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WEB WORDPRO

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Abstract

Web WordPro is a Web based application that allows word processing via World Wide Web. The goal of the project is to develop a word processing program that is similar to Notepad or WordPad but the program is applied on the Internet platform. The motivation of the project is the Web WordPro is feasible for implementation because of Web allows widely distribution of information, to a wide audience at a low cost. Almost seven months is allocated to complete the project.

Literature review has been carried out on the information that are related to Web and word processing. Web WordPro will be developed using Active Server Pages 3.0 (ASP) due to it ease of use and easy to learn. The waterfall model was adopted throughout the development of the project.

There are two main module included in the system. They are login module and word processing module. However, each of the module contains sub modules and other functions. Login module is to control unauthorized access and word processing module allows editing, text formatting and printing.

Everyone can access to the system at any places and any times. It can help us to save money and to vary the uses of Internet.

Acknowledgement

Firstly, I would like to thank the Faculty of Computer Science & Information Technology, University Of Malaya for giving me an opportunity to carry out a thesis.

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Last but not least, to my fellow friends and course mates for their encouragement and their helping hands whenever I faced problems.

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Chapter 1

Introduction

CHAPTER 1 INTRODUCTION

1.1 Project Overview

The world of computers and information processing is growing rapidly. At the center of this amazing growth is World Wide Web, also known as the Web and WWW. Web-based application has become more and more advantage and sophisticate. This project is also an example of Web-based application.

Web WordPro is an on-line application that allows word processing and document management in the World Wide Web (WWW). It is a user-friendly system and designed to create documents that combine text with graphics in the WWW. Besides, those documents that have created also can publish it electronically on paper and store it in related directories. Any Internet users can access to the Web sites and allowed to do word processing such as editing, typing, storing and deleting. The user can just enter text by typing with his keyboard.

The purpose goal of the project is to develop a word processing program that is similar to Notepad or Wordpad but the program is applied on the Internet platform. This is meaning that although there is no any word processing program in the user's computer, users still be able to do word processing by just access to the related Web

sites. Web browser such as Microsoft's Internet Explorer and Netscape Communicator are used to view or navigate the Web.

One of the benefits of the system is to vary the uses of the Internet. It also provides features such as efficiency, accuracy, flexibility, user-friendly and system performance.

1.2 Motivation for the Project

Recently, Internet and the Web become a part of daily life for many people. Million of people and thousand of business around the world are racing to get connected to the global Internet and the World Wide Web (WWW). And the WWW is growing at the phenomenal rate of 50 to 100 new sites per week. It is because of Web is the most powerful and least expensive medium to publish your own work; no other medium empowers the individual like the Web. Another compelling reason to be on Web is that the Web allows for the distribution of information over a wide area, to a wide audience at a low cost (compared to a WAN).

A Web site provides the world with a graphical interface to information that you have to offer. Some companies are using the Web to deliver 24-hour customer service. Some use the Web to provide electronic software distribution, advertise job openings, or sell goods and services. Some places run Web sites to collect data from remote computers, such as large-scale research projects or international sales forces. Some companies use the Web internally to publish their employee handbook or

provide an electronic suggestion box. Even many of the government's departments also create their own Web pages. As a result, the Internet users can get many information and various facilities via World Wide Web. However, there are no any Web sites that allow word processing.

We are not hesitates that actually there are many powerful word processing tools nowadays. Notepad, WordPad, Microsoft Words and Lotus WordPro are the popular words processing tools currently. Unfortunately, the user can use the tools if only they install the application in their computer. The cost for the packages and licensing is expensive and not afforded by everyone. Therefore, Web WordPro not only varies the uses of Web and choices in choosing the words processing tools, but also money saved.

In conclusion, Web WordPro is definitely feasible for implementation with the following reasons:

1. Web allows for the distribution of information over a wide area, to a wide audience at a low cost (compared to a WAN) as well as low hardware cost. Therefore, it is wide to develop a Web-based words processing system.
2. Application can be acquired easily through anywhere. The implementation of Wireless Application Protocol (WAP) in mobile phone may encourage the development of the Web-based words processing system.

1.3 Objectives

An objective is a measurable goal we want to accomplish. Below are the objectives of the project:

1. To investigate into current tools to develop effective Web-based word processing system and produce research documents.
2. To study and investigate into the Web designs architecture.
3. To investigate into the techniques and skills to analyze requirements and produce functional specifications.
4. To design, implement and test the units of the system.
5. To produce a project report containing all of the relevant investigation and decisions.

Besides, the objectives of the system that is developed are as below:

1. To allow word processing on World Wide Web effectively.

   The effectiveness will be measured in the aspect of efficiency, accuracy, flexibility, user-friendly and system performance.

2. To explore various techniques in word processing via World Wide Web.

   The techniques that will be included are typing, text editing, storing and deleting

3. To vary word processing tools and the uses of Internet.

   There are more choices for us to choose the most suitable word processing tool to accomplish our works.

1.4 Scope

System scope determines the overall techniques in word processing for the system. The following system scopes are established to ensure the system meet the project requirements. The system should:

- Enable the user to enter the text by typing with the keyboard.
- Enable the user to store the documents in related directories.
- Enable the user to delete the documents from the related directories.
- Enable the user to do text editing via World Wide Web.
- Enable the user to print documents on paper.
- Be user-friendly by providing graphical user interface and on-line help.
- Implement network authentication, user password is needed to protect unauthorized access to the database.
- Users are allowed changing the password.

The intended users of this system are refers to all the Internet users that are register to use this system. The system will be developed in English because this language is an international language and is more convenience to most of users.

1.5 Project Schedule

In order to accomplish the project in time and achieve the objectives, the project is planned carefully and finally come out Gantt chart as below. Basically, seven months is allocated to complete this project. In addition, this project planning is divided into eight phases.

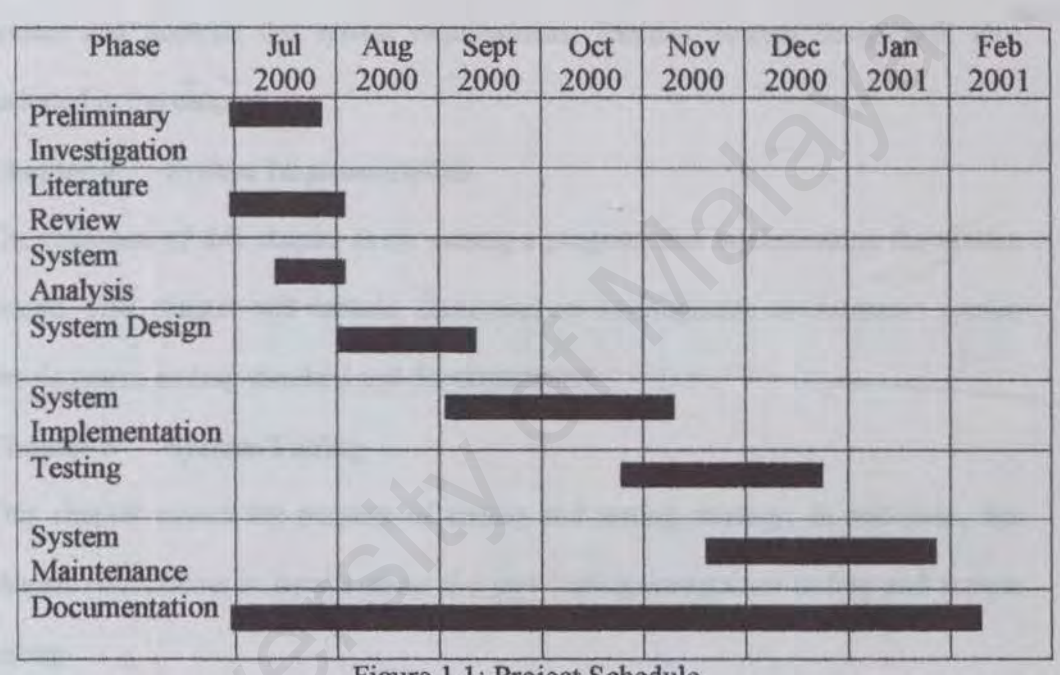

Figure 1.1: Project Schedule

1.6 Chapter Overview

This report is further divided into chapter as below:

Chapter 1 Introduction

This chapter serves as an introduction to the entire report. The overview, motivation, scope, objectives and project schedule are included in this chapter.

Chapter 2 Literature Review

This chapter summarizes the research done and contains relevant information for project development. Mainly, it will consist of discussion on the World Wide Web and the characteristic of word processor. It also includes the synthesis of the project.

Chapter 3 Methodology and System Analysis

This chapter will involve and discuss the methodology that will be used to develop a system and analysis the system requirements. Besides, system design will also included in the chapter.

Chapter 4 System Implementation

The emphasis of this chapter is on writing a program that implementing the system design. This chapter will include discussion on development environment, system development, coding standard and documentation.

Chapter 5 System Testing

This chapter covers the purpose of testing and testing strategy. In additions, this chapter will discuss in details about the unit testing, integration testing and system testing.

Chapter 6 Evaluation and Conclusion

This chapter will focus on system strengths, limitation, future enhancements, problems encountered and solution for the system. Finally, conclusion of the project will also included in this chapter.

Chapter 2

Literature Review

CHAPTER 2
LITERATURE REVIEW

2.1 Information Gathering

In order to ensure the success in a software system development, a careful planning and research are essential. Therefore, in developing this project, research has been conducted in several related areas to gather the prerequisite information. The information is gathered through net surfing, reading on books, references, journals, newspapers and magazines. Besides, advises from supervisor and opinion from friends are also playing an important role to make this project successful.

2.2 Definition of Web WordPro

Web WordPro can define as word processing in Web. Web also known as World Wide Web and WWW. The World Wide Web is a global, seamless environment in which all information (text, images, audio, video, computational services) that is accessible from the Internet can be accessed in a consistent and simple way by using standard set of naming and access conventions [1]. In other words, World Wide Web is described as a global, interactive, dynamic, cross-platform, distributed, graphical hypertext information system that run over the Internet. The meaning of 'WordPro' is words processing.

Words processing is a series of actions, changes and methods to produce a character, word, statement or paragraph.

2.3 Basic Characteristic of Word Processing

Documents

Any word processors can create documents. Basically, each document can contain text. Some word processors also support objects such as graphics, sounds, field, hyperlinks or shortcuts to other documents. Besides, word processor allows you to save and view documents. Each letter of text placed in a document is called character and documents can divide into paragraphs.

Text Editing

You can enter text by typing with your keyboard, and you can also insert selections of text or whole files into a document. Word processor provides some features that make correcting, editing, and changing your text as easy as possible. They are copying, deleting, cutting and pasting.

Text Formatting

Word processor allows users to set the spacing, alignment, or indentations of text. Besides, the user can choose the font, font size, and style of type used to display it in some word processors.

Printing

Word processor provides printing features. The user can print the documents electronically on paper. Some word processor do allows page setup before printing.

Interfaces

Almost all word processor are graphic user interfaces and ease of use.

Help module

It is used to guide user when using the relative word processor. Its also contains information about the word processor itself. Some word processor have an animation picture to act as assistant and giving advises to the user.

2.4 World Wide Web

The World Wide Web is an open-ended information system designed specifically with ease of use and document interchange in mind. Tim Berners-Lee and others initially conceived the Web at CERN. The scientists at CERN needed access to a wide variety of information on many different, distributed, computers. Berners-Lee had this idea of universal readership, which is that any client should be able to read any information. Berners-Lee developed the basis ideas, which others have since added to [1]. Then those involved agreed to work by a common set of principles:

- There would be no central control. The Web works because people work within the agreed-to-guidelines. As part of this the Web ethics is that anyone can publish, and anyone (who is authorized) can read information.

- Built into the mechanisms is support for format negotiation. Web clients tell servers what formats they can handle, and Web viewers allow basic browsers to use different formats.
- All web servers would use the same protocols/ mechanisms…
    - Http, a fast, stateless, extensible transport mechanism would be used to communicate within the Web.
    - Httpd, or http daemons, would be the base Web server – receiving messages and providing data as requested.
    - URLs (Universal Resource Locator) would be used for network-wide addressing.
    - All Web browsers would use the same basic language – Hypertext Markup Language HTML.

2.4.1 Detail descriptions on the World Wide Web

The Web is a hypertext information system

The idea behind hypertext is that instead of reading text in a rigid, linear structure (such as a book), you can skip easily from one point to another. You can get more information, go back, jump to other topics, and navigate through the text based on what interest you at the time. Hypertext enables you to read and navigate text and visual information in a nonlinear way based on what you want to know next [2].

That's just what the World Wide Web is: more information than you could ever digest in a lifetime, linked together in various ways, out there on the Net, available for you to browse whenever you want. It's big, and deep, and easy to get lost in. But it's also an immense amount of fun.

The Web is graphical and easy to navigate

One of the best parts of the Web, and arguably the reason it has become so popular, is its ability to display both text and graphics in full color on the same page. Before the Web, using the Internet involved simple text-only connections. You had to navigate the Internet's various services using typed commands and arcane tools. Although there was plenty of really exciting information on the Net, it wasn't necessarily pretty to look at.

The Web provides capabilities for graphics, sound, and video to be incorporated with the text, and newer software includes even more capabilities for multimedia and embedded applications. More importantly, the interface to all this is easily navigable-just jump from link to link, from page to page, across sites and servers.

The Web is cross-platform

The World Wide Web is not limited to any one kind of machine, or developed by any one company. The Web is entirely cross-platform. Cross-platform means that you can access Web information equally well from any computer hardware running any operating system using any display.

The Web is distributed

The Web is successful in providing so much information because that information is distributed globally across thousands of Web sites, each of which contributes the space for the information it publishes. You, as a consumer of that information, go to that site to view the information. When you're done, you go somewhere else, and your system reclaims the disk space. You don't have to install it, or change disks, or do anything other than point your browser at that site.

Each Web site, and each page or bit of information on that site, has a unique address. This address is called a Uniform Resource Locator, or URL. When someone tells you to visit their site at http://www.coolsite.com/, they've just given you a URL. You can use your browser (with the Open command, sometimes called Open URL or Go) to enter in the URL (or just copy and paste it).

The Web is dynamic

Because information on the Web is contained on the site that published it, the people who published it in the first place can update it at any time. If you're browsing that information, you don't have to install a new version of the help system, buy another book, or call technical support to get updated information. Just bring up your browser and check out what's up there.

If you're publishing on the Web, you can make sure your information is up to date all the time. You don't have to spend a lot of time releasing updated documents. There is no cost of materials. You don't have to get bids on number of copies or quality of output. Color is free. And you won't get calls from hapless customers who have a version of the book that was obsolete four years ago.

Web browsers can access many forms of Internet information

Before the Web became as popular as it is now, to get to these different kinds of information you had to use different tools for each one, all of which had to be installed and all of which used different commands. Although all these choices made for a great market for "How to Use the Internet" books, they weren't really very easy to use.

Web browsers change that. Although the Web itself is its own information system, with its own Internet protocol (HTTP, the Hypertext Transfer Protocol), Web browsers can also read files from other Internet services. And, even better, you can create links to information on those systems just as you would create links to information on Web pages. It's all seamless and all available through a single application.

The Web is Interactive

Interactivity is the ability to "talk back" to the Web server. More traditional media such as television isn't interactive at all; all you do is sit and watch as shows are played at you. Other than changing the channel, you don't have much control over what you see.

The Web is inherently interactive; the act of selecting a link and jumping to another Web page to go somewhere else on the Web is a form of interactivity. In addition to this simple interactivity, however, the Web also enables you to communicate with the publisher of the pages you're reading and with other readers of those pages.

As time goes on, the Web becomes less of a medium for people passively sitting and digesting information (and becoming "net potatoes") as it is a medium for reaching and communicating with other people all over the world.

2.4.2 The relationship between the Web and the Internet

World Wide Web is not the Internet, and vice versa. They are closely related, though. The basic for the Web is the Internet. The Web is built on the Internet, and makes use of many of the mechanisms the Internet provides [1].

The Internet is a network in every sense of the word [3]. The Internet is the physical aspect – computer, network, and service. It allows us to connect to

thousand of other computers across the world [1]. This "network of computer networks" now includes a community that literally spans the globe and counts among its members nearly every country in the world. But it doesn't mean that those systems users' can look at, and understand, the information there.

The Web, however, is not only a network, it is also a distributed set of communication application and system software [3]. The Web is an abstraction and common set of services on top of the Internet. It is the set of protocols and tools that let us share information with each other. The Web was developed with the concept of "universal readership" which means any participating systems should be able to read the information on any connected system using a common set of tools [1].

2.4.3 Overview of Web mechanisms

We have already discussed what the web is. Now we'll look at how the Web works. The Web has a simple architecture. Clients send messages to Web servers, which are referred to as HTTP daemons (or HTTPD).

The httpd servers are responsible for sending the requested information to the client (also known as browsers), who is then responsible for presenting the document to the user.

Since already mention as above, client/server conversations take place using HTTP on the Web. The server is the computer that serves as a repository of information or provides a service when the client computer makes a request for the information or service. Sometimes the terms are arbitrary because both computers can provide information for, and make requests of, each other. When a client requests to view a document on a server, the computers might actually carry out dozens of low-level client/server commands using protocols such as TCP/IP (more about that later).

Typically, there are many more clients than there are servers. A server is somewhat analogous to a library—and many residents (clients) can be served by one community library.

Web Browsers

A Web browser is the program to view pages and navigate the World Wide Web. Web browsers are sometimes referred to as Web clients or other fancy names ("internet navigation tools"), but Web browser is the most common term [2].

A wide array of Web browsers is available for just about every platform you can imagine, including graphical-user-interface-based systems, and text-only for dial-up UNIX connections [5].

Graphical: Text, images, audio, and video are retrievable through a graphical software program such as Netscape Navigator and Internet Explorer. These browsers are available for both Windows-based and Macintosh computers. Navigation is accomplished by pointing and clicking with a mouse on highlighted words and graphics. The current version of Navigator is contained within a suite of programs called Netscape Communicator. Although the Web is not restricted to using graphical-based client program (browsers), there are by far the most popular in use on the Web today [3].

Text: Lynx is a browser that provides access to the Web in text-only mode. Navigation is accomplished by highlighting emphasized words in the screen with the arrow up and down keys, and then pressing the forward arrow (or Enter) key to follow the link. This browser is available through your personal VAX or UNIX account on campus.

What the browser does most often, however, is deal with formatting and displaying Web documents. Each Web page is a file written in a language called HTML (Hypertext Markup Language) that includes the text of the page, its structure, and links to other documents, images, or other media. The browser takes the information it gets from the Web server and formats and displays it for your system. Different browsers may format and display the same file differently, depending on the capabilities of that system and the default layout options for the browser itself.

Web Servers

To view and browse pages on the Web, all you need is a Web browser. To publish pages on the Web, most of the time you'll need a Web server. A Web server is the program that runs on a Web site and is responsible for replying to Web browser requests for files [2].

When you use a browser to request a page on a Web site, that browser is making a Web connection to a server (using the HTTP protocol). The server accepts the connection, sends the contents of the files that were requested, and then closes the connection. The browser then formats the information it got from the server.

On the server side, many different browsers may connect to the same server to get the same information. The Web server is responsible for handling all these requests.

Web servers do more than just deposit files. They are also responsible for managing form input and for linking forms and browsers with programs such as databases running on the server.

Just like with browsers, many different servers are available for many different platforms, each with many different features and each and ranging in cost from free to very expensive.

Hypertext Markup Language (HTML)

HTML is a simple subset of SGML, the Standard Generalized Markup Language. (Specifically, HTML is what is called a DTD, a Document Type Definition, which defines precisely those descriptive elements-the-syntax-needed for a specific type of document: in this case, a hypertext document). As a subset of SGML, HTML is not concerned with the format (i.e. appearance) of a document; instead, it describes a document's logical structure, leaving it up to the client side-the browser-to render the document as desired by the user.

The HTML is the primary language of documents served by Web servers. It provides a rich and growing set of tags that are embedded in documents to specify how the content should be formatted on a page. These tags also enable you to establish hypertext links from content in one document to content in other documents (which can be local or on a server anywhere in the world). HTML also provides mechanisms for invoking programs and services on Web servers.

Hypertext Transport Protocol (HTTP)

HTTP is a lightweight stateless networking protocol that uses minimal network bandwidth. In addition, its simplicity makes it easy to design and implement an HTML server or client (browser). In additions, HTTP is a TCP/IP-based protocol used by Web servers and browsers that define the manner in which they communicate over the Web. As a result, there is a plethora of public domain or

free software products available to built Web systems, as well as an increasing number of commercial solutions.

Retrieving Documents On The Web: The URL

URL stands for Uniform Resource Locator. A URL is a pointer to some bit of data on a Web, be it a Web document, a file on FTP or Gopher, a posting on Usenet or e-mail [2]. The URL specifies the Internet address of a file stored on a host computer connected to the Internet. Every file on the Internet, no matter what its access protocol, has a unique URL. Web software programs use the URL to retrieve the file from the host computer and the directory in which it resides. This file is then displayed on the monitor connected to the user's local machine. In short, the URL provides a universal, consistent method for finding and accessing informative.

URLs are translated into numeric addresses using the Internet Domain Name System (DNS). The numeric address is actually the "real" URL. Since numeric strings are difficult for humans to use, end users employ alphanumeric addresses. Once the translation is made, the Web server can send the requested page to the user's Web browser.

2.4.4 The Important of World Wide Web

There are four reasons to explain the important of Web [1].

1. ***The ability to easily deliver information in any format, to/from a wide range of computing platforms.***

   - On the Web, the users can access information from many diverse sources – competitor, customers, technology provider, international universities, financial institutions, and many other places. This information is on many different computing platforms. The mechanisms of Web insulate us from needing to know or deal with this – it takes care of getting, moving and presenting the information we need.
   - Many companies are also using the Web as a mechanism to share information within the enterprise. Several large companies have hundreds of internal servers, and the number is growing rapidly.
   - The Web has become a standard method of providing distributed information to many different platforms.

2. ***Its' potential as a client-server environment.***

   - Web browsers provide a tested client upon which more organizations are building (or converting) client-server applications. Testing time is greatly reduced, and the application will be available on many platforms with no extra effort.

3. ***Simplified access to the Internet***

- The Internet provides access to mail, interactive conferences, network news, and is rich with information resources but the Internet can be difficult to use and understand. The World Wide
- Web makes it easier to use the Internet:
    - ➢ It provides a graphical interface (on many platforms)
    - ➢ It supports multimedia (sound, video, as well as graphics)
    - ➢ It uses the same tools as the Internet, but hides the ugly details.
    - ➢ It is based on standards/conventions, so sharing is much easier than before
    - ➢ All this makes it easier to access information
    - ➢ Makes it easier to provide information

4. The wide and rapidly growing amount of information available.

- The volume of information available is huge, and growing rapidly. Many of the world's major companies, universities and research organizations are on the Web today, with many others joining daily.
- The Internet is growing at a phenomenal rate (no one knows exactly how big it is, but as of May 25, 1996 Internet Solutions estimated there were 59,628,024 people on the Internet, and an estimated 304,177 World Wide Web sites on the Internet.

2.5 Analysis on existing word processor

Although there are number of word processor, only two of them have been chosen and evaluated for further details and surveys in order to decide the project synthesis. These tools are Notepad and WordPad.

Notepad and WordPad are chosen because they are very simple, yet adequate word processor that comes packaged with Microsoft Windows 95/98/2000. Each provides basic text editing capability, but you may have tasks that are better suited for one editor over the other.

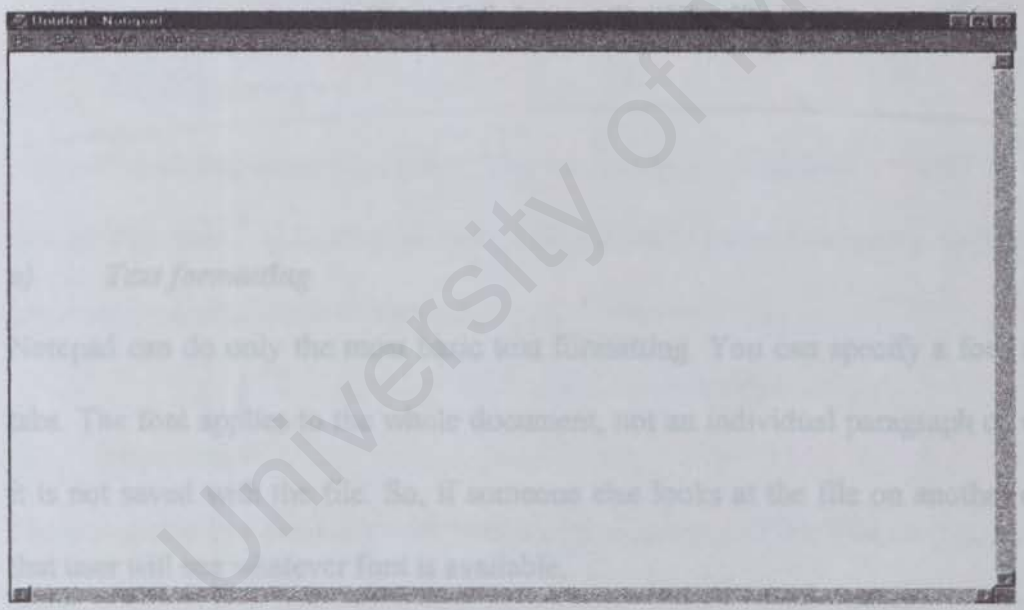

Figure 2.1: Layout For Notepad

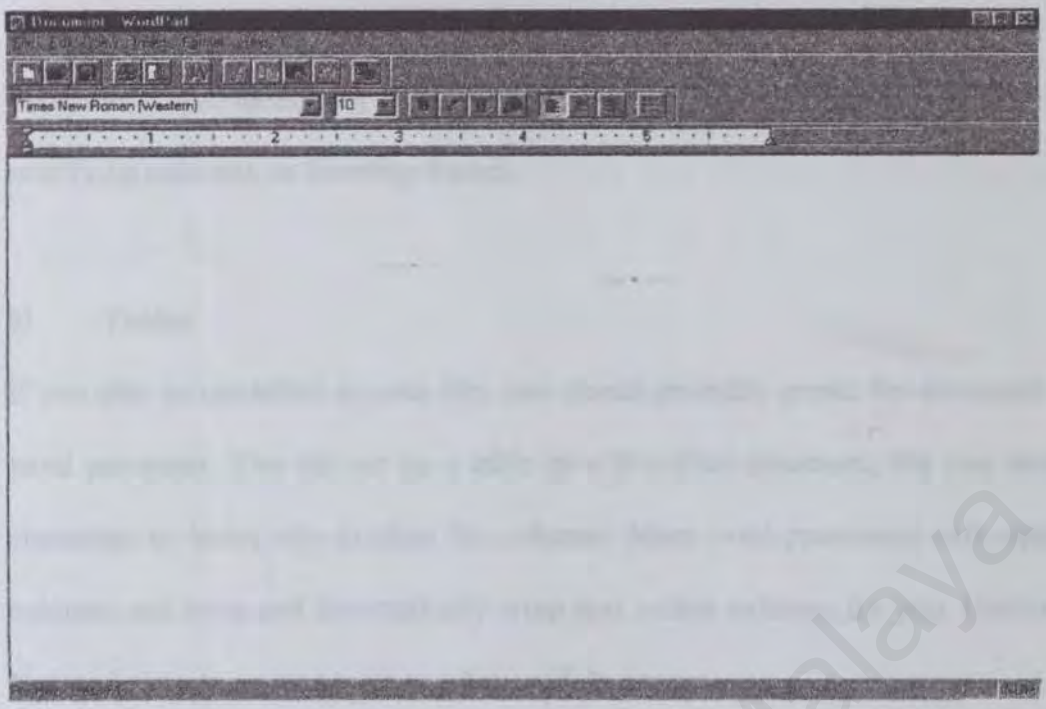

Figure 2.2: Layout For WordPad

a) Text formatting

Notepad can do only the most basic text formatting. You can specify a font and insert tabs. The font applies to the whole document, not an individual paragraph or word, and it is not saved with the file. So, if someone else looks at the file on another computer, that user will see whatever font is available.

WordPad lets you create more complex documents, giving you most of the capability of a word processor. You can change the font for the entire document or just a word within it. With the click of a button, you can insert bullets into text in WordPad or align a paragraph to the right or left. All of this formatting is saved with your document, so no

matter who opens it, it will appear as you created it. Your word processor will provide even more text formatting options, such as automatically numbering lines of text, specifying columns, or inserting frames.

b) Tables

If you plan to use tables in your file, you should probably create the document using a word processor. You can set up a table in a WordPad document, but you must count characters or insert tabs to align the columns. Most word processors will separate the columns and rows and automatically wrap text within columns for you. Unfortunately, Notepad can not set up a table in a Notepad document.

c) Graphics

Notepad does not support graphics. You can insert graphics into a WordPad document and modify them by linking or embedding them in your document. Almost all word processors provide graphics support.

d) Page setup

Basic page setup is available with both Notepad and WordPad. You can set margins, add headers and footers, and orient your documents to print either vertically or horizontally. Your word processor may offer more options.

e) Size documents

The more elaborate the document, the longer it will take to open and modify. Notepad and WordPad are both compact programs that start and open files quickly, best used with smaller files.

Word processors are intended for larger, more elaborate documents. A word processor gives you more control over your documents than Notepad or WordPad does. Often you can add footnotes, annotations, and even generate a table of contents for your documents. Many word processors offer macros and templates to help you automate repetitive tasks, such as typing your name or formatting headings. Usually word processors will automatically check the spelling and grammar in your document.

f) Cross-platform support

Notepad is a basic text editor that is most commonly used to view or edit .txt files, such as the Readme.txt files provided with your Windows 2000 software. Text-only files are critical if you share documents with someone using another platform like Macintosh or UNIX. WordPad also lets you save your files as a Word document, so you can modify files created in Word even if you don't have the program yourself.

g) HTML and Web pages

As more people use HTML to create Web pages or other documents, many find Notepad a simple tool for writing in HTML. Because Notepad supports only very basic formatting, you cannot accidentally save special formatting in documents that need to

remain pure text. This is especially useful when creating HTML documents for a Web page because special characters or other formatting may not appear in your published Web page or may even cause errors.

Many word processors provide plug-ins or converters to help you create HTML documents. But, if you are creating simple pages or if you want to make a few quick changes, Notepad opens files quickly. Also, Notepad shows the entire HTML tagging so you can troubleshoot your page. Not all word processors or converters make the HTML code available.

If you only need to create simple documents, Notepad is your best choice. You would need to use WordPad or another word processor for anything more complicated.

2.6 Synthesis On Project Web WordPro

After review all the relevant about the Web and word processor, several conclusion can be made.

1. There are no Web Pages allow for word processing. Most of the Web pages are used for commercial purpose, information sharing and on-line purchase.
2. Almost all the word processors are stand-alone application.
3. Most of the software for word processors is expensive.
4. Cross-platform that is supported by Notepad and WordPad is limited.
5. Almost all the word processor can do basic page setup and text formatting.

Synthesis on Web WordPro is as below:

- Web WordPro is a server-side and client-side application
- Web WordPro can be accessed easily by browser in any places at low cost
- Web WordPro allows word processing via Web
- Web WordPro provides graphical user interfaces. However, consideration will be strike between attractiveness and performance of the sites.
- Web WordPro will project an elegant and professional style in layout design and color.

	Notepad	*WordPad*	*Web WordPro (Suggested)*
Text Formatting	**Simple**	**Complex**	**Simple**
Insert Tables	**Not Available**	**Available**	**Not Available**
Graphics support	**Not Available**	**Available**	**Not Available**
Page setup	**Available**	**Available**	**Available**
Size Documents	**Small**	**Larger**	**Large**
Cross-platform support (file type)	**. txt**	**.txt, .rft, .doc**	**.txt, .rft, .doc, .html and etc.**

Table 2.1: Synthesis On Web WordPro

Chapter 3

Methodology & System Analysis

Chapter 3
Methodology and System Analysis

3.1 Project Development Methodology

There are many type of development model. The model that is used to develop the system is the 'Waterfall' model. The diagram below is the 'Waterfall' model [6].

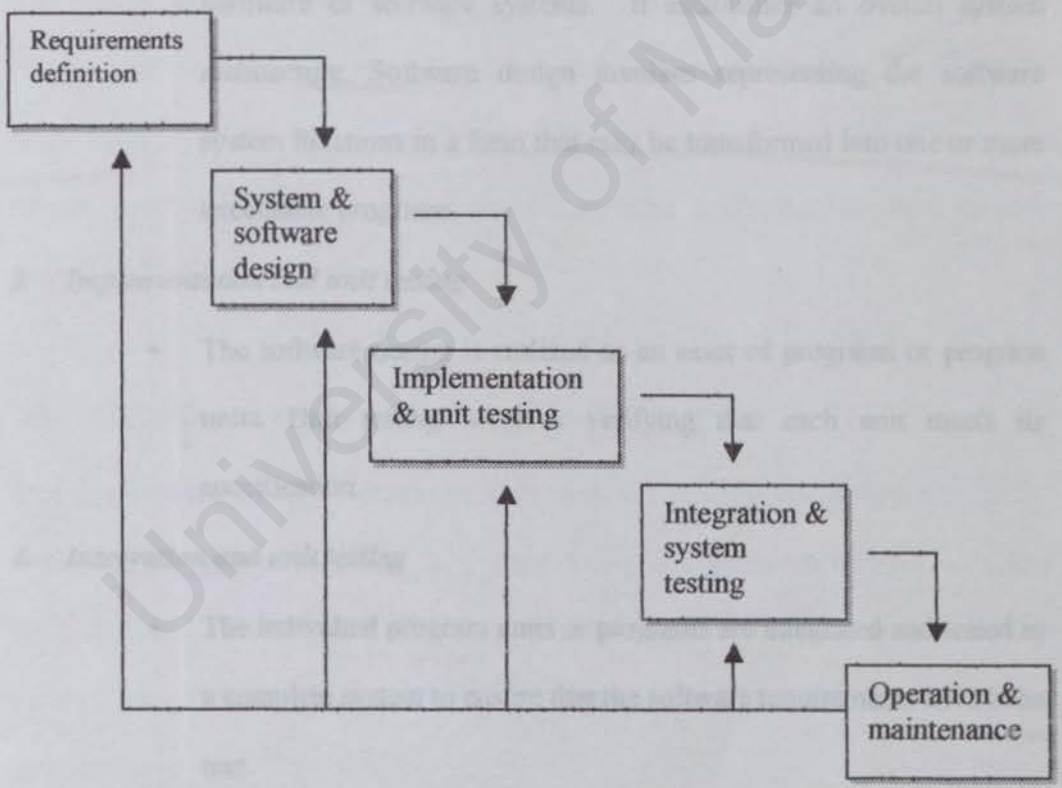

Figure 3.1: Waterfall model

There are numerous variations of this process model (which is sometimes called the software life cycle). The principal stages of the model map onto the fundamental development activities:

1. ***Requirements analysis and definition.***
    - The system's services, constrains and goals are established by conclusion with system users. They are then defined in a manner, which is understandable by both users and development staff.
2. ***System and software design***
    - The systems design process partitions the requirements to either hardware or software systems. It establishes an overall system architecture. Software design involves representing the software system functions in a form that may be transformed into one or more executable programs.
3. ***Implementation and unit testing***
    - The software design is realized as an asset of programs or program units. Unit testing involves verifying that each unit meets its specification.
4. ***Integration and unit testing***
    - The individual program units or programs are integrated and tested as a complete system to ensure that the software requirements have been met.
5. ***Operation and maintenance***
    - The system is installed and put into practical use. Maintenance involves correcting errors which were not discovered in earlier stages

of the life cycle, improving the implementation of system units and enhancing the system's services as new requirements are discovered.

In practice, these stages overlap and feed information to each other. During design, problems with requirements are identified; during coding design problems are found and so on. The software process is not a simple linear model but involves a sequence of iterations of the development activities.

During the final life cycle phase (operation and maintenance) the software is put into use. Errors and omissions in the original software requirements are discovered. Program and design errors emerge and the need for new functionality is identified. Modifications become necessary for the software to remain useful. Making these changes (software maintenance) may involve repeating some or all previous process stages [6].

3.2 Justification Of Methodology

This development model is chosen because of this good visibility. Stages are clearly defined in the project. Therefore, it is more visible and is suitable to use to develop the system proposed. Besides, flexible in time management also become one of the reasons in choosing 'Waterfall' model. Below are the justifications of the methodology:

- There are no prototyping implemented in Waterfall model. However, to build a prototype may use lots of time. Web WordPro is an individual project and may not afford to build a prototype. Because of this reason, I decided no to

build a prototype, however the system will be tested before delivery. Therefore this project will not use prototype because lack of manpower.

- Refer to the overall chapter overview. This methodology is appropriate to organize the activities in developing the project. Each activity of the model can represent by one chapter and make us easily to divide the job stream.
- Each activity of the model can end with the production of some documents. These documents make the software process visible. The information will be included in the report.
- This model is simple and understandable. Therefore special skills are not required and it reflects engineering practices. It also reduce the time spend in order to complete the project on time.
- There are many functions in this program. Each of this function will be tested. All of these functions will be integrated into a complete system.

3.3 Development Tools Considerations

Currently, there are many types of the application development tools offered in the market. Some of the application tools have been taken into consideration before deciding which tool is going to use.

In comparing Web development tools, there are few development tools that are widely used. They are Active Server Pages, Lotus Notes and Visual Basic.

Web Development Tool

3.3.1 Microsoft® Active Server Pages

Microsoft's Active Server Pages (ASP) technology provides a framework for building dynamic HTML pages, which enable Internet and Intranet applications to be interactive. ASP's are implemented using server side scripting that can be performed in any language such as Visual Basic, Microsoft's Jscript, Java or C. ASP allows interaction with ODBC compliant database on the Web server, such as Microsoft Access, Microsoft SQL Server, Oracle, Informix or Sybase. ActiveX controls can optionally be used to encapsulate functions on the client computer that interact with ASP on the server.

An Active Server Page is developed in a text file just like an HTML page. Developers can use any text editor to create an ASP. Both Netscape Navigator and Microsoft Internet Explorer browsers as well as other browsers can view ASP pages because ASP is executed on the server and delivered to the client computer as simple HTML [7].

ASP provides powerful and flexible web session management to help maintain web visitors selections.

3.3.2 Lotus Notes / Domino

Lotus Note is an environment for the development and, in conjunction with the Domino server, deployment of GroupWare applications.

Notes, with its complete integration with the Internet, provides for GroupWare applications, client/server mail, integration with desktop productivity tools, and its integration with third-party databases.

The ability of Lotus Notes is now extends access to Notes and transaction systems to the ultimate end user over the Internet. The integration of transaction systems and Notes is made possible with the advent of Domino, Lotus Development's Interactive Web Server. Domino transforms Lotus Notes into an Internet applications server, allowing and Web client to participate in Notes applications securely.

However, the performance will be infected when the system is too complex and the workload is heavy.

3.3.3 ActiveX

ActiveX is a set of technologies that integrate software components in a networked environment regardless of the language in which they were created. This integration of components enables content and software developers to create interactive applications and Web sites easily. ActiveX is the backbone of the Active platform, enabling developers to tie together client-side and

server-side components easily. It includes the Component Object Models (COM) to enable communication between client components and Distributed COM (DCOM) to integrate components across the network. Due to ActiveX is an open technology; users can freely license it to support the Active Platform in their browser, application or operating system. In addition, vendors can participate in the enhancement of the ActiveX core technologies in the future. Besides, ActiveX technologies cover a broad range of distributed technologies, including ActiveX controls, ActiveX code components and ActiveX documents.

3.3.4 Visual Basic 6.0

Visual Basic is a programming language created in an Integrated Development Environment (IDE) [8]. Visual Basic has been positioned very nicely for Internet development. Visual Basic 6 has sharpened the focus on Internet development; it extends the ability to write server-side applications for Microsoft's Internet Information Server by introducing a project type named IIS Applications. Also, Visual Basic extends and simplifies DHTML (Dynamic Hypertext Markup Language, the language used by all Web browsers) by introducing a project type named DHTML Applications.

On the server side, users can use VBScript to create Active Server Pages (ASP) in order to create logic that enables IIS to respond to various inputs from client computers. Also, users can use Visual Basic to create custom

ActiveX components designed to work as extensions and enhancements to the IIS environment. These components are called server-side components.

Besides, users can use VBScript with server-side ActiveX components to access databases connected to the Internet server to return data to the client and can keep track of the various activities of the users accessing your server.

On the client side, users can use VBScript to make decisions about what information to send back to the server, to create animation effects, and to interact with other programs on the client computer, to name a few examples.

Database Development software

3.3.5 Microsoft Access

Microsoft Access is a fully functional RDBMS. It provides all the data definition, data manipulation, and data control features you need to manage large volumes of data. Microsoft Access makes it easy to design and construct database applications without requiring that you know a programming language.

Access provides advanced database application development facilities to process not only data in its own database structures but also information stored in many other popular database formats. Perhaps Access's greatest strength is its ability to handle data from spreadsheets, text files, dBase files, Paradox and FoxPro databases, and any SQL database that supports the

ODBC standard [9]. This means you can use Access to create a Windows-based application that can process data from a network SQL server or from a mainframe SQL database. The main advantage of Microsoft Access is user-friendly and compatible with Visual Basic and ASP.

3.3.6 Informix –4GL

Informix-4GL enables programmer build relational database system that solves business problems quickly and easily. It is a non-procedural language and has its own relational database Informix SQL. This Informix-4GL is available for a wide variety of operating system such as UNIX, DOS, VMS and any system build with this language will run any of the operating system in different computer. Furthermore, this language is portable meaning that an Informix-GL application, written once, runs on small computers, big computers and everything between [10]. This is one of the main advantages in using this programming language as a development tool.

The limitation of this software is its only supports up to 1-gigabyte (GB) of data. The database design structured in row format, which is much different compare with other database such as Microsoft SQL, Microsoft Access where the database is structured in column format. In future, if the user needs to expand the storage in the database or convert to other database developer need to write a program to reformat the data and port to that database.

3.3.7 Microsoft SQL server

Microsoft SQL Server is the prime choice of many corporations for their relational database management system (RDBMS). This is largely due to SQL Server's tight integration with Windows NT, and its user-friendly interface. The new release of SQL Server 7.0 further reduces the cost of ownership and administrative overhead.

People are often confused regarding the differences between SQL Server and Microsoft Access. The main distinction is that MS Access is an application development tool and a workgroup database, while SQL Server is just a database. The following table should help further explain the differences [11].

	SQL SERVER	MS ACCESS
Application Development Tool	**No**	**Yes**
Workgroup Database (1-30 people)	**Yes**	**Yes**
Enterprise Database (hundreds or thousands Of users)	**Yes**	**No**
Triggers and Stored Procedures	**Yes**	**No**
Part of Microsoft Back Office	**Yes**	**No**
Part of Microsoft Office	**No**	**Yes (for some version)**

Table 3.1: Comparison between Microsoft Access and Microsoft SQL

3.4 Software Specification

3.4.1 Programming Language for Web Development

In this project, several key programming language technologies were employed. These technologies were chosen for their "open" implementation capability and ease of use. They are Active Server Pages, ActiveX and Microsoft Visual Basic.

1. Active Server Pages

ASP was chosen to provide the functionality for building dynamic and interactive Web pages. It was chosen over other forms of scripting due to its simpler implementation and greater flexibility. Reasons for using ASP as Web programming language are shown below:

- *Ease of Use*

Active Server Pages are plain HTML pages with ASP code embedded into them enclosed in <% and %> tags. User can just place ASP files into a directory on the server with scripting or execute permissions and his ASPs are ready to run. Whenever the user needs to change something he just edits the .asp files and that's it, his changes are applied.

- *Language Independence*

ASP is a scripting engine enabling user to develop in virtually any language of his choice. The two languages available by default are VBScript and JScript (Microsoft's version of JavaScript); however, modules for Perl, Python and other languages already exist and there are virtually no limits for

support for other languages to be implemented. This enables the novice ASP developer to utilize his or her previous programming experience.

- *Short Learning Curve*

We may use our current expertise in some programming language or technology to jump into ASP in short time. Even if the user know only HTML, it will not be difficult for him to learn how to insert ASP commands into his HTML files.

- *Extensibility*

There are virtually no limits to what can be done with ASP thanks to unlimited extensibility provided via COM components. This approach, in my opinion, is a key success factor of ASP. For example, there's no way to send email using standard ASP functions but there are lots of components (both free and commercial) enabling you to do this, as well as choosing the methods and features you want implemented.

- *Tools*

Microsoft has two tools supporting ASP: their most popular WYSIWYG editor – *FrontPage*, which add value to creating ASP by adding the visual components that are missing from Visual InterDev; and *Visual InterDev*, is a development environment in which the users can create, edit, deploy and manage ASP.

2. ActiveX

ActiveX is used in the Web WordPro due to its open platform design that combines both desktop and Web technologies. It is desirable for the Web

WordPro because it is consistent and comprehensive, allowing for the writing of software components that can inter-operate, regardless of the languages used to create them.

There are various ActiveX components, controls and documents objects. Altogether, this gives ActiveX the ability to create script objects, assemble interfaces for Windows applications, allow client-server communications and coordinate transactions across multiple servers.

ActiveX components can improve the speed of execution of the application. Some of the useful functions are not available to ASP. In order to provide access to theses functions, we must write an ActiveX component that provides an interface to the ASP application. Because the ActiveX component is really a Visual Basic program, all built-in functions are available to it.

3.4.2 Microsoft Access

Microsoft Access is used as the database development tool in this project. It is a user-friendly system and compatible with ASP and Visual Basic. Microsoft Access is an application development tool and workgroup database, compare to Microsoft SQL, which is just a database. Microsoft Access is needed to create a simple member profile for this system.

In summary, among the software used to develop this system are:

Software	Description
Microsoft Windows 98	Operating System
Active Server Pages	Web development tool
Microsoft Access 2000	Database approach
Microsoft Visual InterDev	Web coding
Microsoft FrontPage 2000	Web editor and developer
Microsoft Personal Web Server	Web Server
Adobe Photoshop version 5.0	Image editor and designer
Microsoft Internet Explorer 5.0	Web browser

Table 3.2: Software Specifications

3.5 Hardware Specification

A few hardware specifications are required to run this system. They are:

Minimum Requirements	Actual Development Environment
166 MHz Processor	Pentium III Processor
16 MB Ram	64 MB Ram
At least 50 MB free Hard Disk Space	More than 200 MB
SVGA graphics adapter	24 bit true color SVGA
28 K modem connecting	56 K internal/external modem connecting
1.44 MB floppy disk drive	1.44 MB floppy disk drive

Table 3.3: Hardware Specifications

3.6 Functional Requirement

A functional requirement describes an interaction between the system and its environment [12]. For example, to determine functional requirements, what states are acceptable will be decide for the system to be in. Further, functional requirements describe how the system should behave given certain stimuli. In Web WordPro, basically there are two main modules: login module and word processing module.

3.6.1 Login Module

Every user that is access to the Web sites is required to login. The purpose of the login module is to control the unauthorized access. There are three functions in this module: login function, registration function and change password function.

a) Login function

The user needs to input the login identity and password in the textbox in order to login to the system. This function will control unauthorized access. A login message box will be given to the members who are successfully login into the system.

b) Registration

New user who wants to be a member can fill in the registration form. It function allows on-line registration. We might need member's details because we can e-mail to the members if there are any news about the system. Each of the users can choose their own identity and password during the registration.

c) Change password

Users are not forced to change their password, they may change it at any point of time. However, it is advised that the password of the users in the database needs to be changed frequently for security reasons.

3.6.2 Word Processing Module

After the user successfully login to the system, the user will automatically link to the word processing module. This module is the root for the system. This is contains six sub modules and each of the sub module consists of few functions. These functions are divided into different job in order to accomplish the works.

a) File menu

The purpose of this menu is to create documents and to store the documents in related directories. The default size for the document is A4 size and the default font is Times New Roman. There are five functions in such menu and these function are shown as below:

1. **OPEN** – To view the existing documents or files
2. **NEW** - To create a new document
3. **SAVE** - To store the latest changes of the document
4. **SAVE AS** - To store the document in new name
5. **EXIT** - Exit program

b) *Edit menu*

This menu allows user to edit the words, lines and paragraphs for the documents. There are five functions and the functions are shown as below:

1. **COPY** - To duplicate the highlight character
2. **DELETE** - To erase the highlight character
3. **CUT** - To move the Highlight character
4. **PASTE** - To put the character where the cursor
5. **SELECT ALL**- To highlight all the characters in the documents

c) *Print menu*

This menu is used to print the documents electronically on the paper.

1. **PRINT** - Start printing the document
2. **PRINT PREVIEW** - View the documents

d) *Format menu*

This menu is focus on formatting characters that are insert into the textarea.

1. **FONT** - Setting font type in the textarea
2. **ALL LOWER CAPS** - Converts all textarea entry to lower case
3. **ALL UPPER CAPS** - Converts all textarea entry to upper case
4. **CLEAN CAPS** - Keep users from typing in all caps, but still allow for capital letter strings for things like initials (JPC) or uppercase abbreviations (NASA or WWII). The user can easily

change the number of capital letters allowed in a row after which the capital letter string is converted to lowercase.

5. **WORD COUNT** - To count number of words that are entry into the form.

e) Help menu

Help menu shows a guideline to the user how to work with Web WordPro. Besides, it also contains details about the Web WordPro itself. User can access to this section by clicking to the help button.

3.7 Non Functional Requirement

A nonfunctional requirement describes a restriction on the system that limits the choices for constructing a solution to be problem [12]. It is essential definition of system properties and constraints under which a system must operate.

3.7.1 User friendly

The user can perform various tasks by clicking a mouse-type instrument on the hypertext or image. With the suitable and meaningful icon usage, the users can easily use the application with more confidence. The available of help files will help the users when the users unable to proceed.

In order to make the system become user friendly, the system must display an error message to inform the users if an error occurs such as invalid password, invalid length, invalid data and even an invalid operation.

3.7.2 Response time

The response time to retrieve the search results must be within a reasonable interval time. This means that information should be available to users at any point in time.

3.7.3 Security

Web WordPro security function is to be able to supply and provide the mechanism authentication and authorization security. The system is able to authenticate the user or entity and authorize access.

3.7.4 Performance efficiency

Besides fast response time, others performance also have to be considered. They are efficient in input, output and storage of data. All the input and output have to be accurate. The data also have to be stored in correct places and retrieved from correct directories. The capacity of storage must be control.

3.8 System Design

Design is a creative process of transforming the problem into solution. A design specification describes the features of the system, the components or elements of the system and their appearance to users. After analyst the functional requirements, Web WordPro will include the design issues like system functionality design, user interface design and database design.

3.8.1 System Functionality Design

The system functionality design is based on the requirements that have been specified in functional requirement. This design focuses on the system structure design and data flow design.

The system consists of two main modules. They are login module and word processing module. The system structure chart will base on these functionality modules.

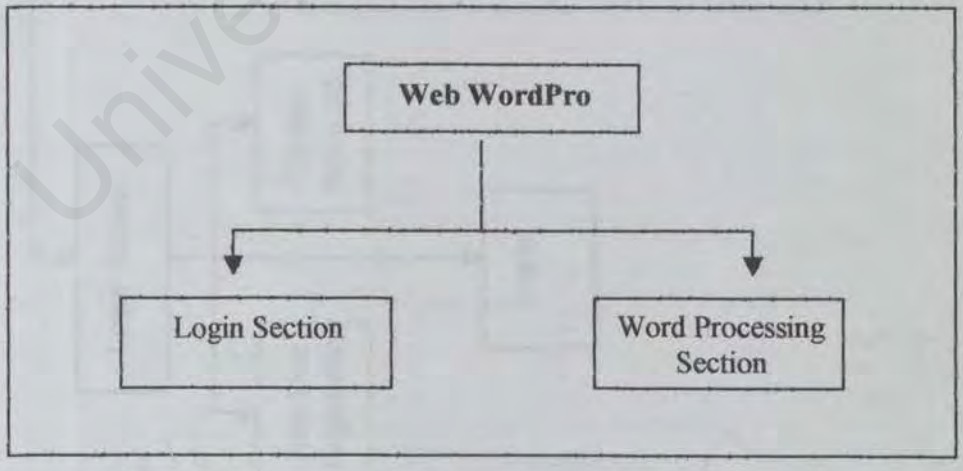

Figure 3.2: Structural Diagram for Web WordPro

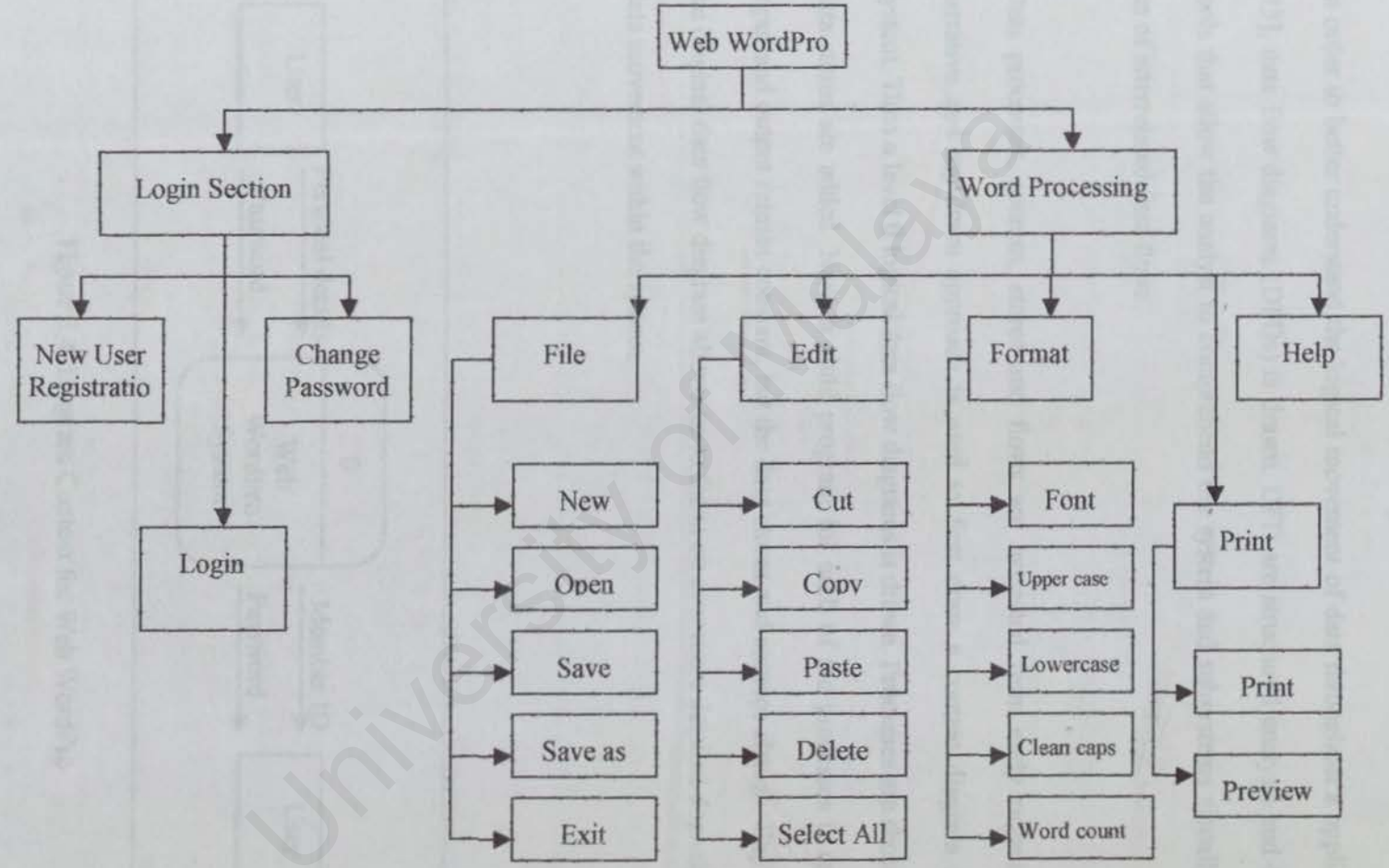

Figure 3.3: User Structure Chart

3.8.1.1 Data Flow Diagram (DFD)

In order to better understand the logical movement of data throughout a application [13], data flow diagrams (DFDs) is drawn. DFD are structured analysis and design tools that allow the analyst to comprehend the system and subsystems visually as a set of interrelated data flows.

Data processes, sources, stores and flows are extracted from early organization narrative and top-down approach is used to first draw a context diagram of the system. Then a level 0 logical data flow diagrams is drawn. Processes are shown and data stores are added. Next, a child program for each of the processes is created. Input and output remain constant, but the data stores and sources change. Exploding the original data flow diagram allows us to focus on ever more detailed depictions of data movement within the system.

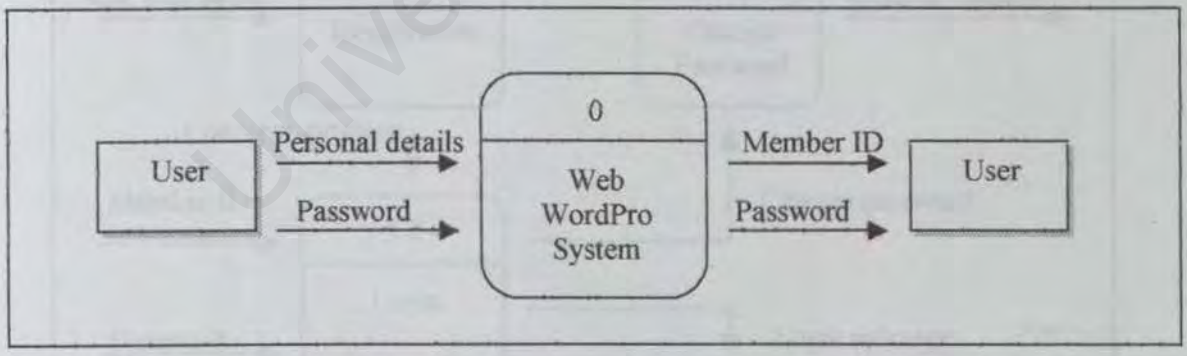

Figure 3.4: Diagram Context for Web WordPro

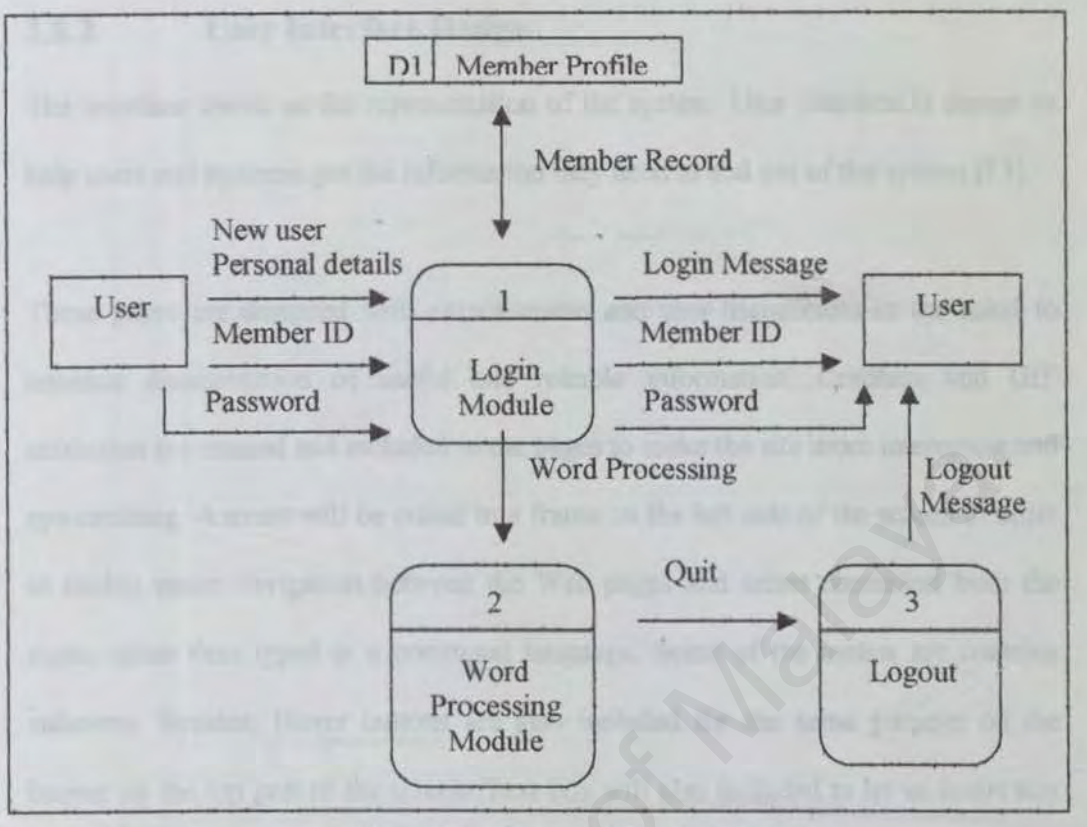

Figure 3.5: Diagram 0 for Web WordPro

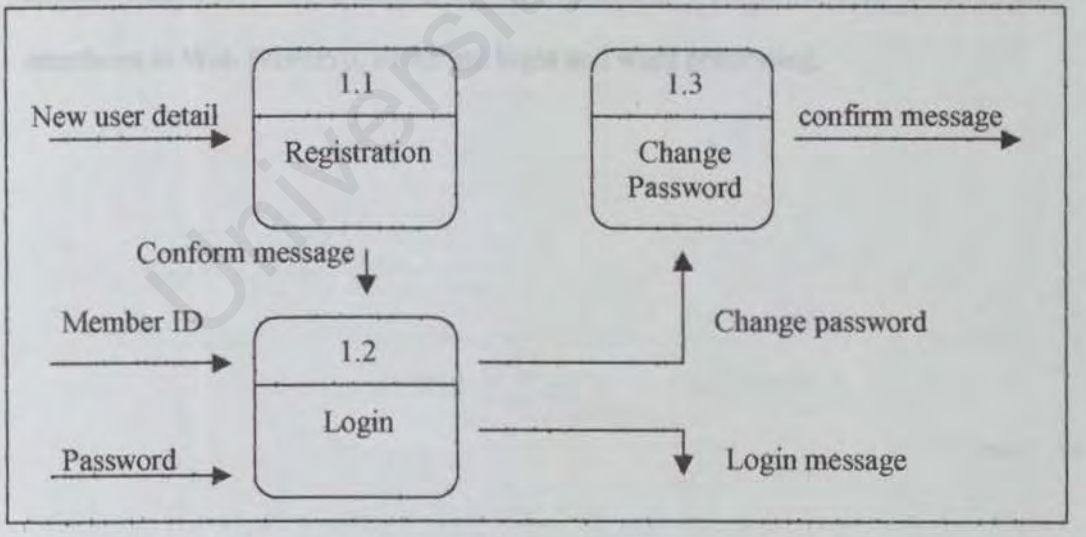

Figure 3.6: Child Diagram for process 1

3.8.2 User Interface Design

The interface stands as the representation of the system. User interface is design to help users and business get the information they need in and out of the system [13].

These pages are designed with attractiveness and user-friendliness in the mind to enhance dissemination of useful and reliable information. Graphics and GIF animation are created and included in the pages to make the site more interesting and eye catching. A menu will be crated in a frame on the left side of the screen in order to enable easier navigation between the Web pages and select command from the menu rather than typed in a command language. Some of the menus are contains submenu. Besides, Hover buttons are also included for the same purpose on the banner on the top part of the screen. Text box will also included to let us insert text by typing with the keyboard. A pointing device such as a mouse is used for selecting choices from a menu or indicating items of interest in a window. There are two main interfaces in Web WordPro, which are login and word processing.

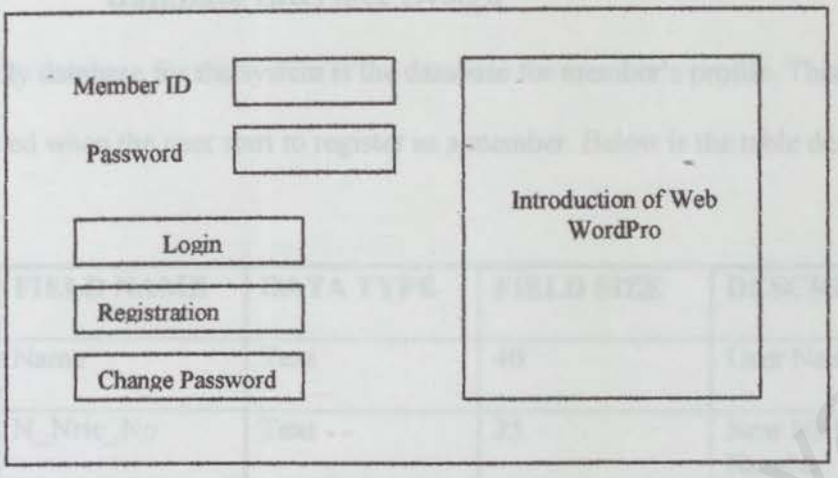

Figure 3.7: User Login Screen

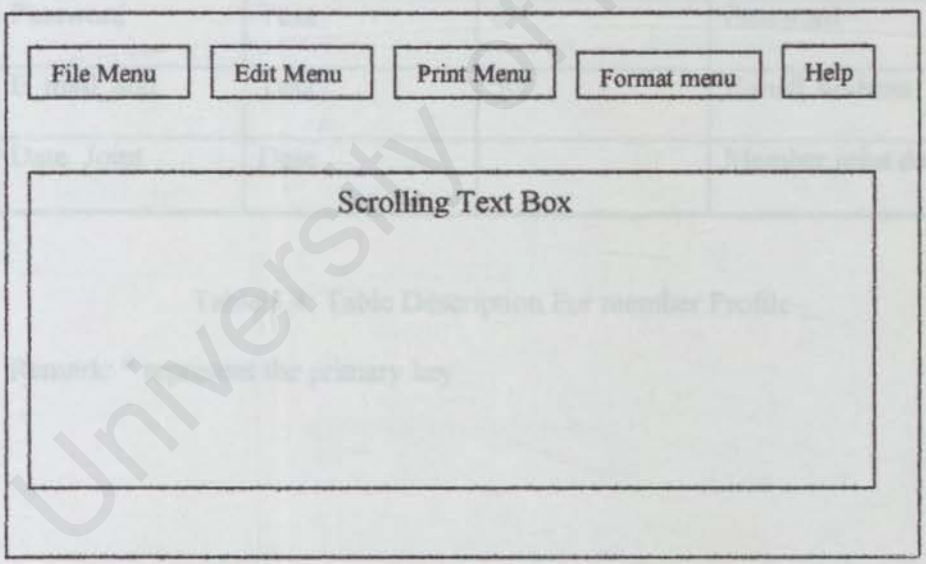

Figure 3.8: Word Processing Screen

3.8.3 Database Interface Design

The only database for the system is the database for member's profile. This database is created when the user start to register as a member. Below is the table description:

FIELD NAME	DATA TYPE	FIELD SIZE	DESCRIPTION
Name	Text	40	User Name
N_Nric_No	Text	25	New NRIC Number
Con_Add	Text	100	Contact Address
Gender	Radio Buttons		Gender
*Login_ID	Text	20	Login Identity
Password	Text	6	Password
E_mail_add	Text	50	E-mail Address
Date_Joint	Date		Member joint date

Table 3.4: Table Description For member Profile

Remark: * represent the primary key

3.9 Expected Outcome

There are two main module and five sub modules in Web WordPro.

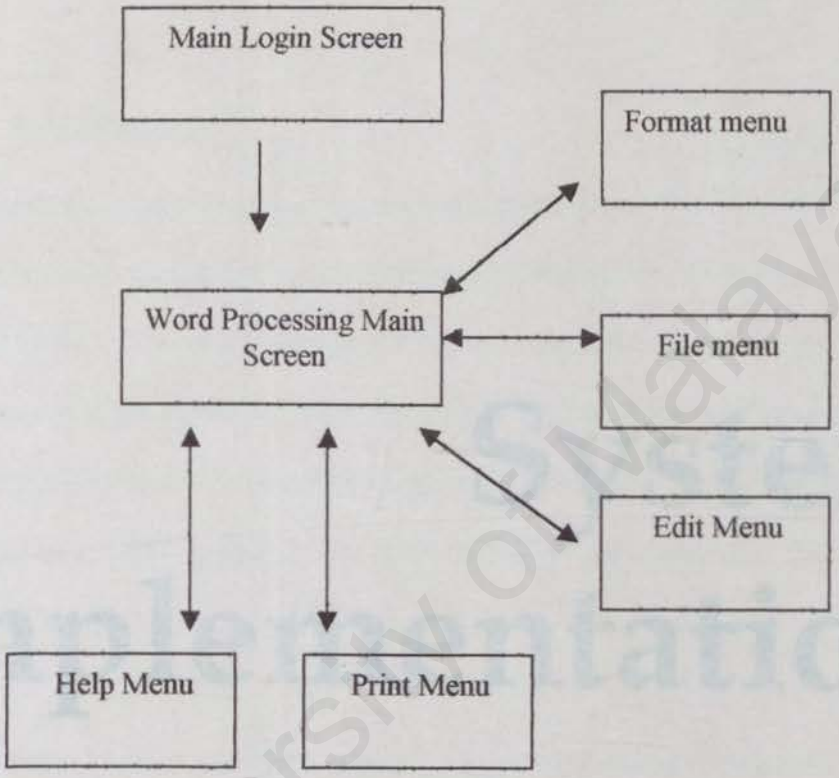

Figure 3.9: Expected Outcome

Chapter 4

System Implementation

CHAPTER 4 SYSTEM IMPLEMENTATION

4.1 Introduction

The emphasis of this chapter is on the implementation on the solution as software. That is to write programs that are implementing the system design. In other words, system implementation is a process that converts the system requirements and design into program codes. Actually there are no clear boundary for requirements analysis, system design and implementation in most software projects. Each phase tends to overlap one another. Therefore, this phase at time involves some modifications to the previous design.

In additions, this task can also be daunting for several reasons. Firstly, the designers may not address all of the idiosyncrasies of the platform and programming environment. Secondly, structures and relationships of the system those are easy to describe with charts and tables actually always not straightforward to write as code. Coding is not an easy task especially in a way that is understandable not only to us when we revisit it for testing, but also to others as the system evolves in the future.

4.2 Development Environment

Development of a system definitely will be impacted by development environment. Developing a system with using suitable hardware and software will not only help to speed up the performance, but also determine the successful of the project. Good environment also helps the designer to develop the system in a convenience condition. The hardware and software tools which are use to develop the entire system are as discuss below.

4.2.1 Hardware Requirements

Below is the list of hardware used during the development of the system:

- Pentium II 300 Mhz Processor
- 96 MB RAM
- 10 GB Harddisk space
- 24 bit true color SVGA
- 56 k internet/externet modem connection
- 1.44 floppy disk drive

4.2.2 Software Tools Requirements

A vast array of software tools was used when developing Web WordPro. Table 4.1below depicts the software used to develop the system.

Software	Purpose	Description
Windows 98	System Requirement	Operating System
Personal Web Server	System Requirement	Web Server Host
Microsoft Visual InterDev 6.0	System Development	ASP coding platform
Internet Explorer 5.0	System Development	Web Browser – viewing the web pages
Active Server Pages	System Development	Coding the Web pages
Hyper Text Markup Language (HTML)	System Development	Coding the Web pages
JavaScript	System Development	Coding the Web pages
VBScript	System Development	Coding the web pages
Microsoft Access 2000	Database	Build a database to store and manipulate the data
Adobe Photoshop 5.0	Graphic Design	Image design
Microsoft Word 2000	Documentation	To write a report.

Table 4.1 : Software used to develop the system

4.3 System Development

4.3.1 Web Pages Coding

Active Server Pages (ASP) are used to process application logic on the Personal Web Server and also used to develop Web WordPro. Generally, when writing an ASP pages, it is likely to be composed of a combination of three types of syntax – some ASP, some HTML tags, and some pure text. The file containing these parts of the ASP page is saved with an .asp extension. To distinguish the different elements of the ASP page is not too hard. Anything that fall between the <% and %> markers is ASP script, and will be process on the Web server by the ASP script engine.

ASP works with a single DLL called asp.dll (or alternatively the ASP scripting engine). This is installed by default into WINDOWS\SYSTEM\inetsrv directory. This DLL is responsible for taking an ASP page (indicated by the .asp file extension) and parsing it for any server-side script content. The script is passed to the appropriate scripting engine, to interpret for example the VBScript and Jscript. The results of executing the script are combined with any text and HTML in the ASP page and the completed page is then sent back the client browser via web server.

Any pages that have .asp file extension are sent to the asp.dll for processing. Meanwhile, those pages with file extension that are not mapped to DLL, for example .html for HTML pages, are simply loaded from disk and sent directly to the client.

VBScript is a default script language for ASP, but in Web WordPro JavaScript are widely used because it is similar to C language. To separate script language from other elements in ASP page, just refer to specific markers such as bellows:

<SCRIPT LANGUAGE="VBScript"> ..... </SCRIPT>

<SCRIPT LANGAGE="JAVASCRIPT"> ..... </SCRIPT>

4.3.2 Database Connection

There is only one database using in Web WordPro, which is userlogin. Actually, there are two ways to connect to database and retrieve data to ASP page. Firstly, is to use Domain Server Name (DSN) to connect to data source, we first need to create the DSN.

- This is done using ODBC Data Source Administrator dialog, found under Data Sources (ODBC) in control panel.
- There are a number of types of DSN that we can create, but for use with ASP, System DSN has to be created because it is accessible to all users of the system.
- When creating a DSN, just click the 'add' button and select ODBC driver that will be using to access the data store. For Web WordPro, the driver that will be using is .mdb (Microsoft Access). After that, select the database that is relevant.
- Additional information is also asked in order to configure the data source. In Web WordPro, name of the database within Microsoft Access is "userlogin" and the name of DSN is also "userlogin".

Second method is using ODBC connection with a connection string.

For example,

```
set objconn = server.createobject("ADODB.connection")
set rs = server.createObject("ADODB.Recordset")
objconn.open "Provider=Microsoft.Jet.OLEDB.4.0;" &
 "Data Source = userlogin.mdb;" & "Persist Security Info=false"
```

4.3.3 Development tools – Microsoft Visual InterDev 6.0

ASPs are simply text files and can be created in ANSCI editor, such as Notepad. In this project, Microsoft Visual InterDev 6.0 is used to create and manage Web-based application in Web WordPro. In conjunction with Visual InterDev, HTML graphical user-interface such as FrontPage is also used to help generate the HTML. Therefore, instead of writing HTML by hand, HTML can be generated as a template that can be manipulated by Active Server code.

Visual InterDev is project management software for high-end Web development. It integrates many of the existing tools for Web development, and throws in a few hefty tricks of its own for good measure. Its main features are:

- Support for Microsoft's new Active Server Pages, a method for server-side scripts to generate HTML pages on the fly
- Support for database integration from desktop (Access and MS FoxPro) to high-end (ODBC compatibility)

- Support for VBScript and JScript (Microsoft's JavaScript implementation) in your HTML files
- Visual design tools, templates and wizards to help you do everything from generating SQL commands with a point-and-click interface to manipulating exposed ActiveX objects
- A special version of Microsoft FrontPage for WYSIWYG editing
- A color-coded HTML text editor
- Web project file management and link management tools
- Support for VBScript to automate repetitive tasks in Visual InterDev

4.4 Coding Standard

In Web WordPro, standardization in coding plays an important role to organize our thoughts and to avoid mistakes. Standardization will simply clarifies which sections of the program perform which specific functions. Thus, it helps us in searching fault location and in making changes. Changes in design are easy to implement in the standard coding because the program in structuring code according to standards.

4.5 Documentation

Program documentation is a set of written descriptions that explain to a reader what the program do and how they do it. Internal documentation is a descriptive material written directly within the code [1] while all other documentation is external documentation.

4.5.1 Internal Documentation

Internal documentation refers to comments within the codes. It means internal documentation contains information directed at someone who will be reading the source code of the Web WordPro. Thus, summary information is provided to identify the program and describe its data structures, algorithms, and control flow.

In We WordPro, three types of comments are used and any codes within these comments tags will not be executed. Table below shows types of comments used during coding.

Type of comments	Comment tags
HyperText Markup Language (HTML)	<-- ! ... -->
VBScript	' ...
JavaScript	// ...

Table 4.2: Type of comments used in coding

4.5.2 External Documentation

External documentation is part of the overall system documentation. At the time the features are written, much of the rationale for the function structure and flow has already been detailed in the design documents section. Not only programmer can refer external documentation but also by those who may never look at the actual source code. (Refer to appendix A)

Chapter 5

System Testing

CHAPTER 5 TESTING

5.1 Introduction

System testing is a major quality control measure during system development life cycle. It is done to detect errors in the software. Besides, it is important to test a system for quality assurance and checks whether it represents the ultimate review of the specification, design and coding for Web WordPro. Web WordPro was developed using Waterfall model, which involves many iterative testing for the modules. Each module is tested repeatedly until it could function precisely. After all units testing are completed, these units will then be integrated to form an application. Finally, the integrated system will be tested in interaction testing. In shorts, testing is a process to ensure the final system will perform as it should.

5.2 Testing Strategy

The testing strategies used in this system are unit testing, integration testing and system testing.

5.2.1 Unit Testing

The first level of testing is unit testing. Units testing were done after the completion of each function according to functional requirements. The objective of unit testing is

to ensure that the code implemented the design properly. The following steps specify how unit testing is carried out for this application:

a) Reading through all the programs codes in order to exam its functionality and spot for algorithmic faults and syntax faults.

b) Published the web pages in Web browser in order to detect remaining fault and correct them.

c) Test cases are developed and module interfaces are tested in order to ensure the input is properly converted to the desired output.

d) Boundary conditions are tested in order to ensure the modules operate at boundaries established for limiting or restricting processing.

e) All errors handling paths are tested.

5.2.2 Integration Testing

After make sure all the individual components are work correctly, these components will be combined into a system and then integration testing will be carried out. If faults occur during this stage, it means that the faults do not lie within the units of the system. The purpose of doing integration testing is to see whether the modules could be integrated properly. The emphasis of integration testing is on testing interfaces between modules. This testing activity could be considered as testing the design, and hence the emphasis on testing module interactions.

The top-down integration approach has been adopted for this system. Modules were integrated by moving downward through the control hierarchy, beginning with the

main control module (main program). Module subordinate to the main control modules were incorporated into the structure in either a depth-first or breadth-first manner.

Aspects	Tested	Evaluated
Ease of navigation	✓	Good
Page-interlink organization	✓	Good
Information shared	✓	Fair
Linkage	✓	Good

Table 5.1: Integration testing and evaluation

5.2.3 System Testing

System testing is the last testing procedure. Once the entire system is validated, it must be combined with other system element such as hardware, database and on the server. System testing verifies that elements are functioning properly and the overall system performance and objectives are achieved. The following steps are carried out during system testing:

a) Functional Testing

System testing begins with function testing. It is based on the functional requirements, which are stated in system analysis. Each function will be tested in order to achieve the specific requirements.

In Web WordPro, function testing will be carried out on two main modules (which are login module and word processing module) and five sub modules (which are file, edit, print, format and help sub modules).

b) Performance Testing

Performance testing addresses the non-functional requirements. The non-functional that have been stated during system analysis and design phase will be tested one by one with all the function. Thus, for Web WordPro, the performance test will be focus on the aspect of user friendly, response time, system securities and performance efficiency.

	Aspects	Tested	Evaluated
1.	***Functional Aspects***		
	Content organization	✓	Good
	Interest arresting	✓	Fair
	Ease of comprehension	✓	Good
2.	***Features Aspects***		
a)	*File menu*		
	New	✓	Good
	Open	✓	Good
	Save	✓	Good

	Save as	✓	Good
	Exit	✓	Good
b)	*Edit menu*		
	Copy	✓	Fair
	Cut	✓	Fair
	Delete	✓	Good
	Paste	✓	Fair
	Select All	✓	Good
c)	*Format menu*		
	To uppercase	✓	Good
	To lowercase	✓	Good
	Clean caps	✓	Good
	Fonts	✓	Fair
	Word count	✓	Good
d)	*Print menu*		
	Print	✓	Good
	Print Preview	✓	Fair
e)	*Help menu*		
	About Web WordPro	✓	Good
	Help Contents	✓	Good
3.	***Non-functional aspects***		

	Attractiveness	✓	Good
	Color combination	✓	Good
	Page layout/design/frames	✓	Good
	Hyperlink performance	✓	Good
	Readability of text	✓	Good
	Response time	✓	Good
	Security	✓	Fair

Table 5.2: Overall unit testing and system testing

Function	Tested	Evaluated
Retrieval of data	✓	Good
User login	✓	Good
Update database	✓	Good
Feedback from functionality	✓	Good
Prevention of unauthorized	✓	Fair
Confirmation form	✓	Good

Table 5.3: Overall login module testing and system testing (database testing)

Chapter 6

System Evaluation & Conclusion

CHAPTER 6 SYSTEM EVALUATION

6.1 System Strengths

Web WordPro has demonstrated strengths as following:

a) Provide an easy and attractive user interface

Web WordPro is equipped with attractive user interface. Web pages are layered with buttons and pop-up menu for users to execute commands with ease. It can perform various tasks by just clicking a mouse-type instrument. Thus, users with basic experience on web browsers will definitely find Web WordPro easy to handle, simple to learn and easy to understand.

b) Page security incorporated

The system will check on the user authentication before the users enter into the system. Unauthorized users are not allowed to access any web pages in the system. Users will feel confidence with this feature especially when they submit their sensitive information or data.

c) Total user control

The system can be fully control by the user. This is meaning the users can navigate to any pages and perform any functions. Besides, users can also log off anytime they wish.

d) Validation on input data and display error messages.

Data validation is done prior to submission of a form. If important fields have not been filled, users will be prompted to fill up the relevant textboxes. Data validation before submission will ease the traffic in the Internet because forms will not be transmitted through the network to the server until the form is filled properly. The users also will be informed by the error messages when the system encounters exceptions.

e) System Transparency

The system provides condition where the users of the system need not have to know the system structure, location of the database and anything related to the system. Therefore, users can use the system without much difficulty.

f) Relatively fast response time

Web WordPro provides relatively faster response in word processing on the Web-based. It is because the information that are processing are not stored in the database but in the hard disk of the user's computer. Besides, member

information also can be loaded faster from the database. Thus, the user would not have to wait for a log time to access into the system.

g) **On-line helps for users**

A good system must have a good help system to guide users whenever it is required especially for a new user. Thus, this application also comes with on-line help for users. Help topics include all the guideline of the functions in the Web WordPro. If users need guidance to perform certain tasks, they just need to click on the link to the relevant help topics.

6.2 System Limitations

The following is the limitation of Web WordPro:

a) **Browser limitation**

Only browsers that supports latest VBScript version can be used to run the system. Thus, only Internet Explorer 4.0 or above can support the features in Web WordPro at the moment. If other browser is used in the system, the functions will not fully operate.

b) **Not supporting features such as insert graphics and insert tables**

Web WordPro currently can't insert tables and supports graphics. This is meaning that users can't insert any pictures or graphics when necessary. Besides, due to time constraints, Web WordPro doesn't develop insert tables features the moment.

c) Some features not in well operated

Some features that are developed in Web WordPro are not function as desired in the early planning. For example, this problem occurred in Paste function in Edit menu where the text can only be pasted at the end of the document, this means the users can not paste the text anywhere they want in the textarea.

6.3 Problems Encountered and Solutions

Develop a system alone is not an easy task, Thus, various problems have been encountered during the process of developing system. The following are some of the major problems encountered and solutions suggested:

a) Problem in choosing development technology and tools

Choosing a suitable development technology and tool is a difficult process. Web WordPro is a very special system because it allows us to do word processing on the web site, not like other web sites, which are only allow navigating to other pages. It is really a struggle process to choice a suitable development tools. Fortunately, after discuss with collogues and refer to some article, my problem is solved.

b) Unknown Error Message

During the testing process, ASP error object will prompt an error message to inform us that our script is failed in which line and what statement. Normally programmer will know what type of problem by reading the message on web

browser or finds out the error message in debugging tool. But sometimes there are some unknown error messages that hard to determine the causes. For example,

"ADODB.Recordset error '800a0cb3'

Object or provider is not capable of performing requested operation "

After much research on these problems, the problems have solved. However, this slow down the development process because spending a lot of time in doing more studied and discussion with collogues in order to solve the error problems. For the problem above, it can be solved by just include a file as below at the header:

<!-- #include file="ADOvbs.inc" -->

c) Different implementation in Internet Explorer and Netscape Communicator

Internet Explorer 5.0 is used to test the functionality of Web WordPro during the testing phase. But when the system applies on another browser, such as Netscape Communicator, it will display a different result. Therefore, the web page has to be tested on both Internet Explorer and Netscape Communicator to make sure that there are only slight variations between the placements of control in web pages

d) Unfamiliar with the script languages

ASP is a combination of script languages and HTML tags. Coding some functions with script language is necessary and can't be avoided. Although script language is not a complex coding, but it is hard to implemented . To solve this

problem, surfing net have been carried out and sending the problems to the professional advisor in the Internet in order to assist some guidance and helps.

6.4 Future Enhancements

There are several enhancements that could extend the usability of the developed system:

a) Setting up e-mail facilities

A Web-based system without email capability is not a completed system. Thus, it is recommend that in the future enhancement, this facilities will be considered and add into the system in order to make Web WordPro more sophisticated. This capability can make the users more easily communicate to the system administrators and send their problems, suggestion and comments. Therefore, from the responses of the users, the system can be enhanced from time to time in order to meet the users requirements. At the end, Web WordPro will become an excellent system.

b) Add more features to the system

The development of Web WordPro is more emphasized on the methods to do word processing and document management on the Internet platform. Therefore, it will be more advance if there is more features add into the system. These features must be usable and user friendly in order to increase the system ability and performance. However, adding more features may be slower the response

time of the system. Thus, consideration and planning have to be done before any modification is carried out.

c) Security improvement

Although username and password are needed to make sure only authorized user can access into the system, the password is easy to detect by any hacker. Therefore, more advanced security control is needed in order to protect the privacy of the users.

d) Backup and restore function

The backup and restore function was not considered in the early stages due to initial functional requirements and time constraint. This function is very important because if any accident occurred will causing damage to the system and database. Thus, the contingency planning is needed and backup must be schedule in one proper manner.

e) Improvement on existing features

Some features in Web WordPro are not well operated in certain condition. The programmer has to review to the documentation and find out the strength and weakness of the specific features. Proper system analysis has to be carried out so that the programmer will determine the suitable functional improvement.

6.5 Conclusions

Web WordPro definitely is a unique system. In Web WordPro, it not only show us how advanced of the Web technology, but also vary the usage of Web application. Web WordPro major aim is to allow word processing on World Wide Web (WWW) effectively and to explore various techniques in word processing via WWW. It is proud to prove that this project has achieved these two objectives

At the moment, Web WordPro supports many features such as security performance, professional user interface, storing document in related directories, editing document, printing capability and on-line help file. All of these features are well performance in accuracy, flexibility, user-friendly and efficiency. In additions, it also shows that basic features in every word processor are also available in Web WordPro. Thus, Web WordPro has potential to compete with other word processor in the market in the future if the enhancement of the system is taken.

Generally, the goals of this project also achieved. I have investigated into a few popular tools i.e Active Server Pages (ASP), Lotus Note, Hyper Text Markup Language (HTML), DHTML and etc. and finally ASP has been chosen to develop Web WordPro. Due to this project, I have opportunity to study some professional web design layout and the knowledge that I gained is very helpful in designing the Web site. This project also gave me an opportunity to build a full application from scratch. Indeed, it is a very challenging job for me to developing this system alone.

I have gained invaluable knowledge and experience as the project progresses. It makes me appreciate the knowledge that I have learnt during the three years of study in University Malaya because this knowledge was very useful for me while developing the system.

I also realize that tertiary education can only provide the foundation of knowledge of computer science and information technology to me. There are more things to learn and experience in the future working environment. Thus, I have to equip myself continuously with new information and skills.

Finally, I feel very successful after developing Web WordPro alone. Although Web WordPro is well operates at the moment, it still need some enhancement to make it more sophisticated.

Appendix A

Summary of The Coding Specification

File name: index.html

Programmer	: Wong Yeu Wen
Matrix No.	: WET 98062
Objective	: Default page for Web WordPro and includes introduction of the system.
Version 1.0	: Written on 01/01/2001
Links	: checklogin.asp Register.asp New_pwd.html

File name: checklogin.asp

Programmer	: Wong Yeu Wen
Matrix No.	: WET 98062
Objective	: To valid the username and password
Version 1.0	: Written on 01/01/2001
Links	: process.asp Index.html

File name: register.asp

Programmer	: Wong Yeu Wen
Matrix No.	: WET 98062
Objective	: To fill in the registration form
Version 1.0	: Written on 01/01/2001
Links	: adduser.asp

File name: adduser.asp

Programmer : Wong Yeu Wen
Matrix No. : WET 98062
Objective : Add new user's detail into the database
Version 1.0 : Written on 01/01/2001
Links : process.asp
Checklogin.asp

File name: new_pwd.html

Programmer : Wong Yeu Wen
Matrix No. : WET 98062
Objective : To allow user to fill in the confirmation form to change the password
Version 1.0 : Written on 01/01/2001
Links : change_pwd.asp

File name: change_pwd.asp

Programmer : Wong Yeu Wen
Matrix No. : WET 98062
Objective : To change the user's password
Version 1.0 : Written on 01/01/2001
Links : register.asp
index.html
checklogin.asp
process.asp

File name: o_file1.asp

Programmer : Wong Yeu Wen
Matrix No. : WET 98062
Objective : To fill in the file name and paths which the file want to open
Version 1.0 : Written on 01/01/2001
Links : process.asp

File name: saveas1.asp

Programmer : Wong Yeu Wen
Matrix No. : WET 98062
Objective : To fill in the file name and the paths
Version 1.0 : Written on 01/01/2001
Links : saveas2.asp

File name: saveas2.asp

Programmer : Wong Yeu Wen
Matrix No. : WET 98062
Objective : To save a new file in a specific directories
Version 1.0 : Written on 01/01/2001
Links : saveas1.asp

File name: process.asp

Programmer	: Wong Yeu Wen
Matrix No.	: WET 98062
Objective	: Main page for WebWordPro which allow user to insert text in textarea, create a new document, to save a document, open a document, text editing, text formatting and printing.
Version 1.0	: Written on 01/01/2001
Links	: o_file1.asp saveas1.asp, saveas2.asp font1.asp logout.asp helpdefault.asp about1.html preview.asp
Functions called	: getActiveText(e) getemptyText(e) copyfile() getdeletetext(e) cutfile() deletefile() CountWords (this_field, alertWords, alertChars) cleanCAPS(str) pick(obj) unpick(obj) save_as() file_print() preview()

about1()
contents()

File name: logout.asp

Programmer : Wong Yeu Wen
Matrix No. : WET 98062
Objective : To inform the user with a message "logout"
Version 1.0 : Written on 01/01/2001
Links : Index.html

File name: about1.htm

Programmer : Wong Yeu Wen
Matrix No. : WET 98062
Objective : To show the information about Web WordPro
Version 1.0 : Written on 01/01/2001

File name: font1.asp

Programmer : Wong Yeu Wen
Matrix No. : WET 98062
Objective : To set the font type
Version 1.0 : Written on 01/01/2001
Links : register.asp
index.html

checklogin.asp
process.asp

File name: helpdefault.asp

Programmer : Wong Yeu Wen
Matrix No. : WET 98062
Objective : Main screen for on-line help. To create two frames. Nav_home.html will loaded in the first frame, while mainpage.html will load in he second frame.
Version 1.0 : Written on 01/01/2001
Links : nav_home.htm
mainpage.asp

File name: nav_home.asp

Programmer : Wong Yeu Wen
Matrix No. : WET 98062
Objective : To link to other help files
Version 1.0 : Written on 01/01/2001
Links : mainpage.html
help2.asp
help3.asp
help4.asp
help5.asp
help6.asp
help7.asp

File name: mainpage.html, help2.asp, help3.asp, help4.asp, help5.asp, help6.asp, help7.asp

Programmer : Wong Yeu Wen
Matrix No. : WET 98062
Objective : On-line help screen for user
Version 1.0 : Written on 01/01/2001

Appendix B

Samples of The On-line Help Screen

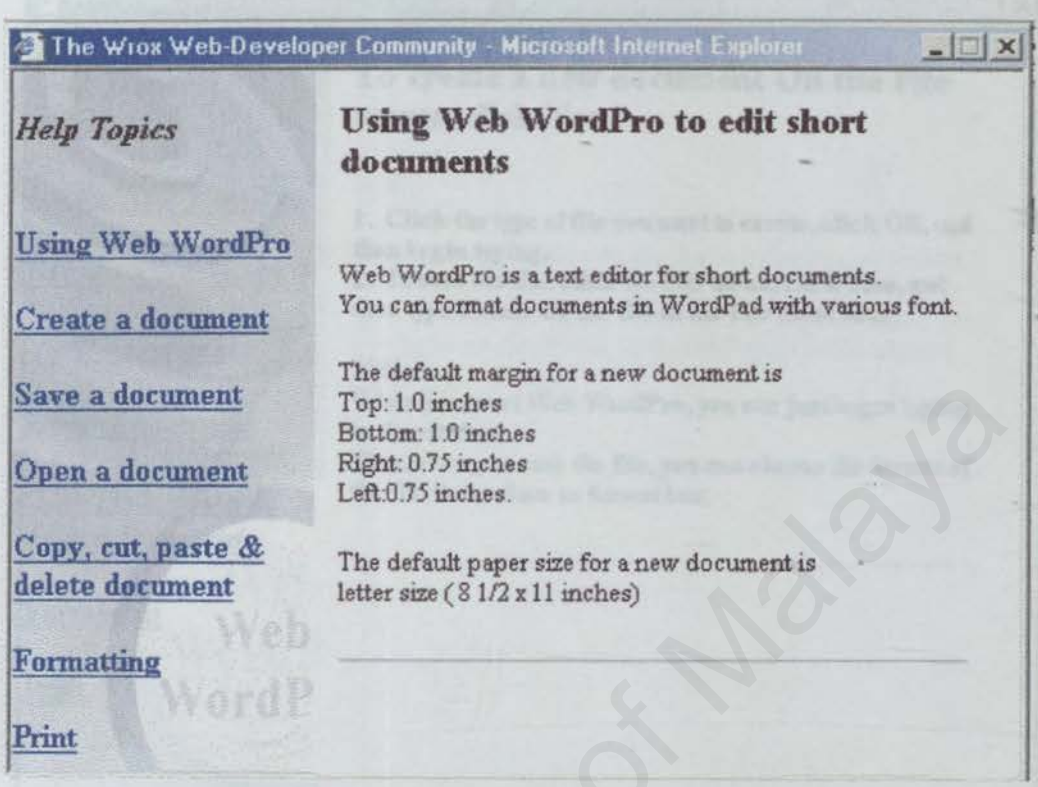

Figure B1: Help screen for users – using Web WordPro

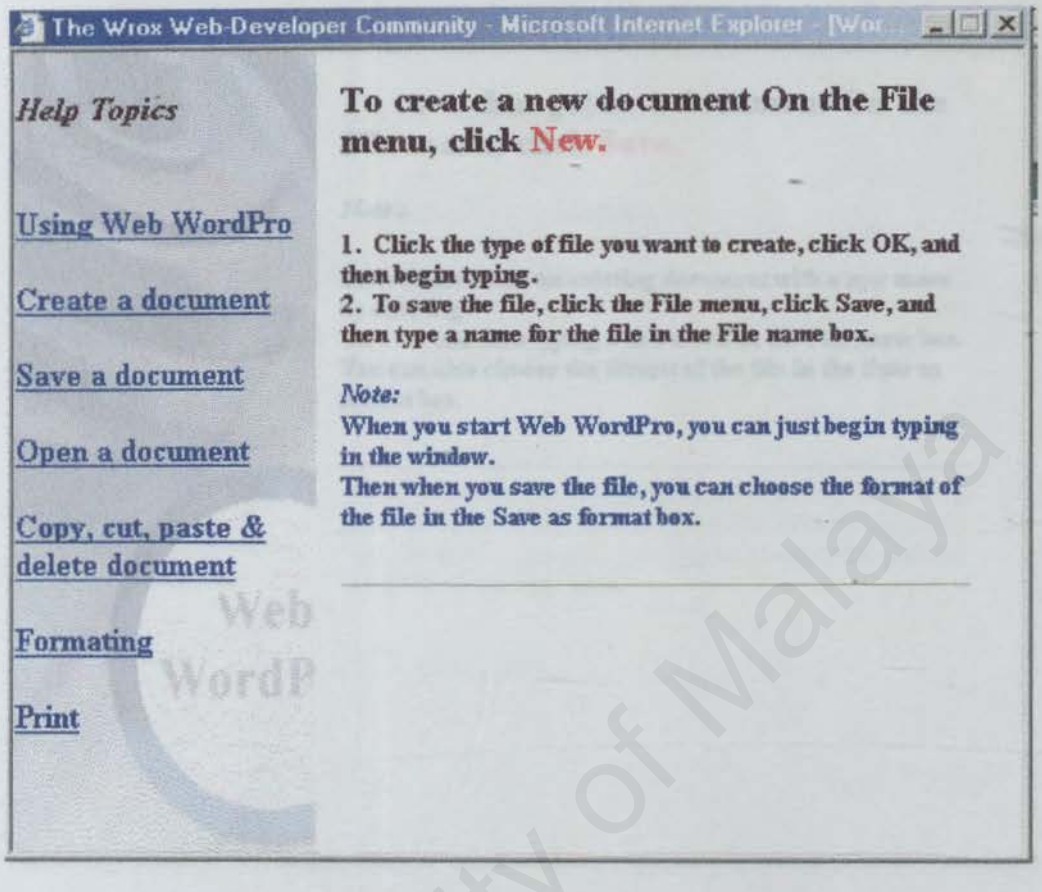

Figure B2: Help screen for users – create a document

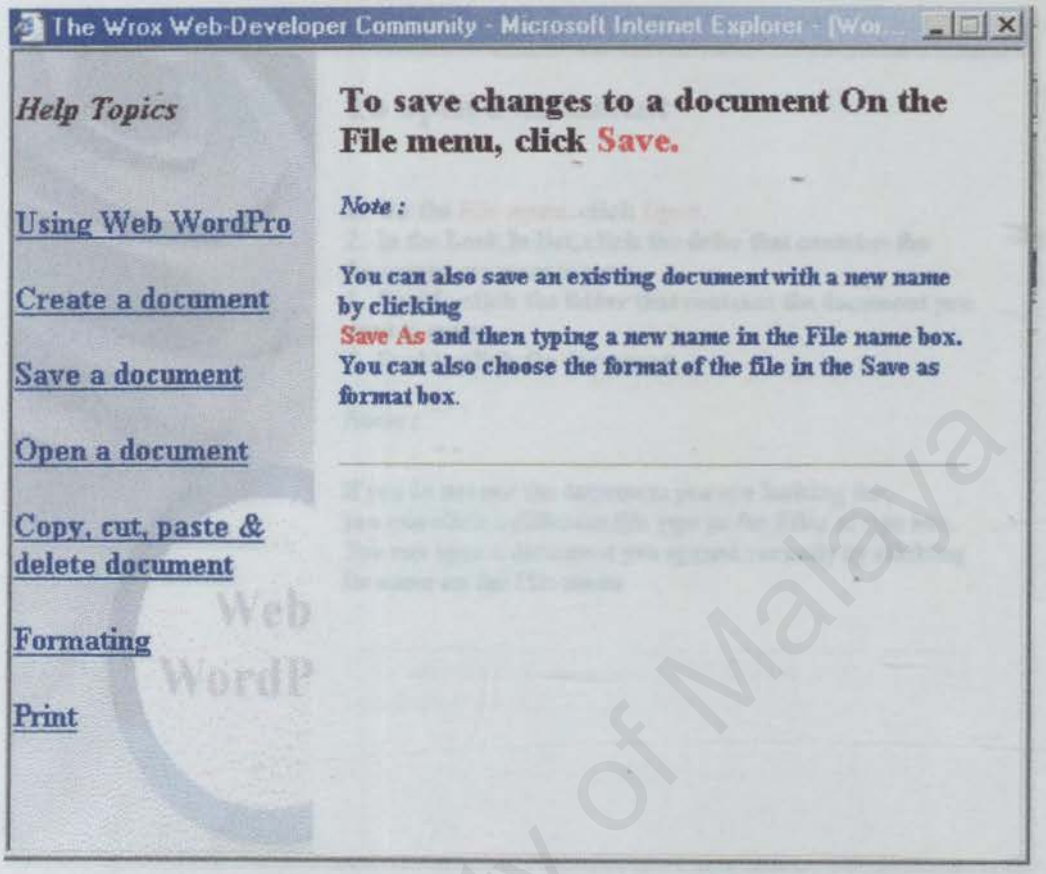

Figure B3: Help screen for users – save a document

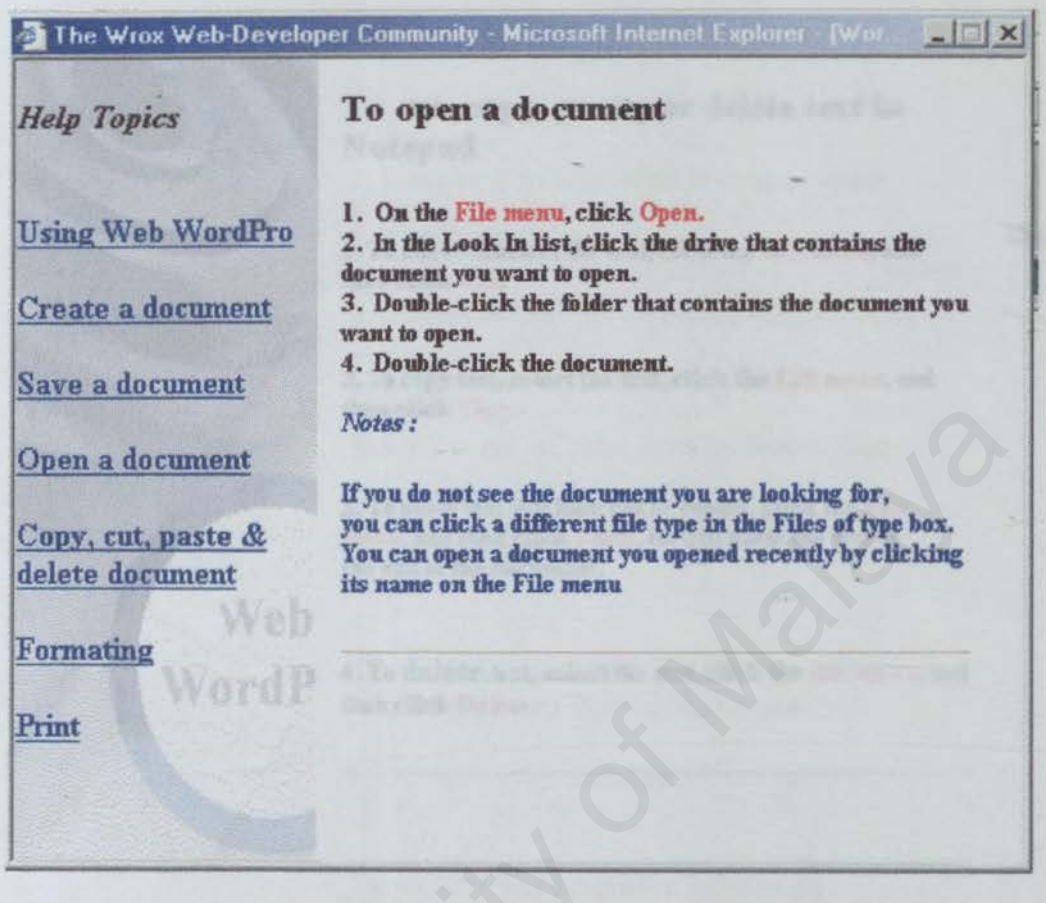

Figure B4: Help screen for users – open a document

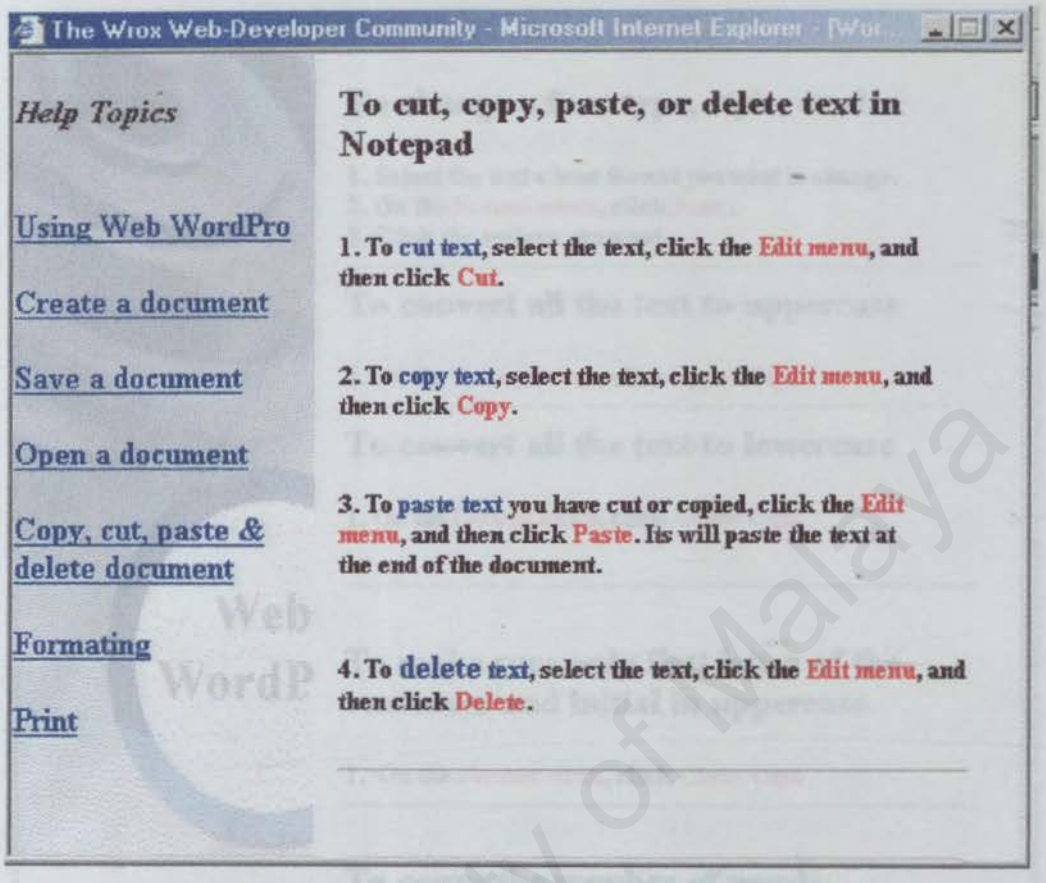

Figure B4: Help screen for users – copy, cut, paste & delete document

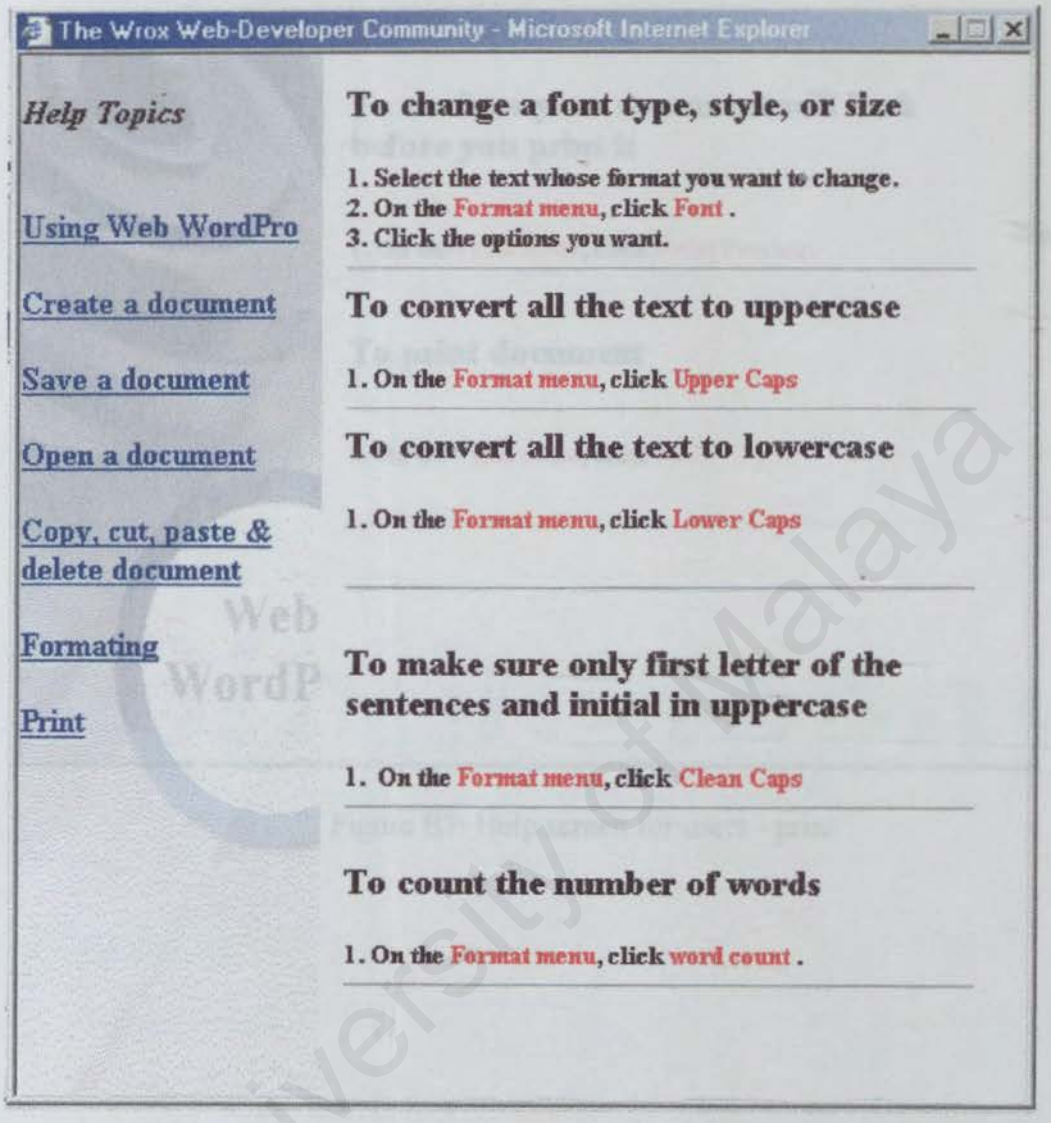

Figure B6: Help screen for users - formatting

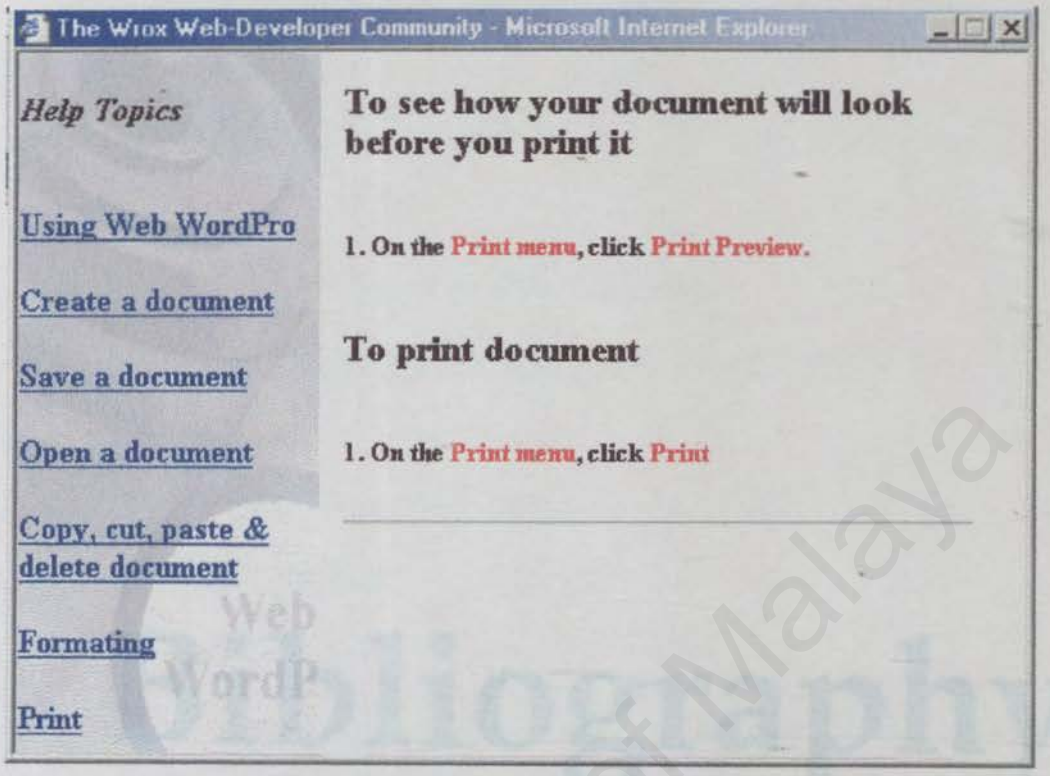

Figure B7: Help screen for users - print

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