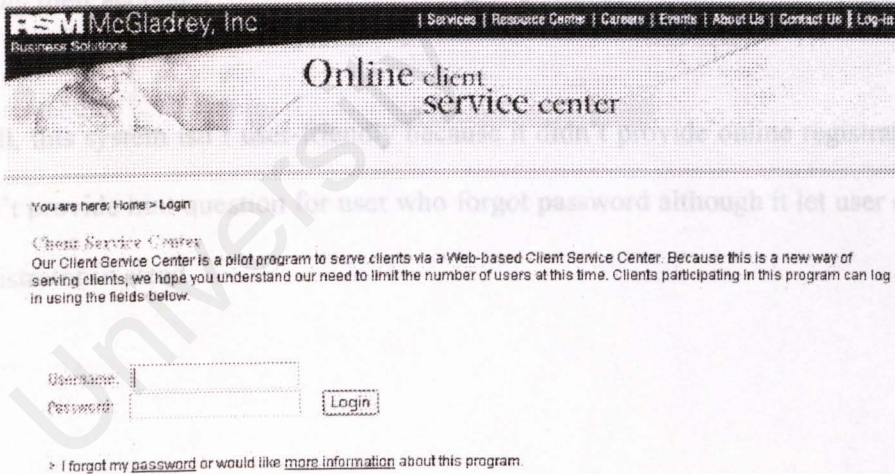


Figure 2.23: Login Page for RSM McGladrey

Figure 2.22 is illustrates home page of the e-Accounting system which provided by RSM McGladrey. This page roughly explains some problems which facing by most of

those small or midsize companies who are using the traditional accounting system. Besides that, it also explains what kind of benefits can be earned by those companies if they are using the e-Accounting system. If user wants to know more details about the benefits of the system they can click the link of Approach/Benefits link. Besides that, user also can browse the Service link to get some information about services which the system provided by RSM McGladrey. The main problem is the system didn't provide online registration, it just give call number to let user to contact the administrator. It makes the system a bit not user-friendly.

The system's login page is shown in Figure 2.23. Users have to enter their user name and password to access their own account. If the user forgot their password there is a feature which let user to email the administrator to ask for password. It didn't look user-friendly and efficiency because it may delay the user's time for checking or updating their accounts.

Overall, this system isn't user-friendly because it didn't provide online registration and it didn't provide hint question for user who forgot password although it let user email to administrator in stead.

2.3 SUMMARY

Chapter 2 presents the review of the existing systems. These systems have revealed the differences between a good system and a bad one. From the reviewed, this project can have some guidelines on how to make an efficient system by putting in the useful features.

Chapter 3 presents the methodology and techniques of information gathering for the project.

Chapter Three:
METHODOLOGY

University of Malaya

Methodology is the study of methods and arranged with the philosophical assumptions which are covered in the research process. System analysis is a problem-solving technique and the process is carried out in sequential phases for the purpose of analysis. Following these sequential steps, separate and separate to address their specific issues and to integrate the overall methodology we choose and model.

Chapter Three:

METHODOLOGY

University of Malaysia

3.1 INTRODUCTION

Methodology is the revise of methods and arranges with the philosophical assumptions which are underlying in the research process. System analysis is a problem-solving technique that decomposes a system into its component pieces for the purpose of studying how well those component parts operate and cooperate to achieve their purpose. In order to do so, the waterfall methodology was chosen and studied.

3.2 PROJECT DEVELOPMENT METHODOLOGY

3.2.1 Waterfall Methodology

This methodology involves the gathering of all kinds' of information that related to the title of the project. The waterfall methodology is the first model describes the life cycle as a series of steps in which all the depiction levels between the difficulty and the execution are found, starting from the explanation and ending with process and maintenance. Each step is connected to the next step which is stand for chaining and to the previous step which is represents by the modification of feedback. Each step is linked with an authentication phase, the purpose of which is to check that the chosen solution be conventional to the step input the conditions. Any be short of conformity will mean that the step or the results of the previous step has to be reworked as shown in Figure 3.1. It is least flexible and most outdated of the life cycle models. It is suitable for those projects which have low risk in the areas of user interface and performance requirements, but high risk in budgeting and schedule expectedness and control.

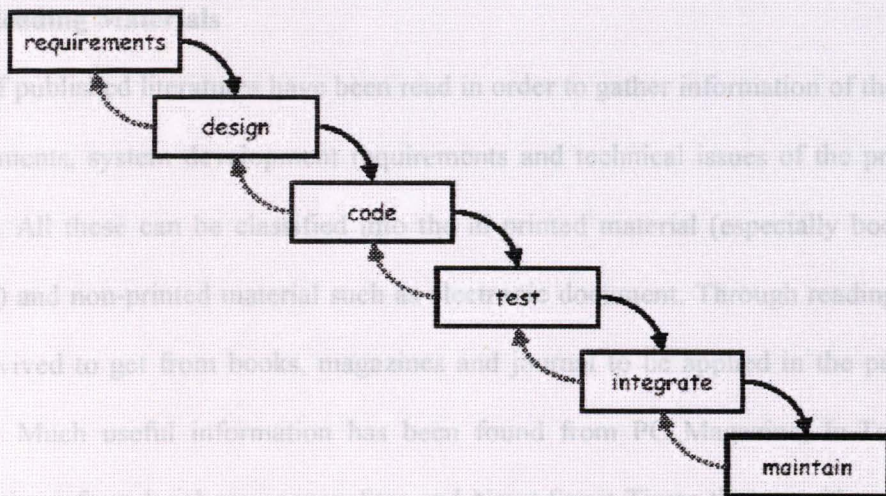


Figure 3.1: Waterfall Methodology

The Waterfall methodology is chosen for the following reasons:

- a. To recognize the structure of the system – the logical flow can be looked up easily.
- b. For repeatability – each step can be done again to guarantee the execution.
- c. To ensure expectedness – allow guesstimate for the output.
- d. Involves user participation – acquire to know more of the system requirements so that the ideal system can be manufacture.
- e. To ensure chain of events is encounter – it introduce a high level view of what's going on during the progresses.

3.3 INFORMATION GATHERING TECHNIQUES

The techniques that have been exercised to gather information were by reading materials, online surfing, program analysis, observation, interview with those professional in accounting field and literature review which is one in the previous chapter. So, other approached has been practice and listed as below:

3.3.1 Reading Materials

A lot of published literatures have been read in order to gather information of the users' requirements, system development requirements and technical issues of the projected system. All these can be classified into the in printed material (especially books and journal) and non-printed material such as electronic document. Through reading, ideas are survived to get from books, magazines and journal to be applied in the projected system. Much useful information has been found from PC Magazine, In-Tech and Computimes from local newspaper, Star and News Strait Times that provides me with the technology in Information Technology and computing fields.

3.3.2 Online Surfing

Internet is being practiced to search for information on the web – the latest technologies, existing e-accounting systems and information correlated to the project. Sites visits and joining related newsgroups on the World Wide Web (WWW) are important to get a great amount of up-to-date information from all around the world. Besides that, some online tutorials regarding to the programming language can also be found through surfing the Internet. Sending e-mail to those experts in certain related fields is helping a lot in solving problems that based on their experiences.

3.3.3 Program Analysis

Some of accounting programs have been analyzed were Quick Book and My Book. By study those programs, basic users' needs can be known. It can give me an idea of how is the data flow of the system.

3.3.4 Observation

Observation at UNIVERSAL Sdn. Bhd. has been done and it has been found out the accounting system is runs manually by its administrators. There are only a few people who look after the counter. The customer will go to the counter to make the loan or payment transaction. The loans' or payments' details were recorded in a record book and will be repossessed when it is required. This makes the transaction slower because there is only one record book. Afterwards, end of everyday the administrator, Mrs. Hum to update those records into relevant account books manually. By that, she will know the debt amount of each customer, total amount of the receivable payment on that day and how many days still leave for each customer to clear their payment. Then, she has to update customer's details when there have any changes.

3.3.5 Interview with Professional in Accounting Field

An interview with those professional in accounting field has been applied in order to acquire help and advices during the development of the project.

3.4 SUMMARY

Chapter 3 presents the methodology and techniques of information gathering of the project. Waterfall methodology has been chosen as the framework to develop the system. Various techniques of information gathering such as online surfing and discussion with supervisor have been practiced.

Chapter 4 will present the system analysis of the project. The system analysis includes functional requirements, non-functional requirement, development tools, the system requirements and the user system requirements.

4.1 REQUIREMENTS ANALYSIS

4.1.1 Functional Requirements

A functional requirement is a function or feature that must be included in an information system to fulfill the business need and be suitable to the users. Below listed the functional requirements of the system:

a. User-friendly hyperlink

The user can find any page that they like. Every web page included suitable links to connect to any web page. This allow user able to go to any web pages easily. For examples, the user can go to the "services link" to view the services and result of the services provided and then link to "login link" to register online for non-authorized users or login for authorize users.

b. Electronic form

There are two major forms provided by this system. The first one is the login form for authorize users, followed by the registration form for non-authorized users.

c. Validation of user input

Some of the input fields in the e-form are significant and essential for the back-end processing; therefore these fields must not be left unfilled such as the e-mail address. If the user failed to key in that necessary information, an error message will produce and display to the web page.

Chapter Four: SYSTEM ANALYSIS

4.1 REQUIREMENTS ANALYSIS

4.1.1 Functional Requirements

A functional requirement is a function or feature that must be included in an information system to fulfill the business need and be suitable to the users. Below listed the functional requirements of the system:

a. User-friendly hyperlink

The user can freely browse any web page at any sequence that they like. Every web page included suitable links to connect to any web page. This allows user able to go to any web pages easily. For examples, the user can go to the “services link” to view the services and prices of those services that provided and then link to “login link” to register online for non-authorized users or login for authorized users.

b. Electronic Form

There are two major forms provided by this system. The first one is the login form for authorized users, followed by the registration form for non-authorized users.

c. Validation of user input

Some of the input fields in the e-form are significant and essential for the back-end processing; therefore these fields must not be left unfilled such as the e-mail address. If the user failed to key in that necessary information, an error message will produce and display to the web page.

d. Administration module

- i. Upload services
- ii. Update pricing rates
- iii. Retrieve information
- iv. Authentication
- v. Feedback maintenance

e. User module

- i. Registration
- ii. Login
- iii. Browsing capabilities
- iv. Sending feedback

4.1.2 Nonfunctional Requirements

A nonfunctional requirement is a depiction of the features, characteristics and attributes of the system as well as any restrictions that may limit the boundaries of the proposed resolution. There are many categorizations of nonfunctional requirements. The PIECES framework is an outstanding tool for categorize nonfunctional requirements. PIECES are the first alphabets for performance, information, economy, control (and security), efficiency and service.

e. Efficiency

a. Performance

The performance of the system is expected to show evidence of the resolutions have to meet the needs of the users.

b. Information

The system has to present the information that is applicable to the users in terms of content, timeliness, accuracy and format.

c. Economy

Which means that the need for the system to decrease costs or increase profits.

d. Control (and security)

i. Represent the environment which must be working, in addition to the type and degree of security that must be furnished.

ii. Operation server able to establish a secure connection with the customer's Internet browser by using the Secure Socket Layers (SSL) technology which can encrypt all transmitted information. Most of the customers press for this type of connection, as they might want their personal details to be protected.

iii. SSL is a security protocol that provides communications privacy over the Internet. The protocol allows client-server applications to communicate in a way that is designed to prevent waves dropping, tampering or message forgery.

e. Efficiency

Efficiency in computer technology means a process or procedure that can be called or accepted in an unlimited number of times to produce similar outcomes output at a creditable pace or speeds.

f. the Service ASP lies in two facts

i. Represent needs in order for the system to be reliable, flexible and expandable.

ii. The system must be stable. The purpose of a web server is to respond to HTTP request from the browser by delivering a requested file, or executing a script. The online reservation system must be run in 24 hours basis. Every line and price of equipment must be backed up. In order to support all those tasks, the web server must be very stable.

4.2 CHOOSING WEB APPLICATION PROGRAMMING TOOLS

There is a lot of web application programming tools that can be use to develop a web-based system such as the Active Server Pages (ASP), Java Server Pages (JSP), Common Gateway Interface (CGI) and so on. The tool that was chosen to develop this project was the ASP. Below is the basic of ASP and the comparisons between the web programming tools.

4.2.1 The Basic of Active Server Pages (ASP) and The Advantages

Active Server Pages (ASP) is a famous tool for generating dynamic web pages. ASP is Microsoft technology and it runs by let developers the functionality of a programming language; developers write programming code that will create the HTML for the web page dynamically. So, at whatever time a user browses to web site and requirements one of ASP pages, the ASP code is progression at that time by a special piece of software – the web server. This processing produces the HTML, which is then passed to the browser and used to generate the page itself, on the user's screen.

The ability of ASP lies in two facts:

- i. The HTML is not produced until the user desires to see the web page.
- ii. It doesn't be bothered kind of the web browser is being used.

Internet Information Server (IIS) works by being arranged to correlate ASP files (which Although ASP isn't the first technology to recommend these features, but it's certainly have the *.asp* or *.asa* file extension) with a special plug-in – itself an ISAPI application. one of the greatest and generally used in industry; and critically, it's one of the fastest. This decodes the file, implements any ASP script it contains and outputs it as HTML. ASP is dissimilar from many Microsoft technologies in the following respect:

- i. while ASP must be implemented on a computer that support it
- ii. users can look at ASP-driven web pages from any computer and with any modern browser

This has allowed developers to improve their web pages with interactive features and even to resolve common business troubles – to such an extent that pages with the *.asp* suffix are rapid becoming as common as those with the *.htm* suffix.

ASP is possible one of the most essential modernizations to appear on the Web – for developers and users of the Internet and intranets.

Below is the list of the advantages of ASP:

- a. its power to create pages that are responsive to aspects such as time and place
- b. can apply ASP to modify web pages to the specific requirements of each individual user
- c. ASP is moderately easy to learn

ASP is just a method of merge scripting code (which implements on the server as the page is loaded by the Web server) with HTML and other Web page content. It is such

as understandable, spontaneous and great techniques that it is fast replacing earlier Microsoft technologies, such as the Internet Database Connector (IDC) and custom CGI and ISAPI applications.

Internet Information Server (IIS) works by being arranged to correlate ASP files (which have the .asp or .asa file extension) with a special plug-in – itself an ISAPI application. This decodes the file, implements any ASP script it contains and outputs it as HTML.

The joint result is then sending away to the client via IIS as shown in Figure 4.1.

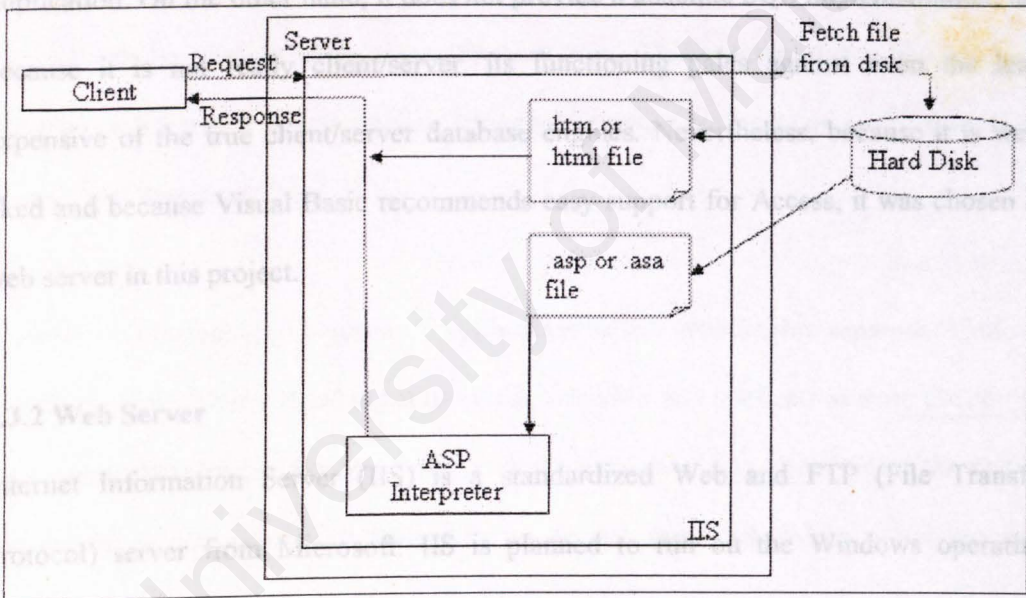


Figure 4.1: Basic ASP request-response model

IIS provides users more broadcasting abilities than most other Web servers. With IIS, users will be able to exercise the following tasks:

- Quickly and easily broadcast information on a Web or FTP site
- Develop and run Web-based applications
- Distantly administer and control users Web site across the Internet

4.3 SYSTEM REQUIREMENTS

4.3.1 Web database

The accurate database for a specific situation depends on several factors, including scalability (number of users, size of data), reliability (mission-critical data, such as potential sales contacts) and existing experience (Office user versus professional database administrator).

Microsoft Access is not really an RDBMS. However, it is a well-liked development back end and recommends some fairly advanced features, such as true database duplication. On the other hand, it does not provide a absolute SQL implementation, and because it is not really client/server, its functioning pales against even the least expensive of the true client/server database engines. Nevertheless, because it is well-liked and because Visual Basic recommends easy support for Access, it was chosen as web server in this project.

4.3.2 Web Server

Internet Information Server (IIS) is a standardized Web and FTP (File Transfer Protocol) server from Microsoft. IIS is planned to run on the Windows operating system and is an Internet standards-compliant HTTP (Hypertext Transfer Protocol) server that also includes FTP and several other costly Web- and FTP-related services.

IIS provides users more broadcasting abilities than most other Web servers. With IIS, users will be able to execute the following tasks:

- Quickly and easily broadcast information on a Web or FTP site
- Develop and run Web-based applications
- Distantly administer and control users Web site across the Internet

In other words, IIS allows users to fully design, generate, organize, and manage Web sites of any size, from individual personal pages to fully interaction high-traffic corporate sites. IIS makes the progression of converting business information into Web applications not just possible; it greatly makes simpler the effort required.

With the strict combination of several applications from the Option Pack, IIS's capability to support spread Web applications is greatly enhanced. Operation ASP files improve commerce and business communications by improving script management. ASP files can implement specific transactions within the context of the Microsoft Transaction Server; therefore, if a script breaks down, the transaction is terminated and no data will be missing in an uncertain condition. This presents for a more secure, reliable, and faster interactions link between business partners, as well as between vendors and their customers.

With IIS, it's probable to begin each application or sub process in a separate Windows virtual machine. This method separates each Websites and application from the rest of the system; therefore, if any Web site or application should crash or delay, the rest of the system is not influenced and carry on to run unabated. When a not succeed application is called, IIS can restart the process by creating a new virtual machine in which the application will progress. This gives IIS with a crash-protection system and allows automatic rescue from process breakdowns. By beginning each process independently, individual components may be loaded and unloaded from memory, as required, without restarting the whole IIS environment.

With IIS, script programmers can gather the benefits of the built-in Microsoft Script Debugger. This tool gives real-time interaction feedback for debugging and troubleshooting ASP. This is a great deal easier than executing such pages with regular file outputs to create trace values for following analysis (which was the only debugging technique presented to ASP programmers in earlier IIS executions).

Service providers will be concerned to Windows 2000's high-availability. With the supplement of the Certificate Server to IIS, corporations are now able to set up their own X.509 certificate authorities. This expands client or customer acknowledgment and provides better certificate and identity authentication services. Likewise, enhanced SSL protocol supports IIS greater manage over secure communication. Server Gates Crypto (SGC) is an extension to SSL that grants IIS the capability to use 129-bit encryption.

Windows 2000, called Windows 2000 Professional, is really easier to use than Windows NT and has a lot advance support for IIS integrates several enhancements in the part of managing and controlling Web site content. Index Server 2.0 offers a greatly better scope of indexing and searching abilities than those of Index Server 1.0. A strong search engine in its own right, Index Server permits HTML documents, text-only files, Microsoft Office documents, Adobe PDF files, and many other file formats to be sought online. When used in combination with ASP, ActiveX, and SQL, Index Server is much more than a usual search engine.

is Netscape Navigator, Microsoft Internet Explorer, and the venerable Mosaic, are the information available on the Web. The client has three main

4.3.3 Operating System

The operating system that was chosen to develop the project is the Windows 2000 Professional. Windows 2000 gives an inspiring platform of Internet, intranet, extranet, and management applications that incorporate securely with Active Directory. It can set

Provide a means of screening the content of web documents.

up virtual private networks – secure, encrypted connections across the Internet. Below is the list of advantages for using Windows 2000:

- a. Has much improved support for newer peripherals and mobile users
- b. Windows 2000 Professional's interface, which looks a lot like Windows 98
- c. Outstanding security and backup, and elasticity for development.
- d. Service providers will be concerned to Windows 2000's high-availability features
- e. Windows 2000 is intended specially for mobile and desktop machines operation in businesses.
- f. Its user interface is much simpler and sophisticated than that of Windows 98 and Windows NT 4.0
- g. The workstation version of Windows 2000, called Windows 2000 Professional, is really easier to use than Windows NT 4 and has a lot advance support for newer peripherals and mobile users
- h. Compatibility, security, and reliability
- i. It will operate forever, with no reboots or crashes

4.3.4 Web Browser

Web browser is sometimes called web client. The most common encountered browsers is Netscape Navigator, Microsoft Internet Explorer, and the venerable Mosaic, are the user's gateway to the information available on the Web. The client has three main functions:

- a. Connects with web server on the Internet using the HTTP protocol.
- b. Give the tools to navigate between web documents and servers.
- c. Provide a means of screening the content of web documents.

○ Microsoft Access

Web browser that was chosen is Internet Explorer 6.0 which supports ASP, DHTML etc.

○ Internet Information Server

○ Visual Studio 6.0

4.4 USER SYSTEM REQUIREMENTS

4.4.1 Server Computer Hardware Requirements

Hardware requirements for the server computer are:

- PC with Pentium III (300MHz or higher)
- 128 MB of RAM
- At least 20 GB of hard disk space
- VGA or higher-resolution monitor; Super VGA recommended
- Peripherals – Microsoft Mouse or compatible pointing device

4.4.2 Client Computer Hardware Requirements

The hardware that required for this project are:

- PC with Pentium II (300 MHz or higher)
- 128 MB of RAM
- At least 1 GB of hard disk space
- VGA or higher-resolution monitor; Super VGA recommended
- Peripherals – Microsoft Mouse or compatible pointing device
- At least 10 bps network card

4.4.3 Server Software Requirements

The software that required to be installed into the server computer are:

- Microsoft Windows 2000 Professional

- Microsoft Access
- Microsoft FrontPage
- Internet Information Server
- Visual Studio 6.0

4.4.4 Client Software Requirements

The software that required to be installed into the client computer are:

- Web browser that support ASP

4.5 SUMMARY

Chapter four presents the system analysis of the project. The functional requirements are divided into two modules, i.e. the administration module and user module. Where as, the non-functional requirements is classified by the PIECES framework. The chosen development software and tools are the Windows 2000 Professional, Microsoft Access, Internet Information Server (IIS), Visual Studio 6.0 and Active Server Pages (ASP).

Chapter 5 presents the system design of the project. The designs include the process design, input form design, user interface design and database design. It also predicts the expected outcome of the project.

5.1 INTRODUCTION

System design is a process through which rationals are interpreted into a model or representation of software that can be accessed for quality before coding starts.

5.1.1 System Architecture

As a conclusion, the proposed client/server architecture to be used in this project is the three-tier architecture because the system includes multiple users, which are provided by the three-tier system.

Chapter Five: SYSTEM DESIGN

The three-tier architecture (also mention as the multi-tier architecture) appeared to beat the two-tier architecture. The middle tier was appeared in between of the user system interface environment and the database management server environment. There are some ways of executing this middle tier, such as transaction processing monitors, message servers or application servers. The middle tier can execute queuing, application execution and database staging. In addition the middle tier puts in scheduling and prioritization for work in movement. The three-tier client/server architecture has been publicized to enhance performance for groups with a large number of users (in the thousands) and expands the flexibility when compared to the two-tier architecture. Flexibility in separation can be as simple as "loading and dropping" application code modules onto different computers in these three-tier architecture. A restriction with three-tier architectures is that the development environment is supposedly more difficult to use than the visually oriented development of two-tier applications.

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As a conclusion, the proposed client/server architecture to be used in this project is the three-tier architecture because the system includes multiple users, which are provided by the three-tier system.

The three-tier architecture (also mention as the multi-tier architecture) appeared to beat the restrictions of the two-tier architecture. In the three-tier architecture, a middle tier was appeared in between of the user system interface client environment and the database management server environment. There are some ways of executing this middle tier, such as transaction processing monitors, message servers or application servers. The middle tier can execute queuing, application execution and database staging. In addition the middle layer puts in scheduling and prioritization for work in movement. The three-tier client/server architecture has been publicized to enhance performance for groups with a large number of users (in the thousands) and expands the flexibility when compared to the two-tier architecture. Flexibility in separation can be a simple as “dragging and dropping” application code modules onto different computers in some three-tier architecture. A restriction with three-tier architectures is that the development environment is supposedly more difficult to use than the visually oriented development of two-tier applications.

The three-tier architecture is applied when an effective distributed client/server design is required that affords (when compared to the two-tier) better performance, flexibility, maintainability, reusability and scalability, while hiding the complexity of distributed giving out from the user. These characteristics have made three layer architectures a well-liked choice for Internet applications and net-centric information systems.

Three-tier distributed client/server architecture (as shown in Figure 5.1) includes a user system interface top tier where user services (such as session, text input, dialog and display management) reside.

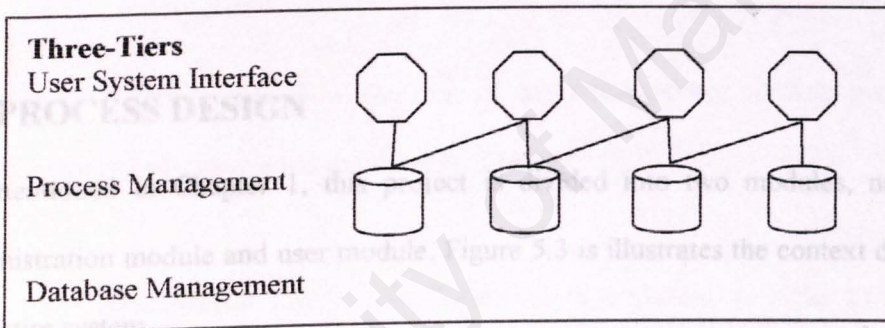


Figure 5.1: Three-Tier Distributed Client/Server Architecture

5.1.2 Overview of e-Accounting System

The proposed client/server architecture to be used in this project is the three-tier architecture because the system includes multiple users, which are provided by the three-tier system. Figure 5.2 shows how the three-tier architecture is implemented in the e-Accounting System.

Figure 5.3: Context Diagram for the System

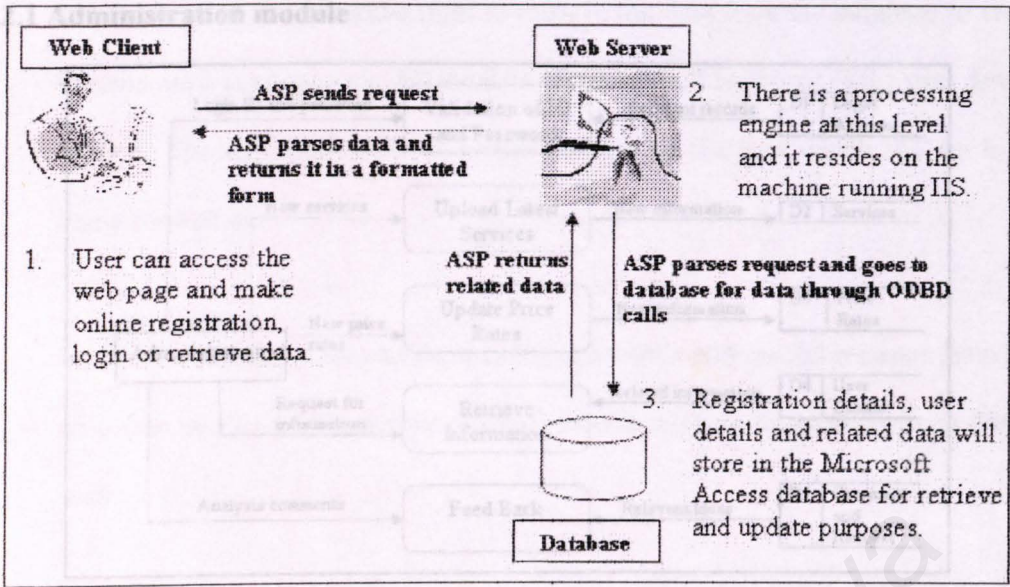


Figure 5.2: Overview of e-Accounting System and Three-Tier Architecture

5.2 PROCESS DESIGN

As mentioned in Chapter 1, this project is divided into two modules, namely the administration module and user module. Figure 5.3 illustrates the context diagram of the entire system.

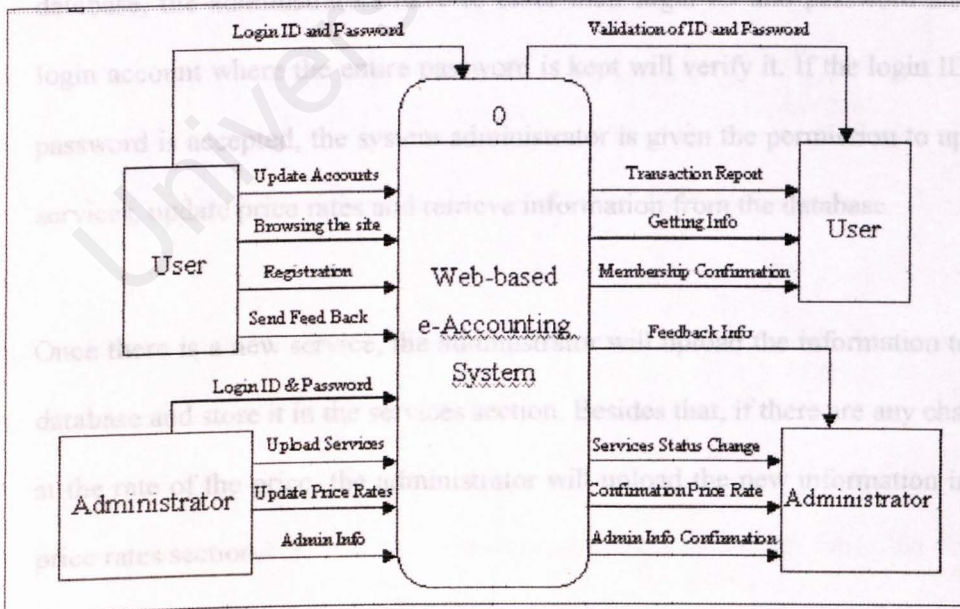


Figure 5.3: Context Diagram for the System

5.2.1 Administration module

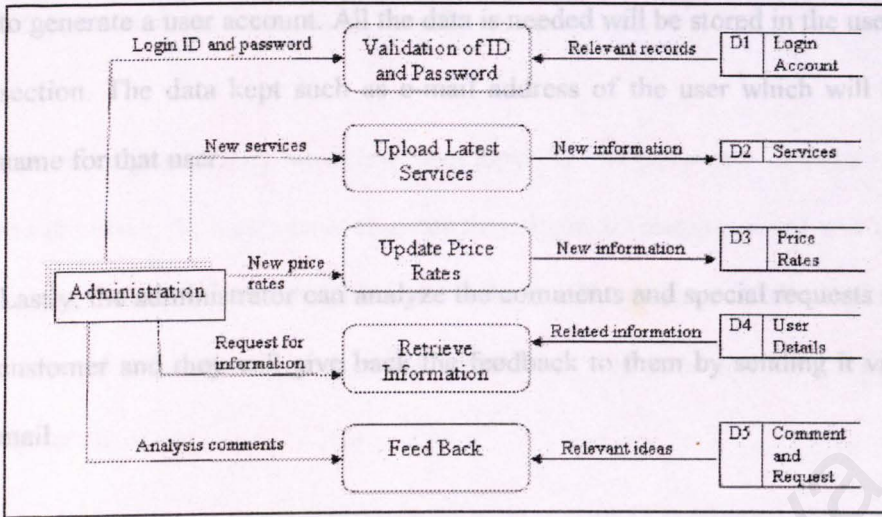


Figure 5.4: Data Flow Diagram of the Administrator Module Processes

Figure 5.4 illustrates data flow diagram of the administrator module process. The processes of the administration are described below:

- Each administrator has its own login ID and password. In order to access the database, the administrators have to enter their login ID and password and the login account where the entire password is kept will verify it. If the login ID and password is accepted, the system administrator is given the permission to upload services, update price rates and retrieve information from the database.
- Once there is a new service, the administrator will upload the information to the database and store it in the services section. Besides that, if there are any changes at the rate of the price, the administrator will upload the new information in the price rates section.

- c. Administrators also have the right to retrieve the data from the database in order to generate a user account. All the data is needed will be stored in the user details section. The data kept such as e-mail address of the user which will be login name for that user.
- d. Lastly, the administrator can analyze the comments and special requests from the customer and they will give back the feedback to them by sending it via the e-mail.

5.2.2 User Module

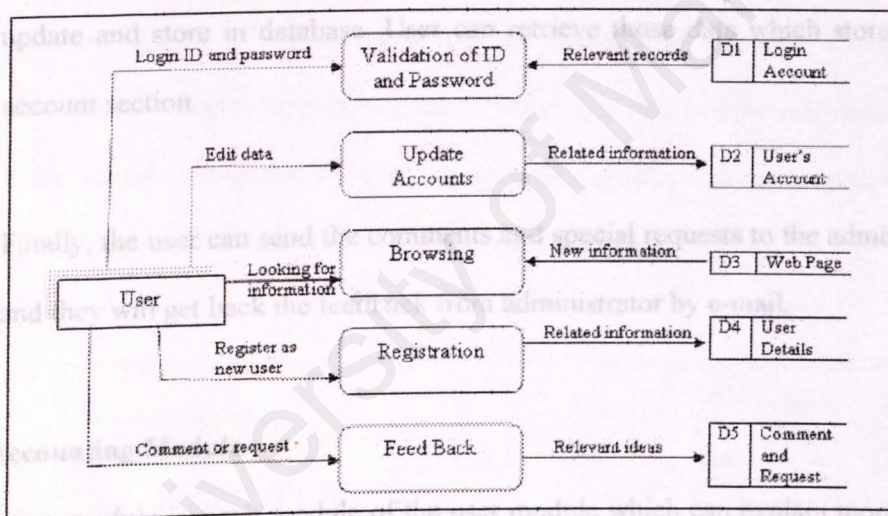


Figure 5.5: Data Flow Diagram of the User Module Processes

Figure 5.5 illustrates the data flow diagram of the user module processes. The processes of the user module are described below:

- a. The user can register as a new user by using the registration form that will be provided and this information will be stored in the user details section.

- b. Besides register as a new user, user also can browse the web page to get some information about the services, benefits and price rates.
- c. For existing user, they have their own login ID and password. In order to access the database, the users have to enter their login ID and password and the login account where the entire password is kept will verify it. If the login ID and password is accepted, the user is given the permission to edit their account and update it.
- d. Once the existing user has changed the information in their account, it will update and store in database. User can retrieve those data which store in user account section.
- e. Finally, the user can send the comments and special requests to the administrator and they will get back the feedback from administrator by e-mail.

5.2.3 Accounting Module

Accounting module is a sub module of the user module which can explain more details for the whole process of the user module especially existing users. Figure 5.6 illustrates the data flow diagram of the accounting module processes. The processes of the accounting module are described below:

- a. After the user login, user can retrieve data from database or add in data to database. User has to insert all the information about product to the inventory control section. Changing in this section will update and store in database.

5.3.1 Besides that, those details about inventory will also be stored in purchases order section and order entry section.

b. User can update payment of purchases order or order entry to the database. This information will be stored in purchases order or order entry section.

5.3.1 Registration Form

c. User can view any of General Ledger, Account Receivable or Account Payable by retrieve data from database. User no needs to insert any thing and edit anything in these sections. Account Receivable will retrieve data from order entry section and save all the changes in account receivable section. Besides that, Account Payable will retrieve data from purchases order section and stored those changes in account payable section. Finally, General Ledger will retrieve data from account receivable section and account payable section to update it data. Those changes will be stored in general ledger section.

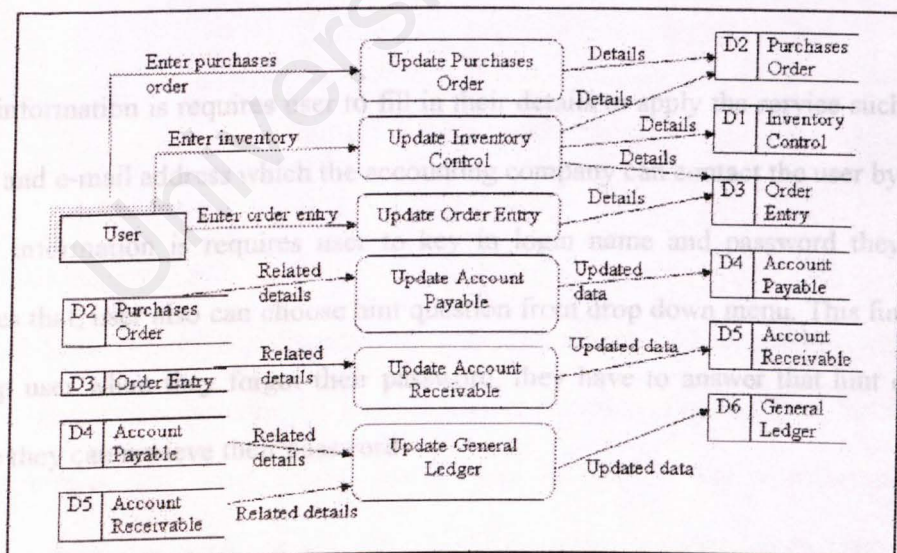


Figure 5.6: Data Flow Diagram of the Accounting Module Processes.

5.3 INPUT FORM DESIGN

The input form design is shown below. There are a few of input forms being prepared for the user namely registration form, feedback form, admin login, user login, update services or price rate and payment form.

5.3.1 Registration Form

The registration form is illustrated in Figure 5.7. This form involved a secure part where a secure sockets layer was implemented in order to protect the security of the data during transmission. This form is divided into five sections namely the information details, user information, login information, hint question and answer and also online payment.

Information details requires the user to enter the services details such as the type of services they wanted by choosing it from the drop down menu. The users also need to specify the number of order they wanted.

User information is requires user to fill in their details to apply the service such as user name and e-mail address which the accounting company can contact the user by e-mail.

Login information is requires user to key in login name and password they desire.

Besides that, user also can choose hint question from drop down menu. This function is to help user when they forgot their password, they have to answer that hint question before they can retrieve their password.

Finally, the online payment is requires user to fill in those information of their card such as card type.

Information Details		
Subscription Period	Amount	Order Quantity
User Information		
Name : <input type="text"/>		
Address : <input type="text"/>		
Zip : <input type="text"/>	City : <input type="text"/>	State : <input type="text"/>
Country : <input type="text"/>	E-mail : <input type="text"/>	Fax Number : <input type="text"/>
Phone (H) : <input type="text"/>	(O) : <input type="text"/>	(H/P) : <input type="text"/>
Login Information		
Login Name ** <input type="text"/>		
Password ** <input type="text"/>	Confirm Password <input type="text"/>	
** Login Name and Password must be at least 6 characters long		
Please provide a hint question and answer that will enable you to login if you forget your password		
Your Hint Question : <input type="text"/>	Hint Answer : <input type="text"/>	
Online Payment		
Card Type : <input type="text"/>	Card Number : <input type="text"/>	
Card Holder : <input type="text"/>	Expired Date : <input type="text"/>	
<input type="button" value="Submit"/> <input type="button" value="Reset"/>		

Figure 5.7: Registration Form.

5.3.2 Feed Back Form

The feed back form is for the users to give their comments and suggests about this web site and the services provided by this accounting company. Figure 5.8 is illustrates the feed back form. This form requires user to enter their details such as name and e-mail which administrator can know who they should reply to. This form has two text area for user to enter suggestion which is text area for suggestion about the service and text area for suggestion about the web site.

Name	<input type="text"/>	This field is required
Company	<input type="text"/>	This field is required
City	<input type="text"/>	This field is required
Country	<input type="text"/>	
E - Mail	<input type="text"/>	
Please Suggest as to how we can improve our services	<input type="text"/>	
What is your suggestion about this website?	<input type="text"/>	
<input type="button" value="SUBMIT"/> <input type="button" value="RESET"/>		

Figure 5.8: Feed Back Form.

5.3.3 Admin Login

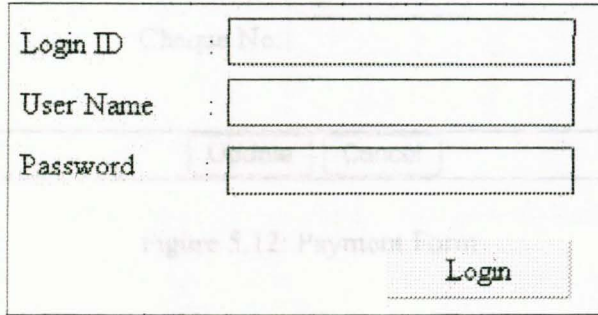
The Admin Login is a form for administrators to login into the database to retrieve or update data. Figure 5.9 is illustrates the Admin Login. Administrators have to enter the admin name, admin ID and password for login purpose and the database will verify the information. After login successfully only the administrators can retrieve or update data in the database.

Admin. ID	:	<input type="text"/>
Admin. Name	:	<input type="text"/>
Password	:	<input type="text"/>
<input type="button" value="Login"/>		

Figure 5.9: Admin Login

5.3.4 User Login

The existing users have to login to access the database to retrieve their data. Figure 5.10 is illustrates the User Login form. Users have to enter the user name, login ID and password in order to login successfully after the database has verified those data.

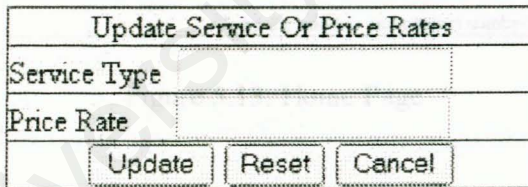


The form contains three input fields stacked vertically. The first field is labeled 'Login ID', the second 'User Name', and the third 'Password'. Below these fields is a 'Login' button.

Figure 5.10: User Login

5.3.5 Update Service or Price Rate

The Update Service or Price Rate form is shown in Figure 5.11. After the administrators login, they can update the service or its price rate by using this form.



The form has a title 'Update Service Or Price Rates'. It contains two input fields: 'Service Type' and 'Price Rate'. At the bottom, there are three buttons: 'Update', 'Reset', and 'Cancel!'.

Figure 5.11: Update Service or Price Rate

5.3.6 Payment Form

For those existing users, their can update those payment that have been made by them or by their customers by using the Payment Form as shown in Figure 5.12.

Account's Name	
CustomerID(VendorID) :	<input type="text"/>
Balance Debt :	<input type="text"/>
Amount of payment :	<input type="text"/>
Cheque No:	<input type="text"/>
<input type="button" value="Update"/> <input type="button" value="Cancel"/>	

Figure 5.12: Payment Form

5.4 USER INTERFACE DESIGN

The following are the interface designs proposed for the system.

Company Logo	WELCOME
	Briefing about company background.
Home	
Services	
Login	
Feed Back	Company address and contact number.

Figure 5.13: Home Page

The Home Page of this web site is shown in Figure 5.13. The home page's left hand side is a table that containing hyperlinks that change the page's content which will take place the right hand side of the page. The page's right hand side is the welcome page and a briefing about the company's background.

Company Logo	SERVICES CENTER Briefing about company's services
Home	
Services	
Login	
Feed Back	Company address and contact number.

Figure 5.14: Service Page

Figure 5.14 is display the Service Page of the web site. In this page, the content is including type of the service which provide by the system and price rate of every service.

Company Logo	WELCOME Briefing about accounts and ledger in the system.
Logout	
General Ledger	
Accounts	
Payment	
Inventory	Company address and contact number.

Figure 5.15: Account Page

The Account Page is shown in Figure 5.15. This page only can view by those existing users after they have successfully login. Users can browser to others page by using the hyperlinks features at the left hand side of every page. The content of every page will be place in right hand side of every page.

5.5 DATABASE DESIGN

Database is needed in this project. Microsoft Access 2000 is the database that will be use in this project. The designs of the database are based on the requirements of the

system. The designs include the Entity Relationship (E-R) model and the data dictionary of the system.

5.5.1 Entity Relational (E-R) Model

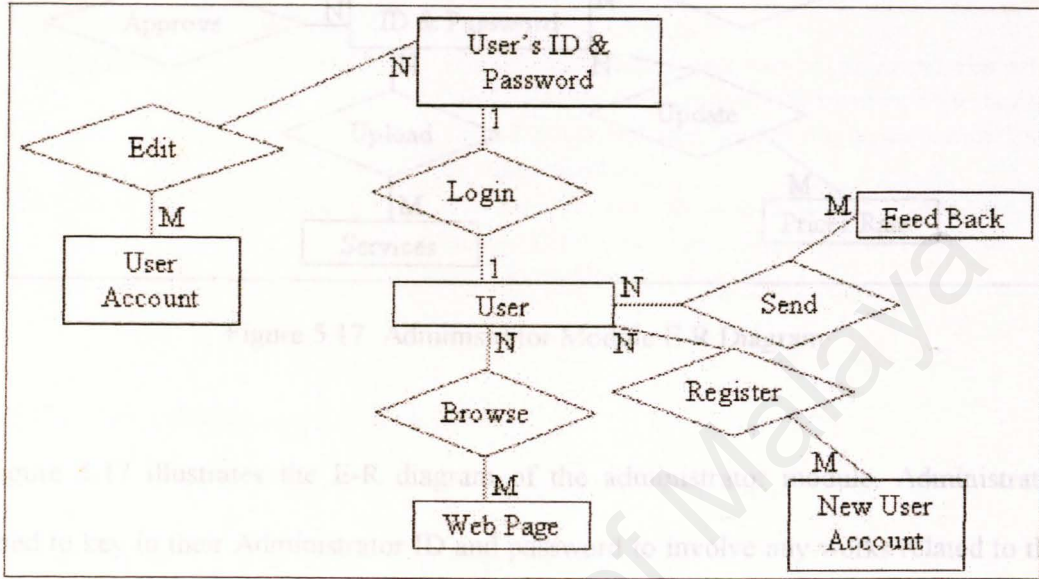


Figure 5.16: User Module E-R Diagram

Figure 5.16 illustrated the entity relational diagram of a user module. Users can browse the web site to retrieve any information they want. Besides that, users can send some comments or inquiry as feed back to administrator. For non authentication users, they can register a new user account through the system. Within a period, the administrator will let the user know whether their application is approve by administrator or not. For authentication user, they need to enter their user ID and password in order to retrieve data from their accounts. They can edit and update their data by this system.

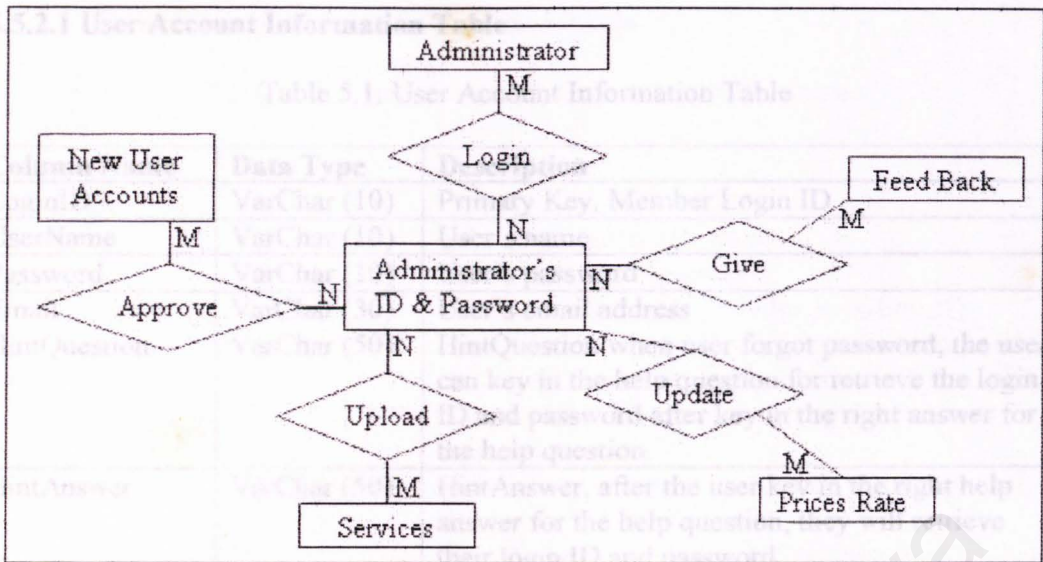


Figure 5.17: Administrator Module E-R Diagram

Figure 5.17 illustrates the E-R diagram of the administrator module. Administrator need to key in their Administrator ID and password to involve any works related to the system. Administrator can upload the Services and Price rates information. Besides that, Administrator also can retrieve information about feed back from users, and then they will reply those users by e-mail. Administrator also can approve those reliable users to own a new account to save their data.

5.5.2 Data Dictionary

The following are the data dictionary that explains the items and fields of the database that used in the e-Accounting system. Table 5.1 to Table 5.8 presents the various tables in the database.

5.5.2.1 User Account Information Table

Table 5.1: User Account Information Table

Column Name	Data Type	Description
LoginID	VarChar (10)	Primary Key. Member Login ID
UserName	VarChar (10)	User's name
Password	VarChar (10)	User's password
Email	VarChar (30)	User's email address
HintQuestion	VarChar (50)	HintQuestion when user forgot password, the user can key in the help question for retrieve the login ID and password after key in the right answer for the help question.
HintAnswer	VarChar (50)	HintAnswer, after the user key in the right help answer for the help question, they will retrieve their login ID and password.
Status	VarChar (10)	Status for the admin (super admin and ordinary admin)

5.5.2.2 User Address and Contact Table

Table 5.2: User Address and Contact Table

Column Name	Data Type	Description
LoginID	VarChar (10)	Primary Key. Member login ID
UserName	VarChar (10)	User's name
CompanyName	VarChar (20)	User's company name
Address1	VarChar (30)	User's address
ZipCode	VarChar (5)	Zip Code Number
City	VarChar (15)	City name
State	VarChar (15)	State name
Country	VarChar (15)	Country Name
Email	VarChar (30)	User's email Address
HomePhone	VarChar (10)	User's house phone number
OfficePhone	VarChar (10)	User's office phone number
MobilePhone	VarChar (10)	User's mobile phone number
FaxNumeber	VarChar (10)	User's fax number
CardType	VarChar (20)	User's credit card type
CardNumber	VarChar (20)	User's credit card number
ExpiredDate	Date	User's credit card expired date

5.5.2.3 Administrator Account Information Table

Table 5.3: Administrator Account Information Table

Column Name	Data Type	Description
AdminID	VarChar (10)	Primary Key. ID for the admin
AdminName	VarChar (10)	Administration's user name
Password	VarChar (10)	Administration's password
HintQuestion	VarChar (50)	HintQuestion when admin forgot AdminID, LoginID and password, the admin can key in the help question for retrieve the AdminID, LoginID and password after key in the right answer for the help question..
HintAnswer	VarChar (50)	HintAnswer, after the admin key in the right help answer for the help question, they will retrieve their AdminID, LoginID and password.
Status	VarChar (10)	Status for the admin (super admin and ordinary admin)

5.5.2.4 Feedback Table

Table 5.4: Feedback Table

Column Name	Data Type	Description
RefNo	Int (10)	Primary Key. Reference no for the detail use by the admin
MsgType	VarChar (15)	What the message about
Subject	VarChar (15)	Subject for the message
Comment	VarChar (15)	Sender's comment
SenderName	VarChar (15)	Sender's name
SenderEmail	VarChar (15)	Sender's email address
ContactRequest	VarChar (15)	See sender's need response from admin to response/feedback the topic
Date	Date	Date for the message post by the user

5.5.2.5 Administrator Profile Table

Table 5.5: Administrator Profile Table

Column Name	Data Type	Description
AdminID	VarChar (10)	Primary key. The admin ID
AminName	VarChar (10)	Admin name
Password	VarChar (10)	Admin password
EmployDate	Date	Date that Admin has been employed
Salary	Decimal (5,2)	Admin salary
HousePhone	VarChar (10)	Admin's house phone number
MobilePhone	VarChar (10)	Admin's mobile phone number
Address1	VarChar (30)	Admin address
Address2	VarChar (30)	Admin address
Postcode	VarChar (5)	Admin stay postcode number
City	VarChar (15)	Admin stay city
State	VarChar (15)	Admin stay state
Country	VarChar (15)	Admin stay country

5.5.2.6 Payable List Table

Table 5.6: Payable List Table

Column Name	Data Type	Description
VendorID	VarChar (10)	Primary key. Vendor ID number that the customer had be paid for the order
BalanceDebt	Decimal (5,2)	Balance debt amount that the customer own the vendor.
PaymentAmount	Decimal (5,2)	Payment amount that customer had been paid
BalanceAmount	Decimal (5,2)	Balance amount that customer still own the vendor after some payment had been paid
ChqueNo	VarChar (20)	Cheque's number
Date	Date	Date that the payment been made

5.5.2.7 Receivable List Table

Table 5.7: Receivable List Table

Column Name	Data Type	Description
CustomerID	VarChar (10)	Primary key. Customer ID number that had paid.
BalanceDebt	Decimal (5,2)	Balance debt amount that the client own the customer.
PaymentAmount	Decimal (5,2)	Payment amount that client had been paid
BalanceAmount	Decimal (5,2)	Balance amount that client still own the customer after some payment had been paid
ChqueNo	VarChar (20)	Cheque's number
Date	Date	Date that the payment had been made

5.5.2.8 Update Service or Price Rate Table

Table 5.8: Update Service or Price Rate Table

Column Name	Data Type	Description
ServiceID	VarChar (500)	Primary key. Service ID number that had provided.
Rate	Double (5)	The price rate of the service.

5.6 EXPECTED OUTCOME

Through the whole project, it is expected that the outcome from this project is to achieve the entire objectives listed in Chapter 1 that are:

- i. To develop a web page that contains all the information of an accounting company. It is also expected that the user will be satisfied with the information that is published and get what they want.
- ii. To create a user interface and it is expected that every user using this system can easily understand and comfortable using the friendly user interface.

- iii. **update** To create electronic form and it is expected that the register form can help user to register a new account to store their data and the feed back form can let users to send some suggests, comments or inquiries to the administrator.
- iv. **eb-ba** To provide bookkeeping services which user can store their general accounts in the system's database. Besides that, user can retrieve those accounts and update them without any accounting knowledge.
- v. Lastly, the database is expected to be stable can store a lot of data and information in it. The database assists the system administrator to retrieve all the information that is needed. And also the database storing all the accounts of the users.

With this e-Accounting system, it is expected that the users' enterprise can upgrade its business by making the accounting system more efficient.

5.7 SUMMARY

Chapter 5 presents the system architecture, data flow diagram, input form design, graphical user interface, database design and the expected outcome of the system. The three-tier system architecture was chosen in this system. The data flow diagram includes the administration module, the user module and the accounts module. The input form design and the graphical user interface has been design. Eight main tables are involved in the database design namely the User Address and Contact Table, User Address and Contact Table, Administrator Account Information Table, Feedback Table, Administrator Profile Table, Payable List Table, Receivable List Table, and

Update Service or Price Rate Table. However, all these designs might need minor or major changes, as there is no promise that all the primary designs are good and perfect.

Chapter 6 described how to implement the reservation system using a database and web-based language.

Chapter Six:

SYSTEM

IMPLEMENTATION

University of Malaya

6.1 INTRODUCTION

The major work in system development is the system implementation. System implementation is the acquisition and integration of the physical and conceptual resources that produce a working system. It is the physical realization of the database and application designs.

6.2 DATABASE DEVELOPMENT

Creating an empty database in Microsoft Access 2000 starts the database development.

All the tables are then created according to the fields and field properties. The main purpose of this is to create a table structure that is suitable for the data that is to be stored. A primary key is allocated to each table in the database. The relationships between the tables are established. Figure 6.1 depicts the relational database inside the database.

Chapter Six: SYSTEM IMPLEMENTATION



6.1 INTRODUCTION

The major works in system development is the system implementation. System implementation is the acquisition and integration of the physical and conceptual resources that produce a working system. It is the physical realization of the database and application designs.

6.2 DATABASE DEVELOPMENT

Creating an empty database called eacc and each user's database also created after their registration proved using the Microsoft Access 2000 starts the database development. All the tables are then created according to the fields and field properties. The main purpose of this is to enable references to be done easily. Besides that, a primary key is allocated for each table in the database. The relationships between the tables are established. Figure 6.1 depicts the relational of the table inside the database.

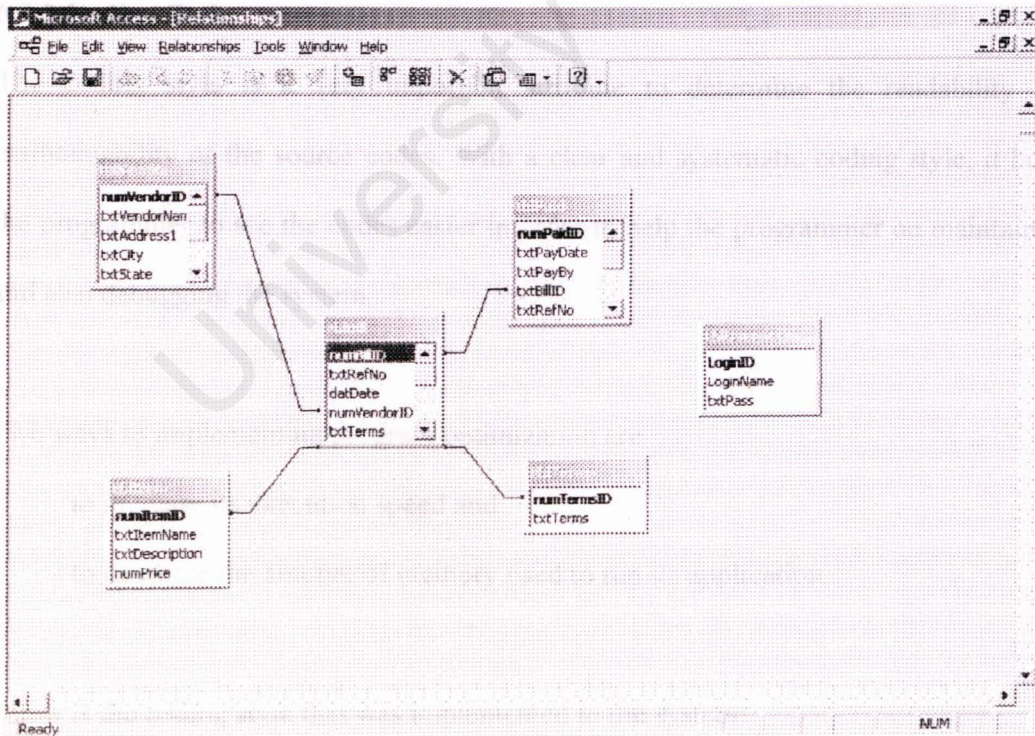


Figure 6.1: Table and Relationships in the Database

6.3 SYSTEM CODING

6.3.1 Coding Methodology

The coding methodology that was used is the top-down approach. The top-down methodology entails the development of the simple modules first followed by the complex module. By applying this methodology, the coding for the login module was done first, followed by the modules that are more complex.

The purpose of using the top-down methodology is to enable tests to be done on the simple module while the complex modules are still in the process of coding. Besides that, completing the simple modules first enable us to check whether the flows of the system are the same as designed and the connectivity of each of the pages can be clearly.

6.3.2 Coding Style

The coding style is a very important attribute to determine the readability and maintainability of the source codes. With a clear and systematic coding style, it helps the programmer to see the codes easier in order to help the programmer on maintaining and also debugging the system.

Two ways to implementing program optimization are

- a. to increase its execution speed and
- b. to decrease the amount of memory used to run its application.

Below is the coding style that was implemented in the system:

- a. Use meaningful variables and labels name


```

function blankValidator(form)
{
    For intRowCount = 0 to intUpperRow
        if (document.bill.txtRefNo.value == "")
        {
            arrVendor(0,intRowCount) = arrData(0,intRowCount) 'numVendorID
            arrVendor(intRowCount) 'txtVendorName
            alert("Please enter the Ref. No.");
            document.bill.txtRefNo.focus();

        }
    }
}

```

- b. Indent the codes according to the function segments
- The indentation of codes in the function made it easily visible to the programmer.
- For example, the indentation in the 'if' loop function was shown by →

```

if (document.bill.txtRefNo.value == "")
{
    → alert("Please enter the Ref. No.");
    → document.bill.txtRefNo.focus();
    return (false);
}

```

- c. Write description or comments in the source codes
- Comments in the coding do not show up in the executable program. It is used to describes the code that was written. In Active Server Pages (ASP), <!--> and

<!--> tags are the common method to indicate method comments. Besides that the ' ' is used to indicate a single line of comment.

```
For intRowCounter = 0 to intUpperRow
    ReDim arrVendor(1,intRowCounter)
    arrVendor(0,intRowCounter) = arrData(0,intRowCounter) 'numVendorID
    arrVendor(1,intRowCounter) = arrData(1,intRowCounter) 'txtVendorName
    Set objVendor = Server.CreateObject("ADODB.Recordset")
    strVendor = "select numVendorID, txtVendorName from tblVendor"
```

- d. Write an include file that contains reusable function to reduce the system size and coding time.

In ASP, there are 2 types of command to perform the include file function. The first one is the include virtual file such as <!--#include virtual="filename"--> and include directive such as <!--#include file="filename" -->. For example, the **userclassfd.asp** file was including in each and every page in the user module.

```
<!--#include file="userclassfd.asp"-->
```

- e. Separate the files into smaller files according to the length of each file
This is to increase the readability of the source code that was written.

6.3.3 Scripting Language

Scripting elements are used to include scripting code within the ASP. The scripting codes are normally the ASP codes written between both the tags <%%>. There are three types of scripting elements:

a. Declaration

A declaration is a block of ASP code in a ASP that is used to define variables and methods in the page. A declaration block is enclosed between <% and %>.

Below is the example of this scripting that was used in the system:

```
<%  
Dim objVendor, strVendor  
Set objVendor = Server.CreateObject("ADODB.Recordset")  
strVendor = "select numVendorID, txtVendorName from tblVendor"  
objVendor.Open strVendor, objMyConn  
%>
```

b. Scriptlets

A scriptlet is a block of ASP code that is executed at request-processing time. A scriptlet is enclosed between <% and %>. For example, the database connection function was written between those tags:

```
<%  
If Not rsDate.EOF Then  
Dim arrBill  
arrData = rsDate.Getrows  
intUpperRow = UBound(arrData,2)  
intUpperCol = UBound(arrData,1)  
strFirstDate = CDate(Date)  
%>
```

c. Expression

An expression is a shorthand notation for a scriptlet that outputs a value in the response stream back to the client. An expression is enclosed within `<%=` and `%>`. For example, the output of the date value to the browser.

Payment Date :

```
<input type="text" name="txtPayDate" value="<%= strFirstDate%>" size="20">  
<p>&nbsp;</p>
```

6.4 SUMMARY

In this system implementation phase, nearly all the design phases that have been presented a directed toward a final objective that needs to translate representation of system into a form that computer can understand. Overall, the primary goal of this phase is to produce a simple, clear source code with internal documentation that will see the processes of a verification, debugging, testing, modification and further enhancement.

Chapter 7 presents the various type of system testing that includes the unit testing, module testing and the integration testing.

7.1 INTRODUCTION

The main objective of testing is to uncover different types of errors that exist while executing the system. System testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. However, testing cannot show the absence of defects, it can only show that software defects are present.

Chapter Seven:

SYSTEM TESTING

This is the first stage of testing where each program component is tested on its own, isolated from the other components in the system. It verifies that the individual functions work properly with the types of input and output expected from analyzing the component design. After each component has been tested, the interaction between the components must be tested again to ensure that the requirements can be satisfied.

Integration testing ensures that the interfaces among the components are defined and compatible properly. It is also known as the module testing, which is used to ensure that the components work together as described in the module or system design.

7.1 INTRODUCTION

The main objective of testing is to uncover different types of errors that exist while executing the system. System testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. However, testing cannot show the absence of defects, it can only show that software defects are present.

In developing a system, testing usually involves several stages. There were 3 stages involve altogether and were listed below:

a. Unit Testing

This is the first stage of testing where each program component is tested on its own, isolated from the other components in the system. It verifies that the component function work properly with the types of input and output expected from studying the component's design. After each component has been tested, the interaction between these components must be tested again to ensure that the components can be integrated.

b. Integration Testing

This stage ensures that the interfaces among the components are defined and handled properly. It is also known as the module testing, which is used to ensure all the components work together as described in the module or system design specifications.

7.2.1 System Testing

This is the last stage and it is to ensure that the whole system works according to users' specifications. Developers will join the users to perform this stage of testing where the system is checked against the users' requirements description. If there is a need for a change, system modification will then be carried. If the users are satisfied with the system's performances, the system is ready to be deployed.

In this stage, the testing runs mainly on the ASP code functions. A ASP file has to be

7.2 TYPES OF TESTING

Figure 7.1 depict the hierarchical chart of the test plan that was used on the e-Accounting system.

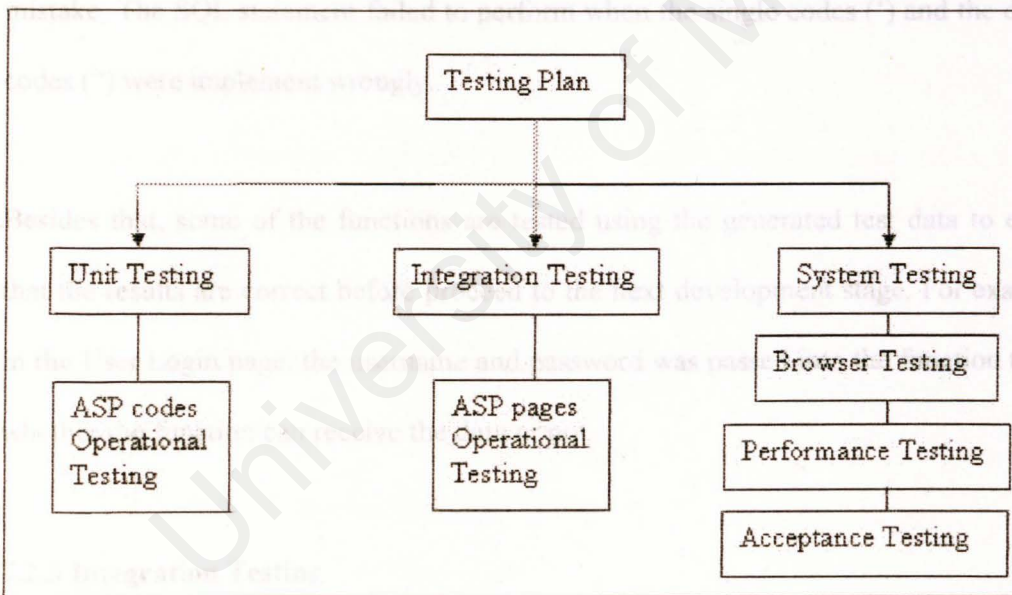


Figure 7.1: Test Plan

7.2.1 Testing data and test cases

Data for testing the application was mainly generated during the development to the test the ASP code functions and the ASP pages. This is because the unit testing needs

test data to evaluate the individual method based on the criteria of its operator and functions. Similar set of data is used when evaluating a similar operator or function during the testing in the integration testing. By doing so, it reduces the effort and time that required in generating the test data. The test cases are generated to ensure all the possible combinations and condition run smoothly and error free.

Below is one of the examples of integration testing on the database connection

7.2.2 Unit Testing

In this stage, the testing runs mainly on the ASP code functions. A ASP file has to be compiled in the ASP pages. If there were any errors occur in the ASP codes, the Microsoft Script Debugger will prompt error messages on the screen. The main errors found when running this type of testing were the SQL statement and the careless mistake. The SQL statement failed to perform when the single codes (') and the double codes (") were implement wrongly.

Besides that, some of the functions are tested using the generated test data to ensure that the results are correct before proceed to the next development stage. For example, in the User Login page, the username and password was passed into the function to test whether the function can receive the data or not.

7.2.3 Integration Testing

As the ASP code was fully tested, the integration testing focuses on the ASP pages, and the HTML codes. HTML codes provide user interface that interacts between the user and the system. Users enter the data through the interfaces, which will be captured by the ASP pages. Each of the HTML codes in ASP page was tested correspondently to ensure the good interaction.

The most common error that occurs was the BOF or EOF, which that the data failed to parse in the ASP pages.

If the integration failed the function will transfer the pages to login page as asking user. After the pages testing, the next step is to test the integration of the user module and the database, as the user module will be calling more than one table at the same time. Below is one of the examples of integration testing on the database connection function:

```
Dim objConn

Set objConn = Server.CreateObject("ADODB.Connection")

objConn.Open "Provider=Microsoft.Jet.OLEDB.4.0;Data
Source=c:\eacc\eacc.mdb"

Dim strlogID, strlogName

strlogID = Session("LoginID")

strlogName = Session("LoginName")

objConn.Close

Set objConn = Nothing

If strlogID = "" or strlogName = "" Then

    Server.Transfer "login.asp"

Else

    Dim objMyConn

    Set objMyConn = Server.CreateObject("ADODB.Connection")

    objMyConn.Open "Provider=Microsoft.Jet.OLEDB.4.0;Data
Source=c:\eacc\" & strlogID & strlogName & ".mdb"
```


End If	
Web Browser	ASP enabled
If the integration failed the function will transfer the pages to login page as asking user to reenter username and password.	YES
Internet Explorer 5.5	YES
7.2.4 System Testing	YES

As mentioned earlier, the system testing involves the browser testing, performance testing and acceptance testing.

7.2.4.1 Browser Testing

The e-Accounting system was tested on Microsoft Internet Explorer on the different operating system. The summary of the testing result is displayed below:

Table 7.1: Compatibility of the System in Various Environments

Operating System	Web Browser	MS Internet Explorer
Windows 98		YES
Windows ME		YES
Windows 2000		YES
Windows XP		YES

As conclusion, the Internet Explorer can support the e-Accounting system in the various platforms. The second test is the based on the browser versions. Table 6.2 shows the results of the testing:

7.3 SUMMARY Table 7.2: Webs Browser Versions and Compatibility with the ASP

Web Browser	ASP enabled
Internet Explorer 4.0	YES
Internet Explorer 5.0	YES
Internet Explorer 5.5	YES
Internet Explorer 6.0	YES

Based on the result above, the ASP is enabled in the Internet Explorer 4.0, 5.0, 5.5 and 6.0.

7.2.4.2 Performance Testing

Performance testing addresses the non-functional requirements of the e-Accounting system. System performances are measured using performance objectives set by potential users as highlighted in the non-functional requirements section as guidelines. In this system, performance testing examines how effective data manipulations are carried out, query (record retrieval, deleting and sorting) speeds, inter-module communication speed and also file-loading speed.

7.2.4.3 Acceptance Testing

After completing the performance testing, the system can be said that it has fulfilled all the specified requirements. The next step involves its potential users. Users lead acceptance testing and define their own real-time business data sets to be used as test cases. The reason this is done is to enable users to determine whether the online reservation system is capable of meeting their performance expectations and the art of business needs.

7.3 SUMMARY

Testing is one of the important steps in developing a system. Precision and accuracy of output data is considered during this process. Unit, module and integration testing has been carried out of the e-Accounting system. The objective of a system will only achieve after all the thorough testing done by different user with different aspects.

Chapter 8 presents the system evaluation. The evaluation reveals the problem encountered and solution, system strength and system constraints, future enhancements, knowledge and experience improvement.

Chapter Eight:
SYSTEM
EVALUATION

University of Malaya

8.1 INTRODUCTION

Evaluation is the ultimate phase of developing a system and an important phase before delivery the system to the end users. Evaluation was related to user environment, attitudes, information priorities and several other concerns that are to be considered carefully before effectiveness can be concluded. At all phases of the system approaches, evaluation is a process that occurs continuously, drawing on a variety of sources and information.

Chapter Eight:

8.2 PROBLEMS ENCOUNTER AND SOLUTIONS

During the process development of the system, there are few problems encountered.

The problem that I encountered during the development of the system is:

SYSTEM

8.2.1 Difficulties in Choosing a Programming Language

In the development of the system, I encountered a problem in choosing a programming language. Choosing a programming language was a difficult process as all the tools have their own strengths and weakness.

In order to solve this problem, many researches have been done. One of the effective resources is to get information from Internet and study on the strengths and weaknesses of each programming language. Besides that, there were discussions with my friends to have ideas on the similar system before.

One of the difficulties is the new Programming Language

One of the difficulties encountered was the difficulties when writing the program. One of the difficulties was setting up the database connection and configuration has taken

8.1 INTRODUCTION

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8.2 PROBLEMS ENCOUNTERED AND SOLUTIONS

During the process development of the system, there are few problems encountered. The problems and the solutions are listed being below:

8.2.1 Difficulties in Choosing a Programming Language

In the market, there are several popular web-based programming languages. Choosing a suitable programming language was a critical process as all the tools have their own strengths and weakness.

In order to solve this problem, many researches have been done. One of the effective researches was getting information from Internet and study on the strengths and weaknesses of each programming languages. Besides that, there were discussions with seniors who have done the similar system before.

8.2.2 Lack of Knowledge in the new Programming Language

ASP is a new programming for me and there were lots of difficulties when writing the first codes. Due to that, setting up the database connection and configuration has taken

more time than what was being planned. Notepad was the main tool that was used to develop the system and it doesn't have any debugging applications. When errors occurred, it was hard to detect which lines of the codes went wrong.

8.3.2 Scalability

In order to solve the above problem, I have sought advices from the expertise on the Internet and joined the ASP Forum. Besides that, many tutorials and references from the Internet was being referred and downloaded. Books were borrowed from the library and I learned from the basic concepts.

8.3.3 Effective Error Recovery

8.2.3 Lack of Knowledge in Accounting

Since I am not very familiar with accounting, so, when I develop this system, I need to refer to accounting software, books and some accountants. Interview, which is one of the way of information gathering techniques to learn how to develop a relevant system.

8.3.4 Real Time System

Therefore, many similar online accounting systems have been studied and analyzed. The results were placed in the second chapter of this book. Besides that, other information gathering techniques such as observation was used to collect information. Dummy data was used to replace the incomplete data.

8.3.5 Web Portal

8.3 SYSTEM STRENGTH

The strength of the e-Accounting system was listed as below:

8.3.1 Simple and Attractive of User Interface

The interface of the e-Accounting system is attractive and simple where it relies heavily on browsing on the left menu. The graphics was designed to let the users feel

comfortable and easy-to-use. All the designed forms ensured user friendliness. User finds this system is very easy to understand. The whole process of accounting is simple.

8.3.2 Scalability

Hardware and applications could be easily added to the existing system without affecting the existing applications. This was because the system was not hardware-dependent.

8.3.3 Effective Error Recovery

This e-Accounting system is a reliable system as it can detect for the possible errors encountered. Input by users is validated and verify at the server side by the ASP pages. If error detected, it will forward to an error page and displayed the error.

8.3.4 Real Time System

The e-Accounting system is a real time system. The whole reservation process can proceed smoothly. When a transaction is done, the amount payment was counted directly by the system. Besides that, users also can view some reports for their account.

8.3.5 Web Enabled

The system was based on the web technology. It was using the client server approach that allowed processing load to be shared between the client and the server, thus reducing the burden on the server and allow it to provide better service.

8.3.6 Security

This system has created to prevent unauthorized users from accessing the page if they do not have any permission to view. More important, the unauthorized users are prohibited from accessing the functionality, which is out of their privilege.

8.4 SYSTEM CONSTRAINT

The constraints of the e-Accounting system were listed as below:

8.4.1 Help File Not Provided

The administrator's module did not provide a help file that will show them how to fully utilize the system. This file also did not provide in the users' module; if there is any enquires, the users have to mail it to the administrators.

8.4.2 Cannot retrieve data from another module in e-Accounting system

This system is expected to retrieve data from account payable module to general ledger module. But the system does not have the function to retrieve data from another module.

8.4.3 Not enough security function

This system is unsecured because did not install any Secure Socket Layers that enabled the secure connection between the client and server.

8.5 FUTURE ENHANCEMENT

Some functionality of the system can be enhanced in order to improve the quality of the system. The following are the functionality that can be enhanced on this system.

8.5.1 Online Update Web Site and Approval for Registration

In the update web site function, administrator is only can be done through the server by copy files into the server in order to replace the old files. This will make the update function inefficient when the administrators want to update the web site through the Internet. In order to make it more efficiency, the upload via the Internet function can be implemented into the system. Prior to this, those administrators can upload files to the server via the Internet.

Besides that, this system also did not have the online approval for the registration of users. Administrators have to approve users' registration manual and set up database for approved users manual. This can be enhanced by enabled online approval and set up database for approved users directly through the Internet.

8.5.2 Security Socket Layers

This system can be more secure by having Secure Socket Layers that enabled the secure connection between the client and server. So that, those users will feel safer in storing their data in this system.

8.5.3 Retrieve function between two modules

Actually, general ledger module can retrieve relevant data from account payable module to generate some reports. But this system does not have this function yet. So, users have to key in those relate data into two modules manual themselves. In order to make it more users friendly, the retrieve function can be implemented into this system. Prior to this, users need not to do redundancy works.

8.6 KNOWLEDGE AND EXPERIENCE GAIN

There was a lot of knowledge gained through development of this system. The experience and knowledge gained are listed as below:

- a. Understand the concept of software development process.
- b. Learned how to implement a web site by using ASP programming language.
- c. Learned how to configure and set up an Internet Information Services 5.0 as web server.
- d. Learned how to manage a database (Microsoft Access 2000).
- e. Learned how to use various tools such as the Macromedia Dreamweaver, Microsoft FrontPage, Adobe Photoshop and Paint Shop.

8.7 CONCLUSION

Overall, the e-Accounting system has achieved its aim that is to replace with the existing manual system. The administrators and the users of this system will find it easy to use and secure. Besides that, the limitation of the system should be eliminated. After implemented the future enhancement proposal, this system will be more efficient and effective.

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