

Perpustakaan SKTM

Online Reference & Tutorial for microprocessor subject

**Submitted by Velan s/o Ramalingam
(WEK000126)**

**Under the supervision of Cik Fazidah
Othman**

Moderated by Puan Nurul Fazmidar

**As a part of the requirement under the
subject of WXES 3182 : Final Phase
AcademicProject 2 (Projek Ilmiah
Tahap Akhir II)**

**Faculty of Computer Science and Information Technology
University of Malaya
Session 2002/03**

Abstract

This project takes form as a web page which provides microprocessor – related information and news that caters all kinds of users , from novice to expert users. The site content will include news features, opinion polls and discussion boards.

This project was proposed in response to the fact that technical sites (such as hardware / software sites) RARELY cater all kinds of users, which leaves the users in the dark when it comes to finding/viewing technical information or to find information that introduces the user to technical topics that helps them understand the site content better.

The Online Student Reference & Tutorial of Microprocessor subject project is an initiative towards gearing the society to consider and accept e-learning as the norm. This project is an online based learning system ,concentrating on microprocessor related subjects, which will include various audio and visual entities to allow the user a better understanding and grasp of the subject involved.

Eventhough it is designed to suit the requirements and syllabus covered by the Computer Science and Information Technology Faculty of University Malaya, for it's students, it is also adequate to be used by anyone who wish to learn the subject independently. In other words, eventhough the system is created with faculty students in mind, it is still suitable for public consumption.

Acknowledgement

I would like to thank my supervisor , Miss Fazidah Othman, for giving me guidance and how-to's on doing this report. Her help has helped me complete this report in time. The content of this report is very much influenced by her guidance. She has also undoubtedly helped me in shaping the project by giving me ideas on how I can improve the site and by clearing any questions and doubts I had about the development process and the project features.

I would also like to thank you , Mrs. Nurul Fazmidar, for spending some time with me and for pointing out certain inaccuracies and enhancements in the VIVA session on 27th of August , 2002. Her comments for this project are certainly well noted.

My thanks to Mr. Noor Zaily Mohammed Noor for allowing me to use some of his lecture presentations for this project.

My gratitude also goes to my fellow colleagues and seniors who have helped in obtaining report material and information on the web.

A welcoming thank you goes to the faculty administration for keeping the Document Room open to third year students who are doing their final year project. It enabled me to find out the proper format and tasks necessary for this project.

Last but not least , I would like to thank my family for giving their moral support and being very patient with me during the period of this project . This project has certainly kept me away from home for some time.

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1.1 Introduction

1.1.1 The Online Student Reference & Tutorial for Microprocessor subject Project

The Online Student Reference & Tutorial for Microprocessor subject Project is an initiative towards gearing the society to consider and accept e-learning as the norm. This project is an online based learning system , concentrating on microprocessor related subjects, which will allow the user a better understanding and grasp of the subject involved.

Eventhough it is designed to suit the requirements and syllabus covered in the Computer Science & Information Technology faculty of Universiti Malaysia, for it's students, it is also adequate to be used by anyone who wish to learn the subject independently. In other words, eventhough the system is created with faculty students in mind, it is still suitable for public consumption.

Chapter 1.0

Introduction

1.1 Objectives

- To develop a online learning system that covers microprocessor related topics, which is easily accessible , and user-friendly.
- To develop a tutorial assessment system that enables the testing of the user's knowledge and understanding
- To fully utilise the advancement in IT to improve learning
- To prove that online learning can greatly enhance and improve the learning experience

1.1 Introduction

1.2 Definition

The Online Student Reference & Tutorial for Microprocessor subject Project is an initiative towards gearing the society to consider and accept e-learning as the norm. This project is an online based learning system , concentrating on microprocessor related subjects, which will allow the user a better understanding and grasp of the subject involved.

Eventhough it is designed to suit the requirements and syllabus covered by the Computer Science and Information Technology Faculty of University Malaya, for it's students, it is also adequate to be used by anyone who wish to learn the subject independently. In other words, eventhough the system is created with faculty students in mind, it is still suitable for public consumption.

1.2 Objectives

- To develop a online learning system that covers microprocessor related topics, which is easily accessible , and user-friendly.
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- To fully utilise the advancement in IT to improve learning
- To prove that online learning can greatly enhance and improve the learning experience

1.3 Definition

This online learning system was devised to help solve certain persistent and sustaining problem relating to the students ability to learn and understand the subjects being studied.

The current lecture system forces learning at slotted times as stated in the class schedule. This is very inflexible when it comes to the different times students prefer to do their studies. Students often attend lectures with a tired mind. They prefer to learn and improve their knowledge of the subject at a time they like, as different students have different studying times.

The amount of teaching material lecturers use is limited due to lack of proper multimedia hardware and facilities in the lecture room or hall. Lecturers often use presentation slides to teach the students, sometimes in combination with a book. However, these slides often contain summaries and short notations of points , which does not allow proper understanding if the topic is new to the students. This can make the students get confused and lose the pace of concentration. Plus, any elaboration of points is done with the absence of additional material. The use of books can help solve the learning problem, but it is static and not updateable with additional information.

The project being undertaken could help solve the problems stated :

- allows student to learn anytime he wants
- improves concentration as students study comfortably
- can guide to understanding the subject better than lecturer's material
- as a quick and cheap alternative to reference sources
- enables students to refer to a source of updateable information

1.3 Target user

1.4 Scope

The system is divided into two modules, that is the administrators' module and the user's module.

Administrators module

This module is specifically for the administrators of the project. The administrators module consists of these functions :

- update and modify site content according to syllabus
- periodically change passwords for safety reasons
- manages and edits the database
- as a moderator for the discussion board
- initiating maintenance for opinion polls and tutorial sections

User's module

This module is specifically for the users of the online reference site. The user's module should consist of these functions :

- contain subject information for reference
- contain tutorial questions
- offer tips and information that can help user's in exam preparation of any microprocessor related courses, if it is relevant, based on exam subject focus
- discussion boards to enable users to discuss questions and submit opinions
- enable the user to send email to the administrator for feedback purposes

1.5 Target user

This project concentrates specifically for the needs of students of the Computer Science and Information Technology Faculty of University Malaya. However, in general , it can be used as reference by the public or IT related students.

1.6 Project Motivation / Expected Outcome

This project was proposed in response to the fact that technical sites (such as hardware / software sites) RARELY cater all kinds of users, which leaves the users in the dark when it comes to finding/viewing technical information or to find information that introduces the user to technical topics that helps them understand the site content better.

As a result , I expect an outcome of a website that supplies information about a subject that caters for all kinds of user background as well as provide tutorial and reference solutions to subjects that involve microprocessor to the faculty students,

according to the faculty syllabus. I hope it would provide a base of learning that is fun and enjoyable as well as giving opportunities to be involved in discussions through discussion forums.

1.7 Project Schedule

A project schedule gives an estimation of the time frame that will be needed to complete individual tasks and tasks in a phase. It can help determine whether a project can be finished in time. It distributes the tasks within a time frame to enable the best use of resources.

Table 1.1 : Project schedule

This project schedule is planned as a guideline to manage the various tasks that has to be completed within the duration of this project. This schedule has a secondary purpose, that is to imitate the real world environment in which any task given must be completed within the given duration or risk undertaking unnecessary additional cost or manpower.

Note : the schedule is just a rough description of tasks to be accomplished. Changes in start time / finish time could be made as necessary.

Figure 1.1 : Gantt chart showing the project task schedule

(REFER TO THE APPENDIX FOR A MORE DETAILED GANTT CHART)

Task	Start day	Finish day	Duration
Introduction	1 July 2002	10 July 2002	10 days
Literature	11 July 2002	17 July 2002	7 days

Review			
System Analysis (Methodology)	18 July 2002	27 July 2002	10 days
System Design	28 July 2002	1 August 2002	5 days
System Implementation	2 August 2002	31 December 2002	152 days
System Testing & Documentaion	1 January 2003	20 January 2003	20 days

Table 1.1 : Project schedule

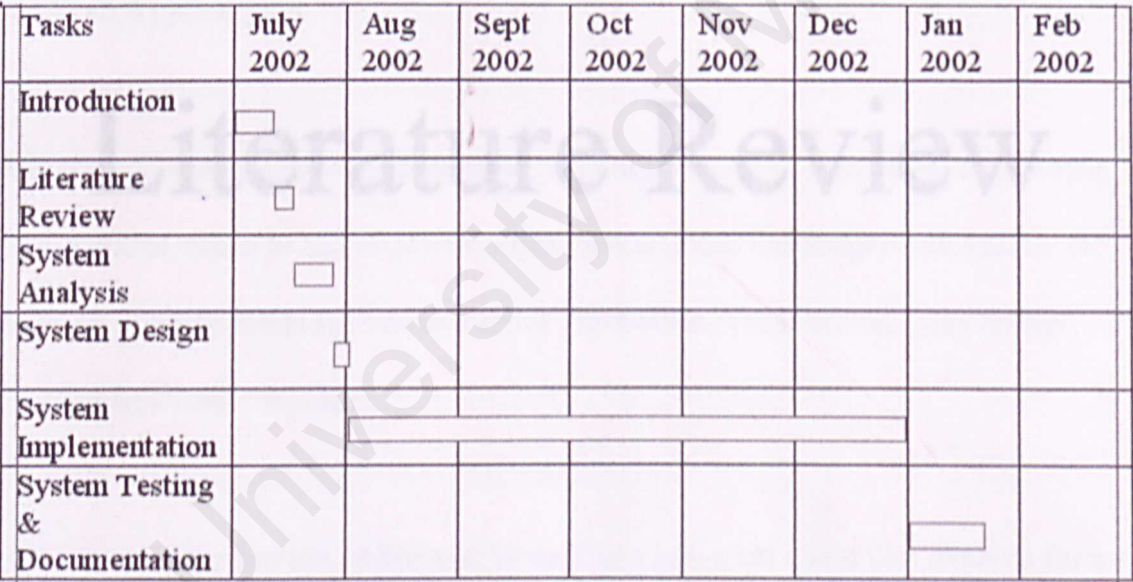


Figure 1.1 : Gantt chart showing the project task schedule

(REFER TO THE APPENDIX FOR A MORE DETAILED GANTT CHART)

2.1 Introduction

The chapter is carried out to get a depth of understanding of system requirements , current tasks and tools available for development. It is an early research about the system development. Review is done by examining, comparing, observing and acquiring the information from articles , books and sources from the Internet.

It's aim is to ensure that the project being developed , is analysed from aspects of quality and user requirements. It also helps to obtain useful information and knowledge concerning the project and its development.

Chapter 2.0

2.2 Web Applications

Literature Review

In a common application , a browser is used as a universal client that requests for a web page for the user. The browser interprets the HTML document that is received and displays the output to the user, based on the position and coding of the HTML tags.

Chapter 2 : Literature Review

2.1 Introduction

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It's aim is to ensure that the project being developed , is analysed from aspects of quality and user requirements. It also helps to obtain useful information and knowledge concerning the development and various aspects of system design.

2.2 Web Applications

It is should be noted that a web program is a combination of formatted text, images, and graphics, audio or video. HTML(Hypertext Markup Language) codes allow the creation of basic forms such as text fields , text areas , radio button, push button , check boxes , and list boxes.

In a common application , a browser is used as a universal client that requests for a web page for the user. The browser interprets the HTML document that is received and displays the output to the user, based on the position and coding of the HTML tags.

The web server receives requests from client browsers through the HTTP protocol.

The web server , in return , sends the requested document in HTML format to the client. The document is sent in HTML format to ensure that the client browser understands the document.

Browsers and Web browsers communicate by using the Hypertext Transfer Protocol (HTTP). World Wide Web was developed using HTTP and the URL (Uniform Resource Locator). The URL is an addressing scheme that tells browsers where to go, how to get there, and what to do after they reach the destination. Technically , an URL is a form of Universal Resource Identifier (URI) used to access an object using existing Internet protocol.

Six things normally happen when you fire up your Web browser and visit a site on the World Wide Web :

- 1)Your browser first decodes the first part of the URL and contacts the server.
- 2)The browser supplies the remainder of the URL to the server.
- 3)The server translates the URL into a path and file name.
- 4)The server sends the document file to the browser.
- 5)The server breaks the connection.
- 6)Your browser displays the document.

2.3 Server-side languages

A server-side language needs to get information from the Web page or the web browser, send it to a program that is run on the host's server, and then send the information back to the browser. Therefore, an intermediate step must send and retrieve information from the server before the results of the program are seen in the browser.

This language gives the programmer options that a client-side language doesn't have, such as saving information on the Web server for later use, or using the new information to update a Web page and save the updates.

2.4 Client-side languages

A client-side language is run through the client being used by the viewer. IN the case of JavaScript , the client is a Web browser. Therefore, JavaScript is run directly in the Web browser and doesn't need to go through the extra step of sending and retrieving information from the Web server.

With a client-side language , the browser reads and interprets the code , and the results can be given to the viewer without getting information from the server first. This process can make certain tasks run more quickly.

The client-side lacks the ability to save files or updates to files on a Web server like a server-side language can. However, a client-side language can access special features of a browser window that is not possible with a server-side language. Client-side language is most useful for tasks involving parts of the browser or information

validation before it is sent to the server-side program or script. The information can prevent strain on the Web server by preventing submissions with incorrect or incomplete information. This allows data to be sent to the server only once, with the correct information, rather than running the program on the already strained server until the information is correct.

2.5 Review and Analysis on Similar systems

The review and analysis is done for the following reasons :

- i) To note and take into consideration the various advantages and disadvantages of various similar systems available.
- ii) To point out certain disadvantages and improve the weakness, or used as reference for future consideration
- iii) The analysis makes available a platform as a basis and example for the project development and for construction of additional improvement

2.5.1 Review System 1:

<http://www.x86.org/> - Dr.Dobb's Microprocessor Resources

The first thing noticeable about the site is it's rather straight-forward layout and menus. The general red-white color scheme is easy on the eyes and it is not distracting to the user. The menus on the left side of the page allow quick navigational to the various segments of microprocessor articles and information on the site. The menu font is right in size and type, with a watermark picture in the

background providing depth. In the main page , each article has respected links. In terms of accessibility and navigation, the site is well made. User friendliness is rated high in this site as the links are straightforward, well tabled and not complex.

The page did not take a long time to download (for 33.6 kbps speed) as there is only several images involved. The total file size is below 50KB, which is the limit recommended by web professionals.

The layout of the article segments is reminiscent of a magazine cover, where certain quotes / a clip of information concerning the article is used to get the user's attention.

As such , the understanding of the content in the site can be well grasped by the user of this site. The content caters for most types of processors and includes the technical manuals of featured microprocessors.

They are certain drawbacks :

- i) The content caters for those who are moderately informed about the microprocessor mechanics , concepts and terms. It DOES NOT cater for users who are beginners in terms of microprocessor knowledge or users who have no knowledge relating to microprocessors .
- ii) It does not contain a section / corner describing the terms used in the article. It should be noted that the articles can get very technical.
- iii) The site has no area in which to discuss any questions or issues that may arise in users/surfers after reading the article(s) .

2.5.2 Review System 2:

<http://www.cpu-central.com/> - Click-On-CPU

The straight-forward layout and menus is also existent here. The general white-blue-black color scheme is easy to the eyes and it is not distracting to the user . There seems to be no general menu, each menu has links to featured and specific sections , like articles, forums, and polls. There is a image links on the top of the page, providing links to major parts of the site. In the main page , each latest article featured has respected links, and has it's section tagged (e.g. Hardware,Software). In terms of accessibility and navigation, the site is well made eventhough it is tabled .

The page did take a substantial time to download (for 33.6 kbps speed). The main HTML file size is more than 77KB, not including the images involved.

The layout of the article segments is extensively tabled, where segments of the site(articles,poll,forums,etc) are columned in either left section, or the right section. The middle accomodates the latest and important articles. The user needs some time to get used to the navigation and layout of the site.

The content not all caters microprocessor subjects , but hardware and software issues and subjects that relate/not related to the processor. It consists of major processor brands.

They are certain drawbacks :

i)The site is not meant for beginners/ users who are new to microprocessors. It caters serious computer enthusiasts / computer overclockers.

2.6 Synthesis of a new system

After considering the analysis above , it is concluded that a new system should be built rather than modifying and improving the existing ones.

These factors are considered for the new system :

Web based system

The new system should be a web based system as it would allow easy user access , anywhere , anytime. It is also easier to develop , and would allow any updates, news and announcements to be available to users in a quick and detailed manner.

Using database

A database would be used to keep store of records of students who access and use the tutorial section. Their score and access details would kept for statistics , evaluation and content quality improvement purposes .

Graphical elements

Proper image presentation and layout can enhance the user's surfing experience in the site. Such impact can be used to help users to better grasp and understand the content of the site.

Page not crowded

The page should NOT have a crowded look, in which a lot of text and images are scattered around the page and sometimes grouped in a way that takes considerable effort to read and understand. The considerable effort might discourage the user to view the page and encourages the user to exit web site.

Proper layout

The layout should make the user feel easy to visit the site. Proper layout in use with coordinated color moods and text size and type can make the site attractive to the eye. It can also improve the look and representation of the content and invites the user to explore the site further.

Error prevention

Errors in terms of spelling , coding and dead links should be prevented as :

- i)spelling mistakes could misinform the user of wrong information
- ii)wrong coding could affect the layout and representation of content
- iii)dead links could frustrate users as needed pages cannot be viewed

Navigational Menu

Menus such as navigational menus and option menus are necessary to help the user explore the intended pages with a click of a button, and to help the user acquire the required information faster, thus saving precious time.

2.7 Consideration of System Development Tools

The following are choices of tools that are reviewed so proper tools can be chosen to develop the system :

2.7.1 Operating System

Windows 2000 Server

Windows 2000® Server is the multipurpose network operating system for businesses of all sizes. Windows 2000 Server lets you share files and printers reliably and securely. It also always developers to build Web applications and connect to the Internet. One of the application that come with this operating system is IIS 5.0 (Internet Information System), which is a multitasking server software that supports Web server, mail server , FTP server and NNTP news server configurations.

Linux

Linux is free operating system in which it can be used on almost any computer. In other words , it requires minimal hardware requirements , which makes it usable by many computers today. It is network-friendly as it supports major network protocols like Novell and Windows protocols. Linux supports multi-user environment and is

very famous for its above-average multitasking capabilities. Linux is an open source software, which makes it customisable and programmable by programmers and developers.

It is reliable as it is very stable and does not need regular reboot. It is backwards-compatible in terms of hardware, so any old hardware is no problem for Linux.

2.7.2 Web Server

Personal Web Server

Its features are very similar to Microsoft's Internet Information Server, but it is more geared for small scale Web application. It supports ASP scripting, Javascript and CGI.

Microsoft Internet Information Server 5.0

Microsoft Internet Information Server (IIS) is a web server programme which can host and manage Web sites, implement business application and publish information across the Internet or an corporate intranet. Dynamic and customisable web pages can be implemented with help of ASP files, which can accomplish tasks that would require frequent updating and maintenance.

It has user logging facilities for checking user usage, site visitation and statistical tasks. Administration and configuration tools are available for any web site properties, whether it is content rating or web site location change.

IIS provides a integrated server solution , rather than a stand-alone Web server , to provide all the services required in businesses. It has built-in Web functions that provide high level of performance , security, manageability and ease-of-use. IIS 5.0 is designed to meet needs of various organizations, from small corporate workgroups on an intranet to Internet Service Providers (ISPs) that host high-volume Web Sites.

It's benefit includes :

- i)Complete Windows NT integration.
- ii)Easy publishing
- iii)Easy indexing
- iv)Easy development of components and applications using existing programming and scripting languages.
- v)Easy management
- vi)BackOffice integration

Apache Web Server

The Apache Project is a collaborative software development effort aimed at creating a robust, commercial-grade, featureful, and freely-available source

code implementation of an HTTP (Web) server. The project is jointly managed by a group of volunteers located around the world, using the

Internet and the Web to communicate, plan, and develop the server and its

related documentation. These volunteers are known as the Apache Group. In

addition, hundreds of users have contributed ideas, code, and documentation

to the project. This file is intended to briefly describe the history of the

Apache Group and recognize the many contributors.

2.7.3 Web Database

Microsoft Access 2000

Microsoft Access 2000 is a pretty versatile product. It can be used as a database or application development tool. The key feature that sets it apart is it's ease of use. It is a straightforward database creation tool compare to other databases such as DB2 and SQL Server. Developing applications with Access is even simpler than the similar applications with Visual BASIC. Microsoft Access 2000 has many wizards and intuitive tools to help create both databases and applications.

Microsoft Access 2000 offers many different types of Access databases. These types of databases can be categorized by their file extensions. These extensions can be made of .MDB , .MDE , .ADE, and .ADP extensions.

Traditional Access databases which has .MDB extensions can contain data (in tables and queries) and a frontend application (in the form of forms , reports , VBA code). Such files can contain links to other databases.

There is a relationship between Access file types and the way Access can be used.

There are 3 of them :

i)Access 2000 can be used as a simple database. A single MDB created contains the database . Other tools (Visual BASIC, Microsoft Word, Microsoft Excel) can be used as the interface to manipulate database data.

Relational Table – It is a matrix of row and column intersections where each

ii) Microsoft Access 2000 can be used as a programming tool. The Access application is contained in a single ADP format file and the database is located outside Access.

Relational database – Such databases use the concept of tables to organize the data

iii) Microsoft Access 2000 can be used as a programming tool and a simple database. Database and application may be contained inside a single MDB file or many MDB files or a file in combination with another external database.

Structured Query Language (SQL) – It is a powerful query language that can retrieve

According to the statistics, between 70% and 80% of the applications built now, save data in some form of database. Big enterprises applications use databases like SQL Server or Oracle. Such databases allow large number of users to access large number of information in a quick manner. Small desktops applications does not need the overhead and the complexity of large databases.

Microsoft Access 2000 is a PC-based relational database.

Description of terms are as follows :

Database – a storage place for data. It has to use some form of logical construct to represent the data within a database, such as tables.

Relational Table – It is a matrix of row and column intersections where each intersection contains a specific piece of data. Each column represents a specific characteristic of the main table.

Relational database – Such databases use the concept of tables to organize the data in a database. Each table usually has some way to relate to other tables. Tables use completely independent but can easily connect data between tables. Data is stored within tables as records (rows) and fields (columns).

Structured Query Language (SQL) – It is a powerful query language that can retrieve collections of related data from relational databases. SQL uses a relatively easy syntax to retrieve data while hiding the underlying complex details of the retrieval process.

Data Integrity – The process of making sure the stored data is reliable and accurate. This can be done using keys, table relationships and field constraints.

Relationships allow associations of a column or columns in a table with a column or columns in another table (for example, a Book table with an Author table). This allows data entered in one table column has a related record of data in another table (a book entry should have a corresponding author entry in another table). In the example stated , if relationship between tables do not exist, a book entry can be without a corresponding author entry in the related table, which undermines data integrity.

Microsoft Access can also create stored SQL queries. Access queries are compiled SQL statements that can be used to retrieve , update or delete specific records that match a user's need. Queries in Access are created using SQL.

Active Server Pages is a technology for the creation of dynamic content of Web

Microsoft SQL Server 2000 script codes (usually VBScript) to achieve content that

changes to the user's interaction with the forms and inputs in a page. It is the main

SQL Server 2000 is a fully Web-enabled database product, providing core support for Extensible Markup Language (XML) and the ability to query across the Internet and beyond the firewall.

These tags describe content in the usual static way, while VBScript controls the flow

of execution through the tags. This approach has a few advantages :

SQL Server 2000 provides extensive database programming capabilities built on

Web standards. Rich XML and Internet standard support give you the ability to store and retrieve data in XML format easily with built-in stored procedures.

It allows easy access to data through the Web. It has integrated and extensible analysis services to analyze the data for business purposes. Quick development, debugging, and data transformation is available to make sure error-free and optimum operation , for good results.It's easy and simplified management and tuning allows faster alteration and modification .

It is a scripting language , so a VBScript document is interpreted when the

document is requested , and follows the instructions it finds on the page. This on-the-

fly interpretation of a plain text document can be costly and time-consuming,

especially for a high-traffic Web server.

2.7.4 Web Application Programming Technology

Active Server Page

Active Server Pages is a technology for the creation of dynamic content of Web Pages. It enables the use of script codes (usually VBScript) to achieve content that changes to the user's interaction with the forms and inputs in a page. It is the main standard for dynamic data and content representation.

Active Server Pages involves mixing VBScript codes into ordinary HTML tags. These tags describe content in the usual static way, while VBScript controls the flow of execution through the tags. This approach has a few problems :

- VBScript is used mainly in Web pages, so VBScript has limited reach and applicability.
- ASP uses Microsoft's proprietary COM object technology. While some porting to other platforms has been done, ASP is designed to run mainly on Microsoft Windows servers.
- It is a scripting language , so a VBScript document is interpreted when the document is requested , and follows the instructions it finds on the page. This on-the-fly interpretation of a plain text document can be costly and time – consuming, especially for a high-traffic Web server.

Common Gateway Interface

The Common Gateway Interface (CGI) is a standard for interfacing external applications with information servers, such as HTTP or Web servers. A plain HTML document that the Web daemon **retrieves** is **static**, which means it exists in a constant state: a text file that doesn't change. A CGI program, on the other hand, is **executed** in real-time, so that it can output **dynamic** information.

It allows web servers to execute other programs and incorporate their output into text, graphics and audio sent to the browser. The server and the CGI program work together to enhance and customize the World Wide Web's capabilities. By providing a standard interface, the CGI specification lets developers use a wide variety of programming tool. CGI programs does the processing behind processing forms, looking up records in a database, sending email, building on-the-fly page counters, and dozens of other activities. Other wise, without CGI, web servers are only capable to provide static documents and links to other pages/servers. With CGI, it becomes interactive, interactive, informative, and useful.

A CGI program can read and write data files and produce different results each time you run it (a Web server can only read them). A sample CGI program, a page counter, works by acquiring the previous count from information stored on the server, increments it by one, and creates a .GIF, .JPG or text on-the-fly as it's output,

every time the counter is called. The server sends the graphics or text data back to the browser.

CGI is the oldest , most firmly entrenched technology for creating dynamic Web pages. With CGI, the server responds to the user's request by running an ordinary computer program. CGI programs are typically written in a language called PERL, but other programming languages can be used as well. It is a scripting language , a language that is never compiled. These programs remain in an editable text format.

Java Server Pages

Java Server Page (JSP) is a technology for controlling the content or appearance of Web pages through the use of servlets, small programs that are specified in the Web page and run on the Web server to modify the Web page before it is sent to the user who requested it. JSP is comparable to Microsoft's Active Server Page (ASP) technology. Whereas a Java Server Page calls a Java program that is executed by the Web server, an Active Server Page contains a script that is interpreted by a script interpreter (such as VBScript or JScript) before the page is sent to the user.

JavaServer Pages mix HTML tags with programming language codes , and these codes help a computer decide what to do next. JSP is a server-side technology , so a JSP document can share data among the users , access databases , and do all other things that require server intervention. JSP takes full advantage of the JAVA programming language , which is a powerful , general-purpose language with a huge

collection of APIs (Application Programming Interfaces), unlike VBScript , which is used in ASP documents. These API packages encompasses a variety of applications , including databases, electronic commerce, accessibility, security, graphics, email, transaction processing , and many others. It is not a scripting language, so a JSP document does not get fully reinterpreted with every user visit. Like Java , a JSP document gets compiled into JAVA bytecode – a binary format with fast , efficient run-time capabilities that can run on any platform that has the Java Virtual Machine (JVM) module installed. It means it follows the ‘compile once, run anywhere’ principle, at which a JSP is compiled into bytecode and can be run on any platform. JSPs also do not rely on COM objects, unlike ASP.

2.7.5 Web Programming Language/Scripting Language

Hypertext Markup Language (HTML) and Dynamic HTML and Cascading Styling Sheet (CSS)

HTML is necessary as it is the scripting language to define the layout and content definition on the Web Page. It is used to mark the layout location of text and images in the web page. DHTML is a extension of HTML in which improved and new tags are added for dynamic page creation. CSS is part of the DHTML specification.

Cascading Styling Sheets (CSS) – a standard of the World Wide Web Consortium (W3C) for style sheets capable of indicating presentation formats (fonts , font sizes, paragraph alignment) for HTML elements. Using CSS syntax, Web authors can

incorporate style statements using HTML 4.0's style statement tag, a separate style are using the STYLE element within the document's HEAD element or as a completely different separate text file. The term 'cascading' tends to refer to overriding external style sheets with style definitions in the HEAD and style statements in a HTML element.

JavaScript

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

It is an object-based, client-side scripting language for dynamic Web publishing that enables Web authors to embed simple Java-like programming instructions within HTML text of their webpages . It lacks powerful inheritance capabilities of Java , as it is a simple scripting language. It is an interpreted language that executes slower than Java (which is a hybrid compiled / interpreted language) and required it's own interpreter , which is built – in in most browsers.

Object based means JavaScript uses items called objects. Client side means that JavaScript runs in the client (software) that the viewer is using, not on the Web server of the site serving the page. The client is usually a web browser.

The term scripting language means that it doesn't require a program to be compiled before it is run, as the interpretation is done on the fly by the client.

With JS, a Web server just sends a pre-written document to the user's browser. Then, the browser takes over. If the document contains JavaScript statements, the browser reads the statements, interprets them, and renders a display in the user's window according to the wishes expressed in the JavaScript code. So, the burden of creating dynamic content rests on the user's Web browser. This is fine for making quick, lightweight changes to a page, but to query a database or even count hits to a Web site, some server-side involvement is necessary.

JavaScript is used in Web site development to do such things as:

- i) Automatically change a formatted date on a Web page
- ii) Cause a linked-to page to appear in a popup window
- iii) Cause text or a graphic image to change during a mouse rollover

JavaScript uses some of the same ideas found in Java, the compiled object-oriented programming derived from C++. JavaScript code can be imbedded in HTML pages and interpreted by the Web browser (or client). JavaScript can also be run at the

server as in Microsoft's Active Server Pages before the page is sent to the requestor.

Both Microsoft and Netscape browsers support JavaScript, but sometimes in slightly different ways.

ActiveX controls

ActiveX controls is a loosely defined set of technologies developed by Microsoft.

ActiveX is an outgrowth of two other Microsoft technologies called *OLE (Object Linking and Embedding)* and *COM (Component Object Model)*. As a moniker, *ActiveX* can be very confusing because it applies to a whole set of COM-based technologies. Most people, however, think only of ActiveX controls, which represent a specific way of implementing ActiveX technologies.

Visual Basic Script (VBScript)

VBScript is an interpreted script language from Microsoft that is a subset of its Visual Basic programming language designed for interpretation by Web browsers. VBScript can be compared to other script languages that can be used on the Web, including:

Netscape's JavaScript

Sun Microsystem's Tcl

The UNIX-derived Perl

IBM's Rexx

It gives the developer tools like interactive streaming video, animation, audio, vector graphics, and hitmap graphics to create high-impact user interfaces, product tours,

In general, script languages are easier and faster to code in than the more structured, compiled languages such as C and C++ and are ideal for smaller programs of limited capability or that can reuse and tie together existing compiled programs.

Photoshop is a very highly recommended and powerful image editing software. It is

VBScript is Microsoft's answer to Netscape's popular JavaScript. Both are designed to work with an interpreter that comes with a Web browser - that is, at the user or client end of the Web client/server session. VBScript is designed for use with Microsoft's Internet Explorer browser together with other programming that can be run at the client, including ActiveX controls, automation servers, and Java applets. Although Microsoft does support Netscape's JavaScript (it converts it into its own JScript), Netscape does not support VBScript. For this reason, VBScript is best used for intranet Web sites that use the Internet Explorer browser only.

2.7.6 Multimedia Creation

Macromedia Flash

This product is known as the solution for developing rich Internet content and application . The environment it provides includes powerful video, multimedia, and application development features, which allow designers and developers to create rich user interfaces, online advertising, e-learning courses and enterprise application front ends.

It gives the developer tools like interactive streaming video, animation, audio, vector graphics, and bitmap graphics to create high-impact user interfaces, product tours, rich media advertising and application.

Adobe Photoshop

Photoshop is a very highly recommended and powerful image editing software. It is also the leading image editor around. It contains a variety of powerful and useful image manipulation and enhancement tools. It can be used for image and image-oriented content creation , without sacrificing the quality of the output.

Swish

This is a programme that always you to create Flash presentation, without using Flash . It contains sets of tools , which are easy to use and user-friendly, which helps the developer to create Flash content, without the involvement of Macromedia Flash programme. It is useful for creation of Flash content on the fly.

2.7.7 Web Application Development Tools

Notepad

This nifty text editor was once commonly used to manual write the HTML codes into the web page . It does not provide any tools or integrated development environment (IDE). Instead, it was meant for web developers who have extensive knowledge of HTML coding.

FrontPage version 2002 delivers a complete tool that enables powerful web site creation, precise and flexible web site management, and the ability for web experts to import, edit, and format HTML the way they want—all with a user-friendly interface that Microsoft Office users are familiar with. It offers an IDE for intermediate Web developers.

FrontPage is also a WYSIWYG HTML editor which has an user interface similar to the Microsoft Office 2000 applications. It supports file format conversion to and from Microsoft Office formats and HTML, uniform table commands, uniform layout commands , and creation of HTML forms.

Microsoft Visual Interdev

Visual Interdev provides a a more visual approach to the web design arena. It is a WYSIWYG HTML / ASP editor or scriptor which has program support and end-to-end debugging. It was designed to accommodate professional web designers in the design of enterprise level database-driven web sites, unlike other editors which is more to authoring medium to small scale web projects. It has extensive support for development teams , from development groups to individual tasks. It has database wizards that help in the creation and modifications of databases. It also has support for the latest wb design technology.

It offers an IDE for serious Web developers . It allows you complete control over code and design. It has extensive visual editing tools, and tools to develop HTML, XHTML, XML, ASP, ASP.NET, JSP, PHP, and Macromedia ColdFusion websites. It has libraries of code to create database insertion and update forms, recordset navigation pages, and user authentication pages. Features like code hints, tag editors, extensible color coding, tag choosers, snippets, and code validation improves the developers ability to complete the coding at a much quicker time. Dreamweaver is one of the best WYSIWYG (What You See Is What You Get) web page editing tools available in the market. It helps create and edit tables and frames, create DHTML pages, and with CSS , layers and JavaScript support. It has a built-in FTP client to allow transfer of HTML files to the FTP server holding your web pages.

2.8 Client/User Application

The user has to have these applications in order to access the project site

- Internet connection
- Javascript capable browser (Internet Explorer, Netscape, Opera, etc)
- Shockwave plug-in (to view Flash presentations on the web)

3.1 Introduction

The system analysis phase is required to identify the functional requirement and the non-functional requirement of the system. It also involves the identification of the hardware and software requirements and the way they are involved that is necessary to support the functions of the system. Once it is all identified, a system can be created which follows the user-oriented description and functions of the system.

Chapter 3.0

Methodology and System Analysis

3.2 Information gathering methods

Several methods of information gathering has been used in the process of analysis :

(i) Internet surfing

It is a fast and effective way to collect information about certain topic and information. This usually done using search engines which allow searching based on key words or the presence of the keyword in web pages. Such methods allow access to websites which contain useful information. It helps to determine any improvement that can be made in this project as my project is web-based. The Internet is also a source of models which I use as guidelines to help determine the requirements.

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This phase is necessary as it allows careful planning for project development process and involves the process of determining the project life cycle. This phase helps avoid problems like schedule slippage, cost overruns , and poor quality of product.

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ii) researching

This method involves looking through any printed material that is related to my project. This includes magazines, technical books, reference books, and even journals.

All the material used are referenced in the reference section of this report.

iii) observation

It is a useful approach as it allows to make deductions about certain aspect of information. As it is known, the Web is steadily becoming a part of everyday life. There are people who are IT-literate, yet these people are a small number. Surfers may spend time on the Internet but may not find the information they need.

Alternatively , this project proposes as a complete solution for microprocessor information.

iv) discussion

Discussions with fellow colleagues helped me finalize certain misconceptions and misinformation about the project development cycle. They also gave information on possible sources of good information.

v) examples

Example codes and tutorials from the Internet and other electronic and printed media was studied if the information can be applied to the project. This method is very

actively used for the implementation phase , as information from such sources would be created or integrated into the modules.

3.3 Software/Application Development Life cycle

The software development process should be modeled for the following reasons:

- i) It creates an understanding of the development processes involved as a whole and as separate phases
- ii) To detect inconsistencies, redundancies, and omissions in the development process of the application involved
- iii) To evaluate and deduce the proper activities and tasks necessary to achieve the process targets

The model chosen is the waterfall model with the prototype. This model was chosen because :

- i) It allows the developed prototype to be revised if there is any addition or subtraction of feature or requirement. It also allows for any modification if additional components or enhancements is to be added.
- ii) Prototype testing can be done to verify whether it fulfills the requirements. Prototyping is a product that is constructed partially to be tested whether it fulfills the suggested system requirements or to find out any code omission and initiates an error-free execution. This is necessary for the sections of discussion board , opinion poll and tutorial , where the coding needs to be experimented and refined. Necessary corrections can be detected through running a prototype module.

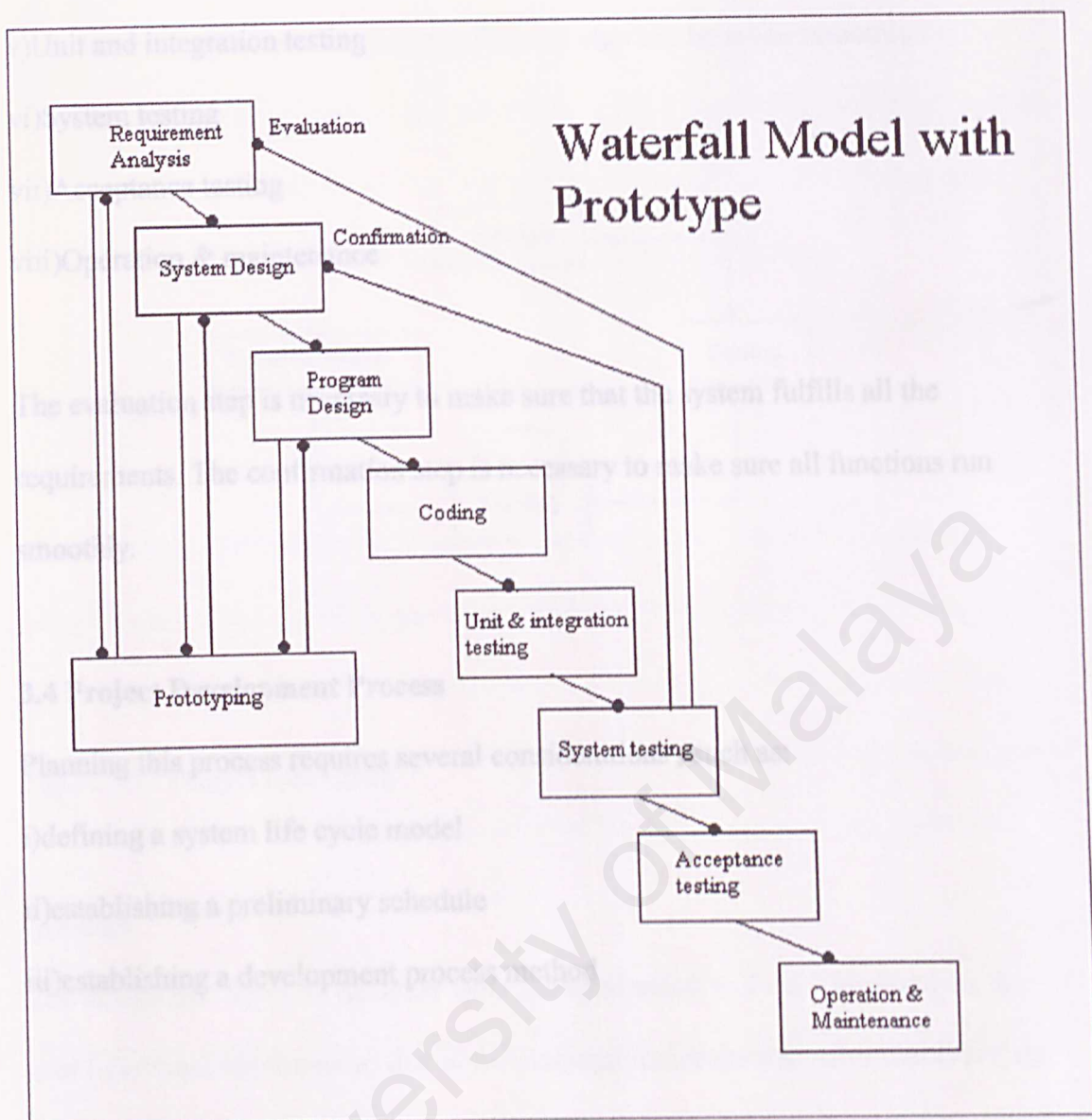


Figure 3.1: Waterfall model with prototype

The phases involved are :

- i) Requirement analysis
- ii) System design
- iii) Program design

- iv) Coding
- v) Unit and integration testing
- vi) System testing
- vii) Acceptance testing
- viii) Operation & maintenance

The evaluation step is necessary to make sure that the system fulfills all the requirements. The confirmation step is necessary to make sure all functions run smoothly.

3.4 Project Development Process

Planning this process requires several considerations , such as:

- i) defining a system life cycle model
- ii) establishing a preliminary schedule
- iii) establishing a development process method

3.5 Project Life Cycle

In the process of ensuring that the application development is done carefully, several steps are taken. These steps can be grouped , and the grouping would be called the project life cycle. The number of steps may change according to the project's complexity , however, each project will have basic steps that MUST be taken.

These steps allow plans for each section of work to be done. If the goals set for a section is accomplished , transition to the next step can be made smoothly.

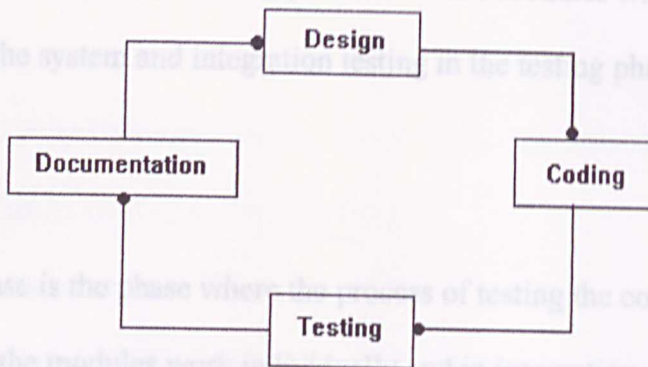


Figure 3.2 : Project Life Cycle

i)Design

The design part involves deciding what the application will do. This involves the user functional requirements and non-functional requirements. After that is set, the next phases should be easy as it is done based on the requirements stated previously. However, the design section can be considered as a cycle by it's own right, as it is consisted of several steps in itself.

The design is consisted of design description, functional description , technical description and specification.

ii)Coding

Scripting languages such as HTML (with DHTML, CSS) , ASP, VBScript, and JavaScript will be used in the coding phase. This phase is the part where code programming of the application is done. All the code placed in the web pages will be written according to priority and tag placement. The modules will be coded and combined for the system and integration testing in the testing phase.

3.6 Functional Requirement

iii)Testing

The testing phase is the phase where the process of testing the code will be done to check whether the modules work individually and in integration, and to fix and debug any code that is causing any error. The types of testing are :

a) Unit testing – involves testing individual modules or section of code. In the case of this project, a good example is testing whether the posting a new discussion topic section is functioning or not.

b) Integration testing – involves testing all the different units of code as a single system.

c)Validation testing

d)System testing

iv)Documentation

This phase involves creating a sort of help system for the application that should include online help and a user’s manual. Facilities such as online help is important as

users would want to refer to them if they encounter any problem about the system. It would be helpful if there was a section dedicated to user problem-solving needs. The documentation can either come in printed form or in an electronic form such as a Word document or a web page.

Links of related websites

3.6 Functional Requirement

Reference section : user through other web sites

View and browse content

The users of the site must be able to view the content using a browser and minimal external plugin. The user must be able to read the text with comfort. Content must be created in a viewable format which eases the reading experience. Browsing should be possible via links and navigational menus.

Help section

Search capability

The users must be able to make searches for certain phrases , terms or content that is related to the microprocesor. The search should view the search result , to give the user the ability to choose the relevant page.

Tutorial section

Discussion forum

The forum should enable users to read discussion material, reply to messages, and send a new message on a new question / topic of discussion.

the knowledge of the user, and guide the user and proper answers will be given.

Opinion polls

User would be able to give poll input based on poll topic, to gauge the user's majority opinion concerning poll topic.

Links of related websites

A list of related links should be made available to enable users to explore further the topic of microprocessor through other web sites.

User website opinion

This feature allows user feedback , which would enable the webmaster to refine and improve the website.

Help section

This feature will include the documentation and the user manuals that is necessary for users who need help navigating the site.

Tutorial section :

Able to test knowledge through tutorials

The tutorial section will provide users a testbed for their knowledge and understanding of the subject. It will provide questions to test the knowledge of the user, and grade the user and proper answers will be given.

Grading and answers

The users who used the tutorials would be given grades to enable the users to evaluate their performance. Answers to the questions will also be given.

Registration for tutorials

The site should allow registration to users who are not registered.

User verification

A login/log-out section should be implemented to allow registered users to enter the tutorial section. A database would keep the relevant information.

3.7 Non-Functional Requirements

These requirements represent the essential definitions of the system properties and constraints under which a system must operate. It is also important, and goes in accordance with the functional requirements of the system.

Userfriendliness

The term user-friendly in the project refers to the degree of understandability of the user to the system. High degree of user-friendliness can be achieved by following certain rules :

- making the user interface easily understandable
- consistency in terms of screen design and error messages displayed will allow user to familiarize with the system interface easily.

- Allowing accommodation of any level of user by clearly stating user interface attributes and actions
- Appropriate error handling with associated error messages
- Reducing the amount of memorization of events or commands by the user

Correctness

Refers to the extent of which a program satisfies its specifications fulfills the stated requirements of the system.

Efficiency

In computer terms, efficiency is measured when a process or a procedure can be called or accessed in unlimited number of times to produce similar outcomes or output at a creditable pace or speed. It also refers to its ability to accomplish its objectives.

Effectiveness

In computer terms, it refers to the ability to use minimum resources to achieve its objective.

Modularity

It is critical to good program design. Modules are working of the system that are broken down. This is to allow distinct functions to be isolated. Such isolation allows easier testing and maintenance as it helps isolate and identify errors when they occur. Since it is isolated, any expansion to the module is also easier to implement.

Accessibility

It is important to make the system accessible to a wide community of users. The system should be accessible anywhere as long as there is Internet access.

Maintainability

It is defined qualitatively as the ease with which software can be understood, corrected, adapted and enhanced.

Expandability

Defined as the degree of which architecture, data or procedure design can be extended and enhanced.

Reliable, accurate and robust

The system should be able to perform search functions accurately as requested by the user and must be able to eliminate duplicate records (The system must be able to maintain *accurate* database). The system should be *reliable*, that it should not produce dangerous, life-threatening, or costly failures when it is being used.

Robustness is defined as the quality that causes a system to be able to handle or avoid disaster in case of unexpected data.

Security

The system should be able to authenticate and authorize valid or registered users. The authorized users should only read and have access to data related to the user only. As such, users are able to perform actions based on level of user's authority.

3.8 Programming/scripting language

The programming language is considered after understanding the non-functional and functional requirements.

The choice of programming/scripting language should be influenced by these criterias:

- A web-based scripting/programming language
- The language involved must be able to support database communications
- A server-side and client-side programming language
- A dynamic programming / scripting language to create non-static web page
- A programming/scripting language that supports ease of user interface construction, as end user interaction with the system is frequent

In the end , ASP, JavaScript, VBScript, HTML, DHTML, and CSS are chosen to develop the system and for the user interface design.

3.9 Advantages of ASP

Active Server pages allows the power of a real computer language in a webpage. It enables programming codes alongside HTML codes. This is easier for the programmer/developer as updating a web site just involves editing the code using a HTML editor, making the changes to the codes, and save it. Since the ASP codes and the HTML script tags are mixed together, it is easier to create interactive web sites and for future updating and maintenance purposes.

3.10 Software Requirements

Server requirements

The server has to have various supporting software installed, like :

Feature	Description
Microsoft Windows 2000 Server	network operating system
Microsoft Internet Information Server	web server service to interpret ASP codes
Microsoft Internet Explorer or Netscape Communicator	Web browser to view output or to test the output
Microsoft Access	Web server for database to perform record keeping functions

Client requirements

The client system requires a browser in their system. A browser allows the user to view the World Wide Web using the HTTP (hypertext transfer protocol) protocol. It

generally views the HTML files, but is also capable of accessing FTP (File Transfer Protocol) sites.

3.11 Hardware Requirements

Server requirements

- i) A Pentium III system
- ii) 64MB of RAM memory or more
- iii) network interface card that connected to the network and the Internet
- iv) Other necessary peripherals

Client requirements (minimal)

- i) A Pentium I system
- ii) 32MB of RAM memory or more
- iii) network connection through existing network configuration or modem that has access to the Internet
- iv) Other necessary peripherals

3.12 Tools used

After the review of the tools above , the choice is made:

Windows 2000 Server

It is more user-friendly , straight-forward options and had experience in dealing with problems related to this OS.

Microsoft Internet Information Server 5.0 / Personal Web Server

It is more familiar as I had several months of experience using this product, and it is easily configurable. It is required to host the project I am designing. However, The Personal Web Server can also be used as the web server as it's functions are similar to IIS , and very much configurable.

Microsoft Visual Interdev 6.0

Used for ASP code resource

Microsoft Access 2000

It will be used to provide the database necessary for my project.

Active Server Pages

VBScript

Javascript

This scripting language will be used to enhance the navigation and the content of my project.

Flash

This programme will be used to create and produce the multimedia elements necessary to enhance the understanding of topics or concept or mechanics of the microprocessor.

Swish

Adobe Photoshop

This programme is necessary for all my image editing needs

Macromedia Dreamweaver

Chapter 4: System Design

4.1 Introduction

System Design is the creative process of changing the problem into a solution. There can be many ways to implement designs, given specific requirements. For example, there many ways to implement graphical user interface designs for a web site using imagemaps, navigational menus or text as hyperlinks and interactive elements.

Problems are defined through the requirements and a solution is considered to solve the problem if it satisfies the requirements in the specification.

4.2 Segmentation – User Interface Layout

The following diagram shows how the material and requirements of the project. The Segmentation shows how roughly the main page will be divided. The navigational menu (nav menu) is on the segment below the main title segment.

User interface is important to web sites as it is the mechanism in which the user interacts with the program. It is the layer that lies in between the user and the program.

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The following shows the segmentation of the main page according to the material and requirement of the project. The segmentation shows how roughly the main page will be divided. The navigational menu (nav menu) is on the segment below the main title segment .

User interface is important to web sites as it is the mechanism in which the user interacts with the program. It is the layer that lies in between the user and the program.

Featured articles give attention to articles that might appeal to majority visitors , who might find the article an appealing read.

The other segments are :

i)Website logo and title image in title segment

The project logo will be located here. This segments might contain header related information or any information that relates to the introduction to this website.

ii)Discussion board related information

This area will exhibit hot discussion topics and links to enter to that specific topic or the discussion board

iii)Opinion polls

Provides poll question, choice and links for poll input and result generation.

iv)Navigation bar

Provides all the links to the website main sections.

v)Featured articles

Provides excerpts , title and links to articles that might get visitors' attention.

Segmentation of project main page (User interface design mapping)

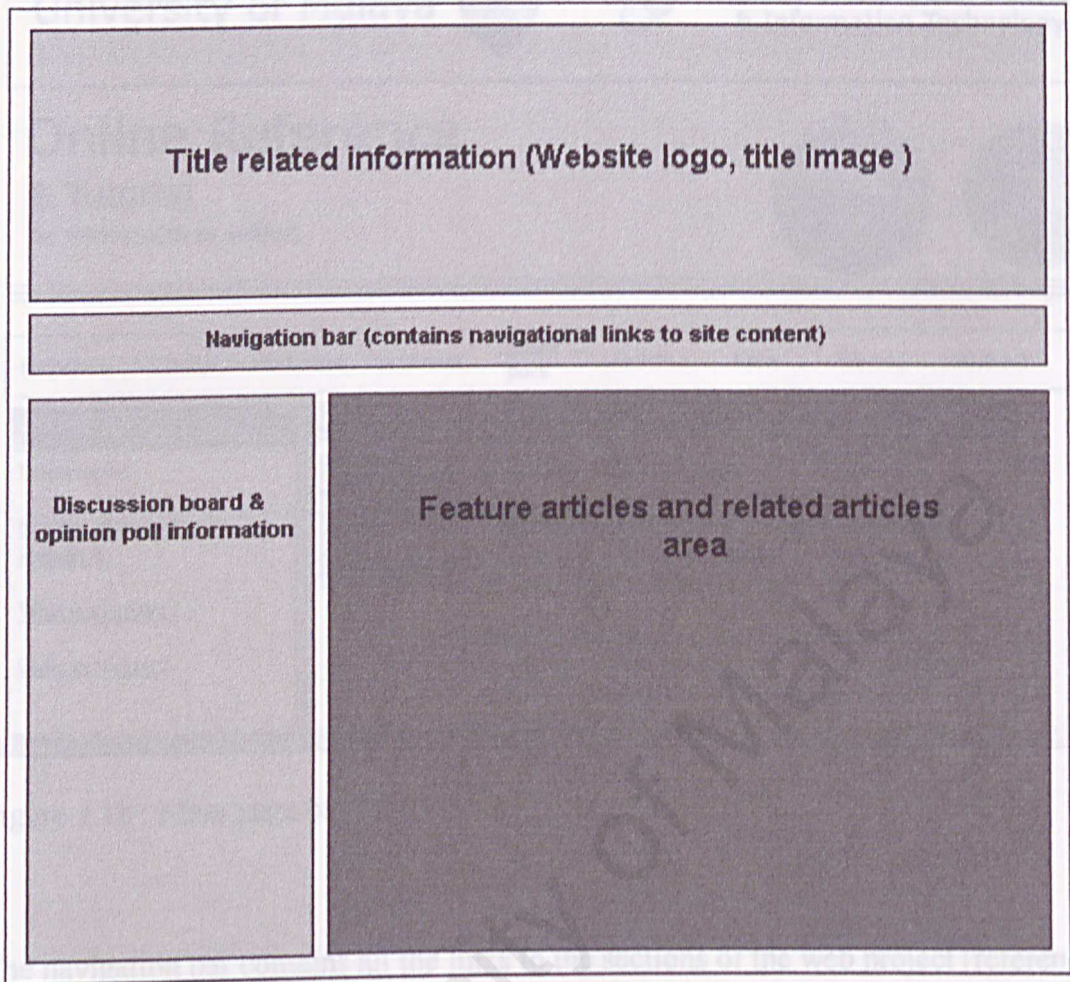


Figure 4.1a : Segmentation of project main page

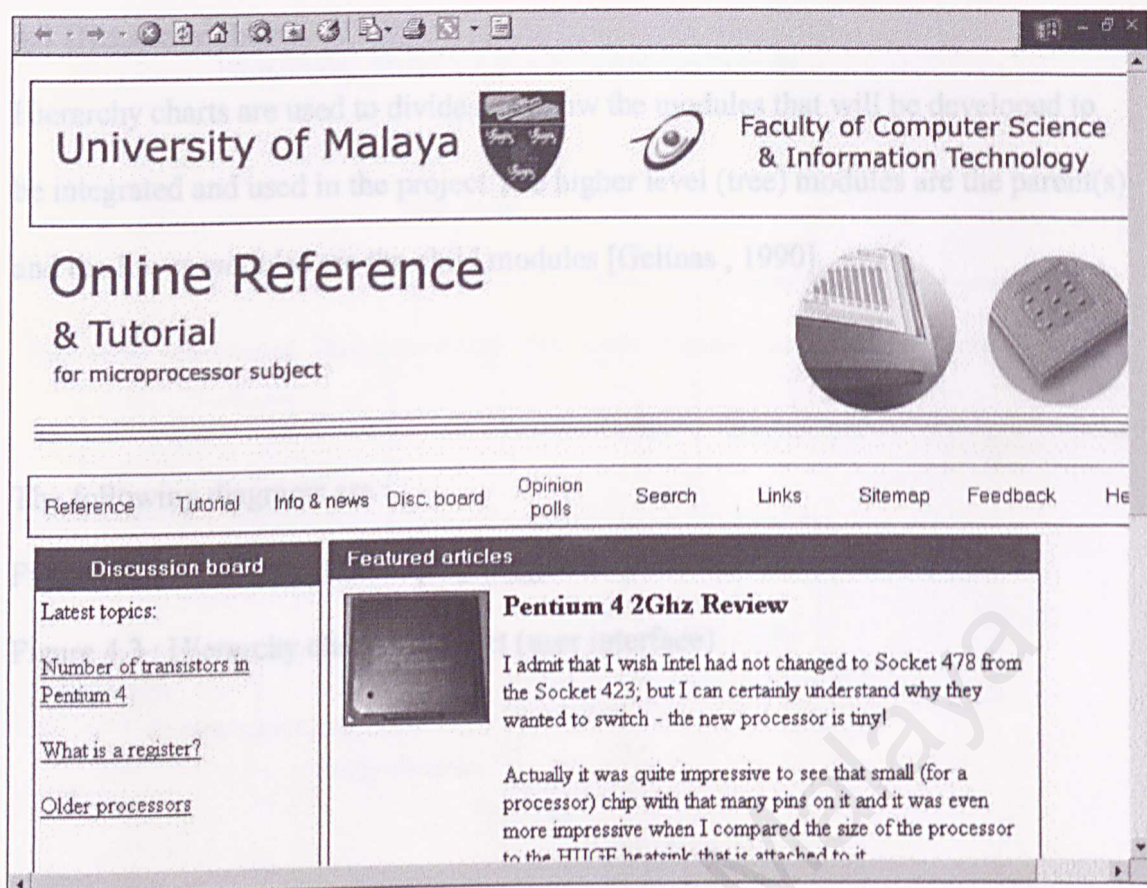


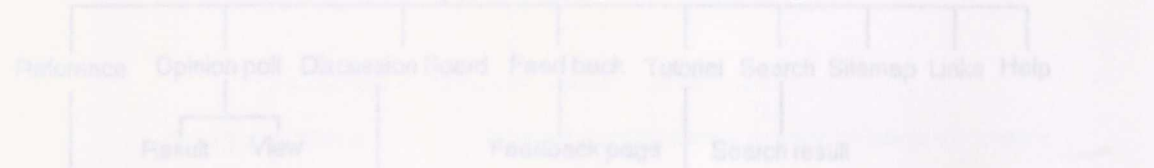
Figure 4.1b : Main page of project (index.htm)

The navigation bar contains all the links to the sections of the web project (reference, tutorial, information & news, discussion board, opinion poll, etc). This bar would be used in most of the pages in the project as it provides navigational flexibility to the user. Text links would also be included at the footer of most pages for better navigational interface to the user.

The user manual can be referred to view the user interface on other pages, which is very much similar to the main page, allowing familiar interface on different pages.

4.3 Hierarchy charts

Hierarchy charts are used to divide and show the modules that will be developed to be integrated and used in the project. The higher level (tree) modules are the parent(s) and the lower modules are the child modules [Gelinas , 1990].



The following diagrams are :

Figure 4.2 : Hierarchy chart of project (general)

Figure 4.3 : Hierarchy chart of project (user interface)



Figure 4.2 : Hierarchy chart of project (general)

Hierarchy chart for the project system in general

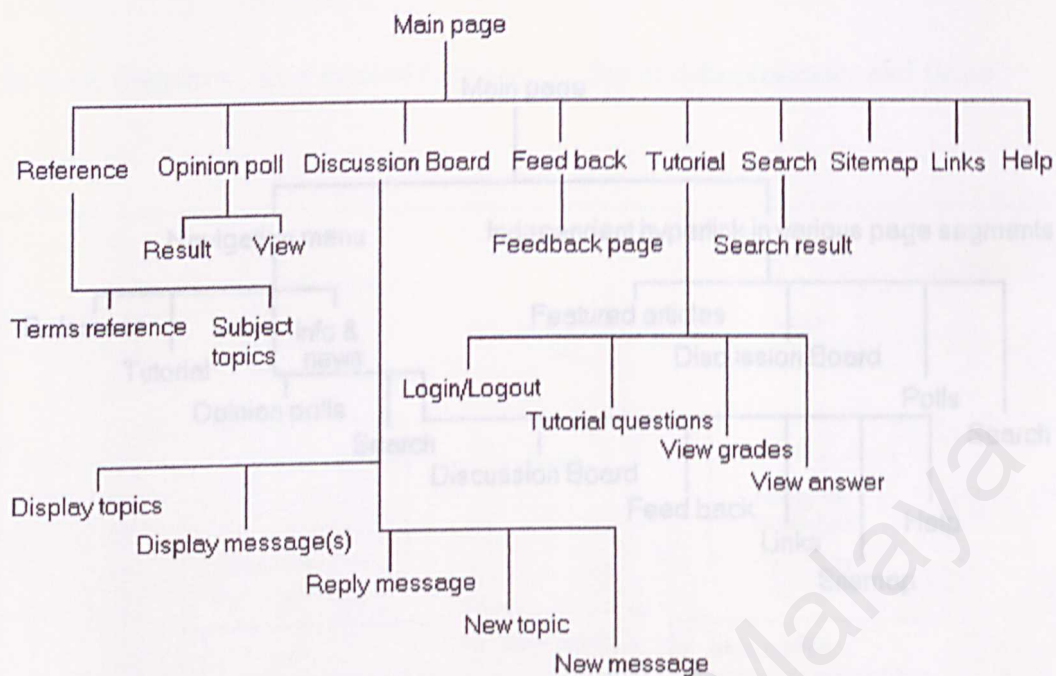


Figure 4.3 : Hierarchy chart of project (user interface)

4.4 Data Flow Diagrams

Data Flow Diagram (DFD)

Figure 4.2 : Hierarchy chart of project (general)

DFD are diagrams that help represent the processes in the system in a more graphical manner. It shows the data processes and flows in an easy and understandable manner. It's function is to give a more detailed analysis of the processes in the system. It's emphasizes on the logic of the data flows in the system.

This diagram is good news to users as it spares the user from committing to technical implementation in the early stages of the system development. It provides a deeper understanding and a graphical depiction of the relationship of each processes and

Hierarchy chart for the project system in terms of links / user interface

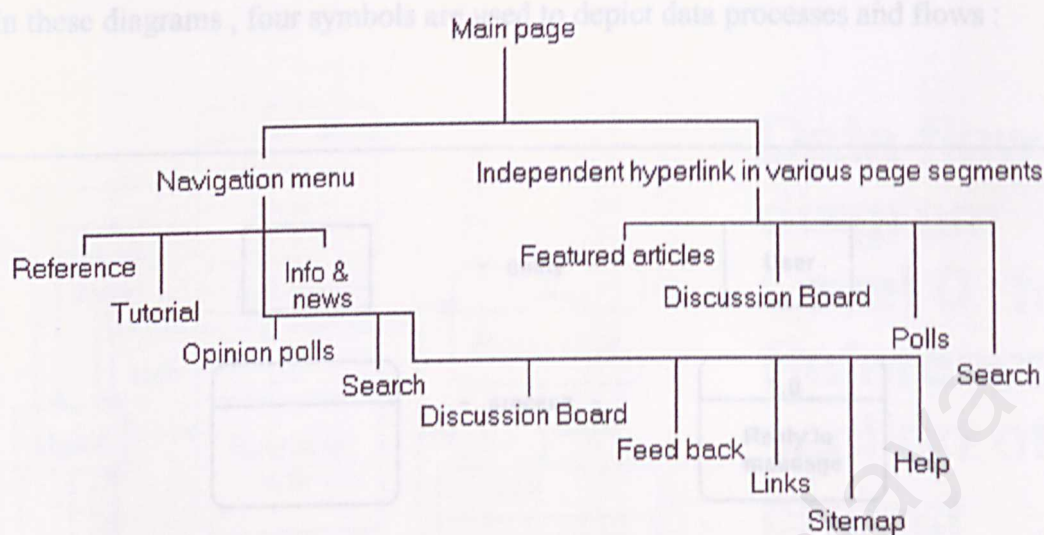


Figure 4.3 : Hierarchy chart of project (user interface)

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modules of the system. It reduces the chance of redundancies in the system implementation, which saves project cost and time .

Diagram 5 : The data flow and processes in the tutorial section

In these diagrams , four symbols are used to depict data processes and flows :

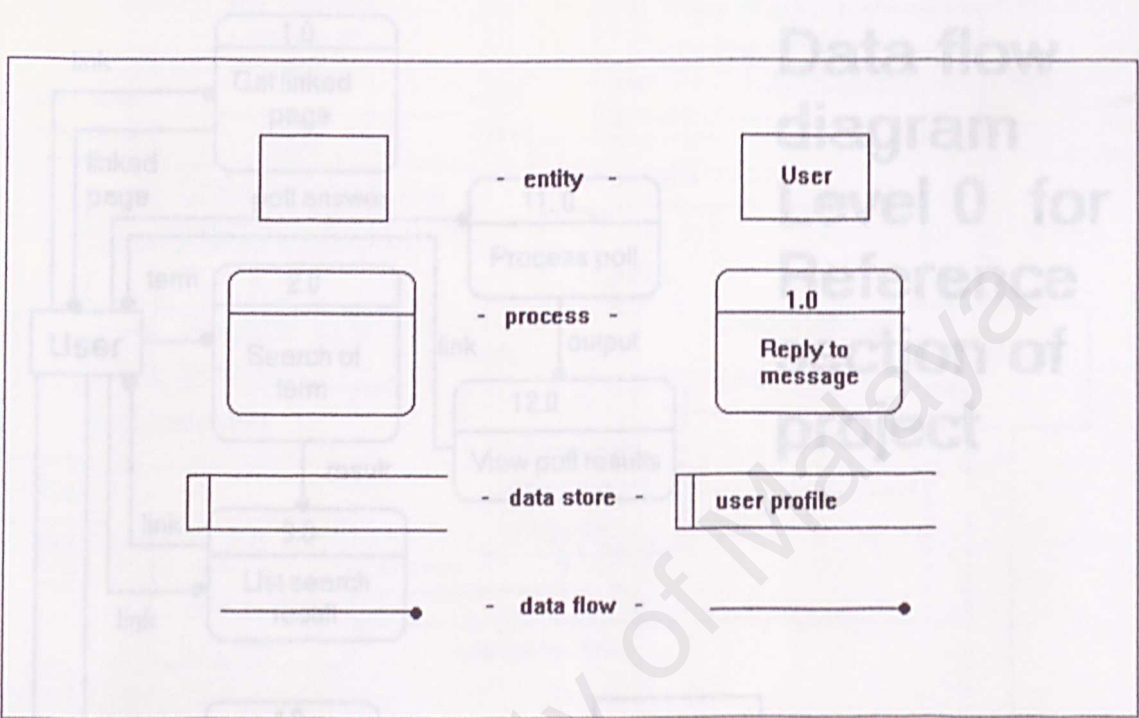


Figure 4.4 : Four symbols in the Data Flow diagrams

The data flow diagram does the following :

- i)graphically charaterises data processes and flows
- ii)emphasises the logic in the system
- iii)conceptualises how data flows and function within the system processes, the input and output as well as the transformation the data undergoes

DFD Level 0 shows the general diagram of how the data is processed.

The following diagrams are :

Diagram 4 : The data flow and processes in the reference section

Diagram 5 : The data flow and processes in the tutorial section

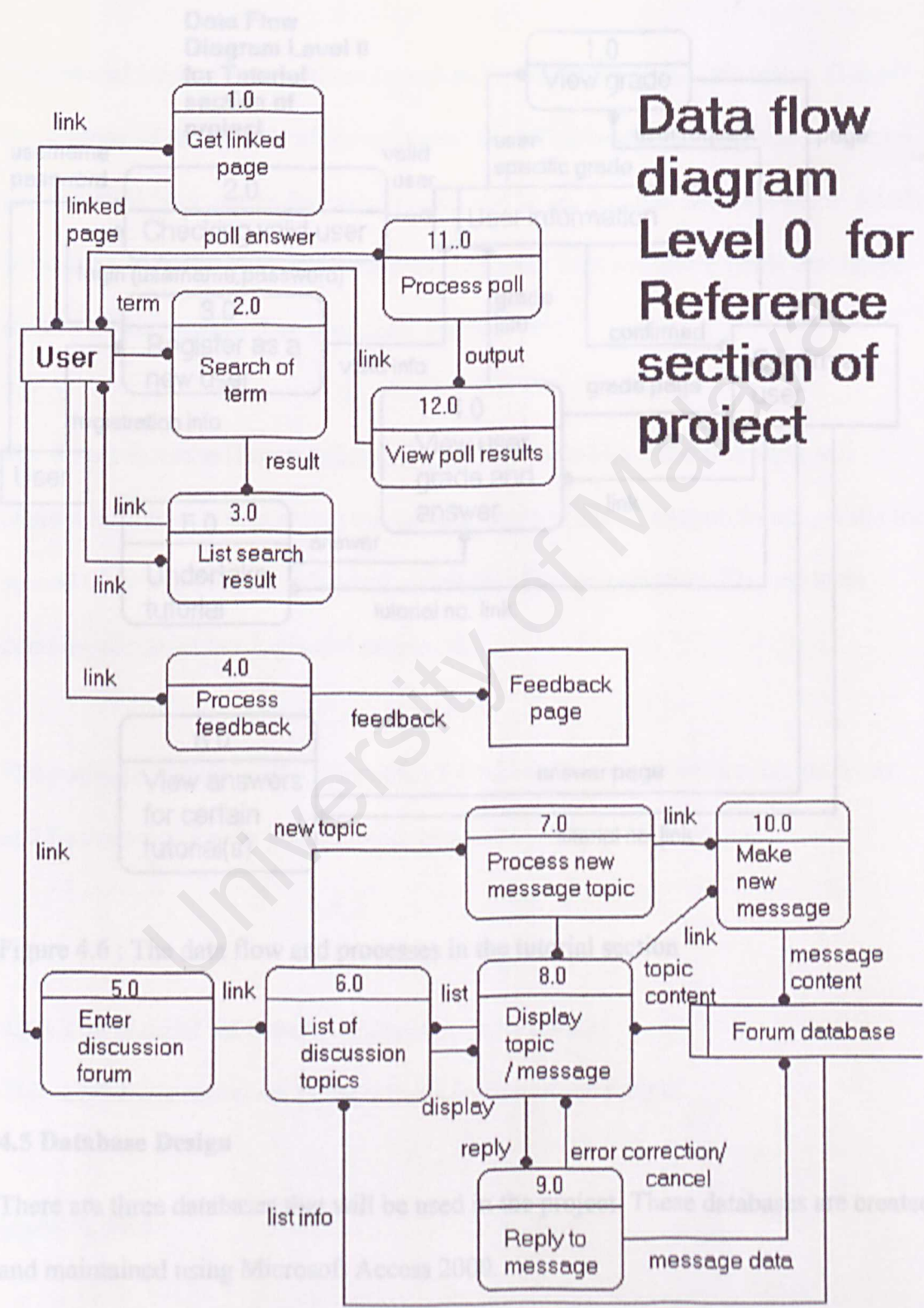


Figure 4.5 : The data flow and processes in the reference section

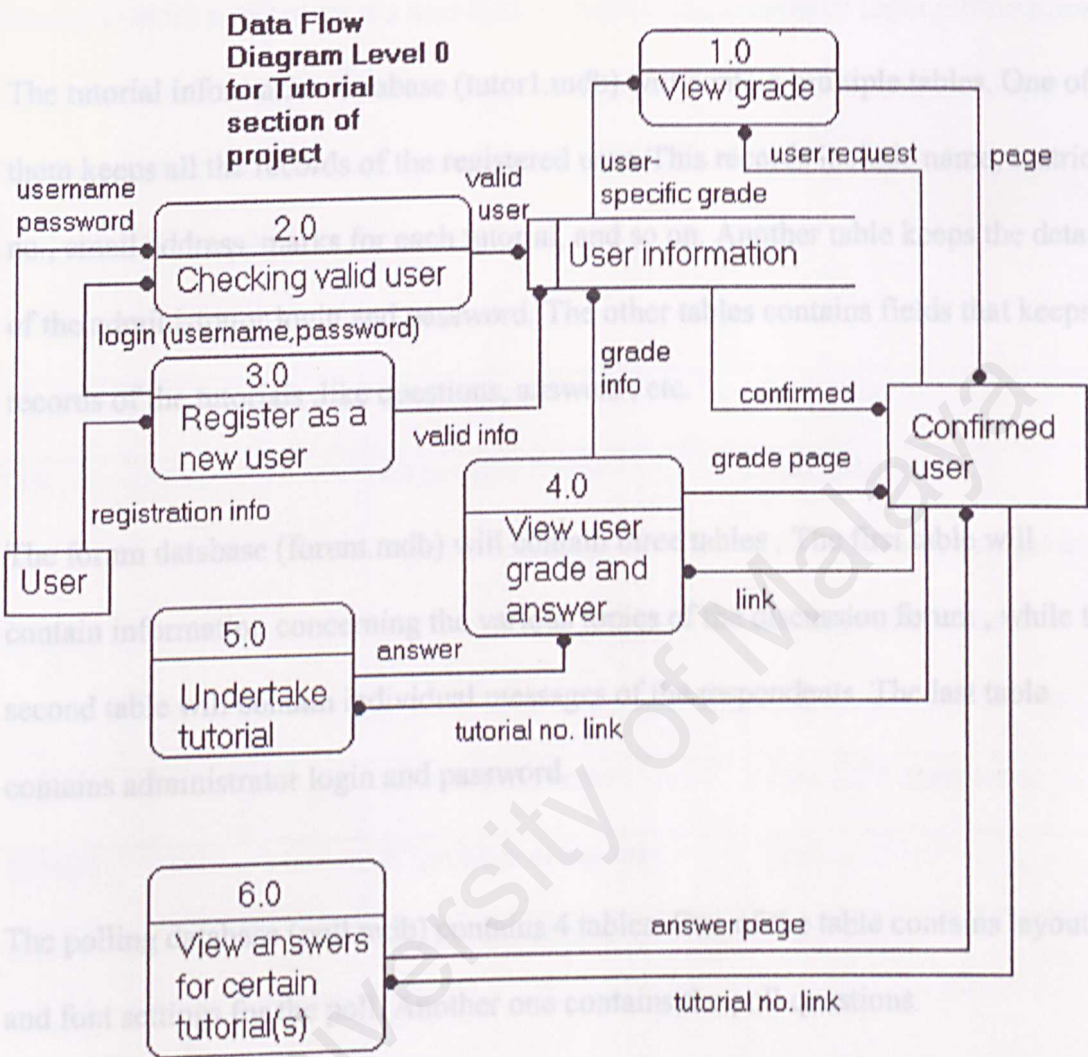


Figure 4.6 : The data flow and processes in the tutorial section

4.5 Database Design

There are three databases that will be used in the project. These databases are created and maintained using Microsoft Access 2000.

This table keeps the relevant records of the registered users. It has 18 fields. This

Each tables in the database contains fields that hold information. Fields are the basic unit that stores information in the database.

username entry as it spares the user from remembering additional login information

The tutorial information database (tutor1.mdb) will contain multiple tables. One of them keeps all the records of the registered user. This records include name, matrics no., email address, marks for each tutorial, and so on. Another table keeps the details of the administrator login and password. The other tables contains fields that keeps records of the tutorials ,like questions, answers , etc.

The forum database (forum.mdb) will contain three tables . The first table will contain information concerning the various topics of the discussion forum , while the second table will contain individual messages of the respondents. The last table contains administrator login and password.

The polling database (poll.mdb) contains 4 tables. One of the table contains layout and font settings for the poll. Another one contains the poll questions.

email
Email address of the user
(important for login)

4.5.1 The tutorial information database (tutor1.mdb)

This database is contained in the tutorial section of the project.

password	User login password	Text
<u>Students table</u>	Date of user registration	Date/time
Tut1 / Tut2 / Tut3 / Tut4	Contains the marks of the	Number (default = -1)

This table keeps the relevant records of the registered users. It has 18 fields. This information will be involved in registration of new members and validation of user's login name and passwords. For login, the matrices number will be used as the username entry as it spares the user from remembering additional login information. The password field is used to store the password. It will be used during user login. Please note that the text data type holds 256 characters while the memo data type holds 65,536 characters.

Field	Description	Data type
ID	ID number of the registered user	Autonumber (automatically assigns a number when record is added)
name	Name of the user	Text (256 characters)
ICNo	IC number of the user	Text
matricsno	Matrics number of the user	Text
email	Email address of the user (important for login)	Text
department	The majoring department of the user	Text
password	User login password	Text
registerdate	Date of user registration	Date/time
Tut1 / Tut2 / Tut3 / Tut4	Contains the marks of the	Number (default = -1)

until Tut10	relative tutorial exercises	
-------------	-----------------------------	--

Table 4.1 : Students table

This table will be involved to store grades for each user who have taken the tutorials.

The access of this table will be during storing grades, reading grades and grade update if the user retakes a particular tutorial.

Forums table

Things to note :

ii)The number of tutorial may vary, and can only be determined during the implementation phase.

Chp0X tables (Chapter tables)

The chapter tables contain information about tutorial questions and answers. There is separate tables for separate chapters (chp01 for Chapter 1, chp02 for Chapter 2, etc).

Field	Description	Data Type
ID	Question ID	Autonumber
question	Question of the chapter	Text
Sol1	First answer	Text
Sol2	Second answer	Text
Sol3	Third answer	Text
Sol4	Fourth answer	Text
Answer	Correct answer	Text

Table 4.2 : Chapter tables

The Administration table in that database(tbladmin) contains the adminID field (Autonumber) , admin field(login name), and password field.

4.5.2 The forum database (forum.mdb)

This database is contained in the reference section of the project.

Forums table

This table contains all the discussion forum topics of the discussion board . It contains several fields necessary to store topic information. This table has 4 fields . It is accessed when the user enters the discussion forum page of the project, where forum topics will be displayed and can be added. In each forum (example : Hardware forum, Software forum , Microprocessor forum) lies a list of discussion topics, which are parent messages. In these topics (example : “How does the floating point arithmetic in the ALU is done?” in the microprocessor forum) contains the messages and replies to the messages (example message: How does the floating point arithmetic in the ALU is done?

Fields	Description	Data type
forumID	ID number of the forum	Long Integer
forumTitle	Title of the forum topic	Text
forumDesc	Forum topic description	Text
forumStartDate	Start date of the forum topic	Date/Time

Table 4.3 : Forums table

Messages table

This table contains all the messages posted in the discussion board. It contains 10 fields. This database will be accessed when the user enters a discussion forum, reads, replies , and posts a new message.

Just imagine that a topic in the discussion forum Microprocessor (How does the ALU calculates floating-point arithmetic? – designated M1) and there are 2 replies to this topic (designated M2 and M3) . The third reply is a reply to 2nd reply of “How does the ALU calculates floating-point arithmetic?” topic (designated M4) . Assume that M1 is the only topic discussed in the Microprocessor Forum.

- So, for M1:
- messageID : 1 – ID of the message
 - forumID : 3 - ID of the forum (3 – Microprocessor forum)
 - threadID : 1 – refers to the position of this topic message(s) among others
 - threadParent : 0 - parent message
 - threadLevel : 1 – refers to the level according to the main topic message

Fields	Description	Data type
For M2:	ID of the message	Long Integer
messageID : 2	– ID of the message	Long Integer
forumID : 3	- ID of the forum (3 – Microprocessor forum)	Long Integer
threadID : 1	– refers to the position of this topic message(s) among others	

threadParent : 1 - refers to messageID 1 as the parent message

threadLevel : 2 - refers to the level according to the main topic message

For M3:

messageID : 3 - ID of the message

forumID : 3 - ID of the forum (3 – Microprocessor forum)

threadID : 1 - refers to the position of this topic message(s) among others

threadParent : 1 - refers to messageID 1 as the parent message

threadLevel : 3 - refers to the level according to the main topic message

For M4:

messageID : 4 - ID of the message

forumID : 3 - ID of the forum (3 – Microprocessor forum)

threadID : 1 - refers to the position of this topic message(s) among others

threadParent : 3 - refers to messageID 3 as the parent message

threadLevel : 4 - refers to the level according to the main topic message

Fields	Description	Data type
messageID	ID of the message	Long Integer
forumID	ID of the forum	Long integer
threadID	ID of the topic	Long integer
threadParent	To identify whether this is	Integer

	the parent message (a zero means it is the parent message / topic)	
threadLevel	To identify the number of the message in the parent message/topic.	Integer
MessageAuthor	Name of the person who wrote the message	Text
MessageAuthorEmail	Email address of the person who wrote the message	Text
messageTimeStamp	The posting time and date of the message	Date/Time
messageBody	Message text	Memo
messageSubject	Message subject	Text

Table 4.4 : Messages table

The last table is the tblAdmin table , which contains the administration login information. It has the ID field (AutoNumber), admin (text, for login name) , password (text).

4.5.3 The polling information database (poll.mdb)

This database is contained in the polling section of the project.

Count table

This table stores the amount of votes given for each option of a poll.

Fields	Description	Data type
ID	ID of poll	Autonumber
Option1	Votes for first option of poll	Number
Option2	Votes for second option of poll	Number
Option3	Votes for third option of poll	Number
Option4	Votes for fourth option of poll	Number
Total	Total amount of votes	Number

Table 4.5 : Count table

Ques table

Question table contains the poll options for the poll questions.

Fields	Description	Data type
ID	Poll ID	Autonumber
Q1	Option one of poll	Text
Q2	Option two of poll	Text
Q3	Option three of poll	Text
Q4	Option four of poll	Text

Q5	Option five of poll	Text
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Table 4.6 : Ques table

Settings table

This table contains the presentation and font settings for the poll display. It has settings that include the font color, type and bar color.

Field	Description	Data type
ID	ID of poll	Autonumber
barcolor	Colour of the bar that shows the percentage of votes of a poll option / choice.	Text
fsize	Font size in the poll	Text
fcolor	Font colour in the poll	Text
font	Font type in the poll	Text
bgcolor	Background colour of the poll	Text

Table 4.7 : Settings table

Chapter 5

Implementation

Chapter 5 : Implementation

5.1 Introduction

This phase of the software development converts the system requirements and designs into program codes.

5.2 System Implementation

This phase is divided into 2 sections

5.2.1 Development Environment

The development environment can have an impact on the development process of a good software system. The hardware and software used in the environment is important.

Hardware requirements used

The following is the hardware used during the implementation of this project .

- A Pentium 4 7 NHz system
- 256 RAM
- 40GB hard disk drive

Software tools requirements

The table below shows the software tools used in the development process :

Software	Tools	Description
Server	Microsoft Internet Information Services 5.0 OR Personal Web Server	This is a high load web server that can handle the requirements of this
Operating System	Microsoft Windows 2000 Professional	It is the most widely used browser in the market.
Database management	Microsoft Access 2000	It is an easy to handle and configurable DBMS.
Software tools requirements	Microsoft Visual Interdev Explorer 6.0	It is used for the ASP quick access to HTML source codes.
Image editors	Microsoft Paint	It is used for the ASP quick access to HTML source codes.
File viewer	Microsoft Word	It is used for the ASP quick access to HTML source codes.

Chapter 5 : Implementation

5.1 Introduction

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5.2 System Implementation

This phase is divided into 2 section :

5.2.1 Development Environment

The development environment can have an impact on the development process of a good software system. The hardware and software used in the environment is important as it can determine the success of the development process.

Hardware requirements used

The following is the hardware used during the implementation of this project :

- A Pentium 4 1.7 Ghz system
- 256 RAM
- 40GB hard disk drive

Software tools requirements

The table below shows the software tools used in the development process :

Software	Tools	Description
Server	Microsoft Internet Information Services 5.0 OR Personal Web Server	This is a high load web server that can handle the requirements of this project. The same goes to the Personal Web Server.
Operating System	Microsoft Windows 2000 Professional	
Browser	Microsoft Internet Explorer 6.0	It is the most widely used browser in the market.
Code source and modification	Microsoft Visual Interdev 6.0	It is used for the ASP code resource.
HTML editor	Microsoft Frontpage 2000	It is a general purpose HTML editor that allows quick access to HTML source codes.
Image editor	Adobe Photoshop 6.0	One of the most widely used image editors in the market with a lot of tools and effects.
Database management system (DBMS)	Microsoft Access 2000	It is an easy to handle and configurable DBMS.
PDF file viewer	Adobe Acrobat 5.0	It is a famous PDF file viewer.

5.2.2 System Development

5.2.2.1 Methodology

The Waterfall with prototype methodology is being used, so the prototype of the project was built to test the requirements. Sections of tutorial , discussion board and opinion poll was built and tested before integration.

5.2.2.2 Coding

The coding of the website was done primarily with ASP (using VBScript) and HTML. The ASP and the HTML codes are used intermittently and are separated using the script delimiters. The delimiters not only separate different scripts , but also contain lines of script within each pair of them.

Each pages of script goes through a cycle of testing , modifying and code viewing to ensure that the desired result is achieved.

Visual Basic ActiveX Components

With Visual Basic, components ranging from code libraries to Automation-enabled applications can be created. Visual Basic ActiveX components are Internet and Intranet-enabled.

These components can be deployed in such a way that users will be able to navigate transparently between HTML pages and ActiveX documents. ActiveX documents that are not installed on users' computers can be automatically downloaded when users navigate to them.

Several features come together to enable you to use ActiveX Documents in this fashion, providing installation, navigation and persistence :

- Internet component download
- Hyperlink object
- Menu negotiation
- PropertyBag

Visual Basic Data Access Techniques

Visual Basic is the programming language that has been chosen from a list of other languages. Under Visual Basic itself, there are many concepts and techniques can be used to make web-based application. I would like to briefly describe these techniques.

Each of these technologies can be a suitable candidate for any given task.

Data Control

This is the traditional entry point for new database developers and is often used for low-volume (and sometimes even high-volume) applications. However, the Data control is really best suited for access to desktop database engines like Jet.

RemoteData Control

The RemoteData Control (RDC) is the companion to the Data control for remote server databases. Although convenient for many applications, it imposes some of the same restrictions and lack of control that come with the Data Control.

DAO (Data Access Object)

DAO is the first step beyond the data control for most developers. It is a flexible and powerful object model for database application development. Using linked tables or SQL Passthrough, developer can accomplish almost all server database tasks.

It provides flexibility in Microsoft Access Database but contains some limitation when accessing non-Microsoft Access files like dBASE, Microsoft FoxPro databases and Paradox databases. Using DAO to open a remote database directly can be very expensive in time and network resources.

RDO (Remote Data Object)

RDO is the remote server equivalent to DAO. It provides a similar (although not identical) object model but is design and optimised to work with intelligent server databases like SQL Server and Oracle. This similarity not only makes RDO easier to

understand, but it also makes the conversion of programs from PC databases to client/ server databases much easier . Beside that, it is small (about 250K), fast, and robust.

Unlike DAO, which is bundled with the Jet engine, RDO does not contain a query engine; it expects all query processing to take place on the server. Because RDO is really just a thin object layer over the ODBC API, it exposes nearly all the capabilities of the database server with almost no impact on performance.

ODBC API

ODBC was designed to be a database independent server-programming interface. Cumbersome and complex to work with, it is the data access strategy for the hard-core programmer. Despite its difficulties, it might offer a minor performance advantage over RDO.

ODBC Direct

With the latest release of DAO, Microsoft unbundled the Jet engine from the object model. ODBC Direct used the DAO model but sends queries directly through to the database server using RDO (and via the RDO proxy by ODBC) bypassing Jet entirely. This allows developer to use existing DAO code (with minor modifications) but gain the performance benefits of RDO. The limitations of DAO, however, still apply, meaning that many server database features will be unavailable or difficult to work with.

5.3 Web Development Tools

Microsoft Frontpage 2000 is used as the primary tool in HTML and ASP editing and coding. Eventhough Dreamweaver was used as a secondary editor for code verification and reference, code modification and testing occurred in the Frontpage application. Frontpage had a starightforward interface that allowed users to get straight to the HTML tags and code with a single mouse click.

Adobe Photoshop is primarily used for image creation and editing. It has extensive tools which allows images to edited and manipulated in various ways. Photoshop was used in the creation of all the images created in the project.

Chapter 6 : System Testing

6.1 Introduction

System Testing encompasses one of the main phases of the Waterfall with prototype methodology. This phase allows the process of the testing and debugging to be done in order to detect defects and bugs in the system. Testing is done incrementally with system development.

6.2 Objective

- i)It helps to reveal different classes of errors and does so with minimal time and effort.
- ii)It demonstrates if the software functions appear to be working according to specification.
- iii)Helps demonstrate that behavioral and performance requirements are met.

System Testing

Testing cannot show the absence of errors and defects, it can only show that software errors and defects are present.

6.3 Characteristics of testing

Testing was done with the following general characteristics :

- i)begins at lowest module level, where testing is done and testing continues upwards, to higher levels and towards the integration of the entire system.
- ii)different testing techniques are done at different point of project.
- iii)Testing and debugging are two different activities , but debugging must be accommodated in any testing strategy.

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- iii)Testing and debugging are two different activities , but debugging must be accomodated in any testing strategy.

6.4 Unit testing

Unit testing focuses on verification efforts on the smallest units of software design which is the software component or module. All important control paths is to be tested , to enable errors to be uncovered within the boundary of the module.

Module interface is tested to ensure proper information flow into and out of the program unit under test. Data integrity should be tested in all processes and task execution to ensure that integrity of data is maintained. Boundary conditions of modules should be tested to ensure modules operate properly at established limits. Independent paths are exercised to ensure all statements are executed at least once. Error handling methods are important components , so testing should also encompass them , which gurrantees proper handling of incorrect data types and exceptions.

6.4.1 Areas tested

Boundary value analysis

This testing ensures modules operate properly at boundaries established to limit and restrict processing.

Error handling paths

Modules execute error procedures when error occur . Testing should be done to ensure updating process should be able to continue despite duplicate records.

All possible independent paths executed

Such testing ensures control structures are implemented properly.

6.5 Integration Testing

Integration testing is a systematic technique for constructing program structure at the same time conducting tests to ensure errors in the interface are uncovered. Unit tested components are taken and constructed to the program structure dictated by the design specification. Interfaces are tested to see if they are arranged correctly.

6.5.1 Approach to Integration Testing

Incremental integration strategy

Testing occurs at construction and testing at small increments where errors are easier to isolate and correct. Interfaces are tested completely, where the test approach is systematic.

Bottom-up approach integration

Construction and testing of modules are done at the lowest levels of a system, moving upwards to higher level modules after lower levels are error free.

Regression

Re-execution of some subset of tests that has been conducted to ensure recent changes does not create unintended errors. It helps ensure changes does not introduce additional errors.

6.6 Validation Testing (Acceptance testing)

Validation (or acceptance) testing is the final series of tests where software validation is done through a series of black-box tests that demonstrate conformity with stated requirements. This is done after integration testing is done, project has been assembled completely as a package, and all interfacing errors are uncovered and corrected.

Test plans outlines the classes of tests that has to be done and specific test cases that will be used to uncover errors in conformity with requirements.

The plan ensures :

- i) All functional requirements are satisfied
- ii) All behavioral characteristics are achieved
- iii) All performance requirements are achieved
- iv) Documentation is correct
- v) Other requirements (error recovery , maintainability , compatibility) are met

6.6.1 Alpha and Beta testing

These tests are carried out to uncover errors that end users are able to find. Alpha testing is conducted at the developers site by an end-user in a controlled environment. Beta testing is conducted at one or more customers sites by the end-user of the software.

6.7 System Testing

System testing is a series of different tests designed to fully exercise the software system to uncover its limitations and measure its capabilities.

Objectives of system testing are to test an integrated system and to verify that it meets the specified requirements.

6.7.1 Types of system testing

Several types of system testing is done :

i)Recovery testing

It is a system test that forces the system to fail in variety of ways and see that recovery is properly performed. If recovery is automatic, then reinitialization , checkpointing mechanisms , data recovery , and restart are evaluated for correctness. If recovery requires human intervention , mean-time-to-repair (MTTR) is evaluated to determine whether it is within acceptable range.

ii)Security testing

This testing attempts to verify that protection mechanisms built into the system will protect it from improper penetration.

iii)Performance testing

This test tests the run-time performance of the software in the integrated system. It requires hardware and software instrumentation and tuning. Resource utilization is also measured.

7.1 Introduction

This project development presented itself with several problems that tested my knowledge and experience. These problems were solved through research and study from various sources such as the Internet, technical books and peers. Throughout this project, I have also learnt of various technology and programming concepts that helped me in the implementation of the project.

Chapter 7.0

7.2 Problems Encountered

The world of IT is ever-changing, as well as the World Wide Web. This means that the technology and the software used are constantly updating and improving. In other

words, a knowledge or skill gained on a certain scope of computer science may

System Evaluation &

Microsoft. It utilizes ASP.NET and C# programming language to enhance the web development of enterprise-scale sites.

Conclusion

This section describes the problems encountered during the development of the final year project. The following describes the problems and solutions of the system development.

The following are the problems encountered and it's solution :

1. Difficulty in choosing suitable development technology, programming language

and tools.

Chapter 7 : System Evaluation and Conclusion

7.1 Introduction

This project development presented itself with several problems that tested my knowledge and experience. These problems were solved through research and study from various sources such as the Internet, technical books and peers. Throughout this project , I have also learnt of various technology and programming concepts that helped me in the implementation of the project.

7.2 Problems Encountered and Solutions

The world of IT is ever-changing, as well as the World Wide Web. This means that the technology and the software used are constantly updating and improving. In other words , a knowledge or skill gained on a certain scope of computer science may become obsolete in a short time. One good example is the .NET platform created by Microsoft. It utilizes ASP.NET and C# programming language to enhance the web development of enterprise-scale sites.

This section describes the problems encountered during first phase of the final year project. The following describes the problems and solutions of the system development.

The following are the problems encountered and it's solution :

I) Difficulty in choosing suitable development technology , programming language and tools

It is critical to choose the proper tools and coding medium for the project as it can decide the proper outcome of the project. Various views and sources were sought for the purpose of finding out the best tools, such as faculty peers, my supervisor and my seniors. Research was also done to establish features of tools and coding medium that might help in developing the project. However, there were several choices for every aspect of tools and coding medium. For example, there were several HTML editors that were adequate for the HTML scripting such as Microsoft Frontpage, Macromedia Dreamweaver and Visual Interdev. All of them were impressive HTML editors with their own unique features and advantages. However, Frontpage was chosen since it allowed easier code editing and creation, and I was very familiar and comfortable with the user interface.

II) Lack of knowledge in ASP and VBScript

This problem posed a serious drawback in the project development. There was uncertainty in the matter of code organization and in terms of learning how to code in ASP, since I had no background knowledge in ASP. I also had no good grasp in VBScript, which forms the backbone of the Active Server Pages. Learning scripting languages such as VBScript and JavaScript is quite time-consuming task. A great deal of time has been spent on learning the implementation of the system, such as learning the scripting language, editing and learning the basic codes, database implementation and creation, user interface design and so on.

Coding languages and standards are followed upon by referring technical books and articles on the Internet. E-books from the Internet and CD-ROMs also help in understanding and learning the skills and tools necessary to develop the system.

Proper coding is also learned by examples on the Internet (downloading and reviewing source codes). Codes are tried through trial-and-error and are corrected with debugging tools. . It took time to learn and understand the coding concepts of ASP , but it was a wise move as it helped me to better implement the requirements of the project. Discussion with peers and source codes from the Net helped me improve the my knowledge and functionality of the project web site.

III) Difficulty in configuring the Internet Information Service (IIS) 5.0

I experienced difficulties in configuring and setting web site properties for the project web site. This web server was giving problems accessing ASP pages that alter database content , as there was a setting called Application Protection that interfered with the functionality of the project content protection. The problem was only isolated when I went through the discussion boards on several programming web sites and IIS technical books.

IV) Difficulty in acquiring the proper software

Acquiring the proper application software was also a problem as the programs are commercial software and requires trips to the faculty to use them in the computer labs.

V) Difficulty in obtaining reference material

Acquiring the appropriate books and printed material for the subjects was tough as the library was closed for maintenance and repair during the period of m project. I had to search extensively on the Internet , and get peer help for related books.

7.3 System Strengths

The following are the project system strength :

i)User friendly Interface

The interface for users of the project is made in a way that all the pages has at least one link that leads to the external area of that page. The main pages of each section of the project has extensive navigation links in terms of text links in / out of tables.

There is also text links at the footer of most of the pages to accommodate quick navigation and for text-based browsers (if there are anyone using it, etc Lynx).

ii)Easy to use website

The project site is made to be easy for the user to navigate and view the pages. It should be noted that the pages are made to be printer-friendly , and does not contain unnecessary graphics to allow quick download for slower bandwidth users.

iii) Database – based web site

The databases used in the project has many purposes. The tutorial database contains questions , answers and user login and access details , and it is critical in the function of tutorial section. The forum database keeps messages , author , email and forum details of the discussion board. The poll database is integral in running the opinion poll. There are 3 databases running in this project.

iv) Security features

The administrators pages are made sure that the administrator with the password is the only person that can enter the admin pages.

v) Fast response time for document retrieval

As stated before, the documents are made in smallest size possible to enable quick document retrieval .

vi) System transparency

The system is designed so that end users do not need to know the workings of the system . End users need only to refer to the user manual to find out how to use the facilities of the web site. They do not need to know the physical and logical locations of the site, databases , web pages , and other technical details of the site.

7.4 System Limitations

The following are the system limitation of the project :

i)Lack of firewall

A firewall is a software or hardware that secure data from being accessed outside the network and that can also prevent data from leaving the network through an inside source. Firewalls can :

- All access and traffic goes through the firewall , which defines a single choke point that keeps unauthorised users out of the protected network, thus provides protection from various kinds of IP spoofing (intruder using duplicate IP address to gain information meant for the computer with the same original IP address) and routing attacks. The single choke point

simplifies security management as security capabilities are done on a single system / a set of systems.

- Monitor security-related events , which allows for implementation of auditing and alarms.
- Also function as a network address translator , which maps local addresses into Internet addresses and a network management function that audits / logs Internet activity.

7.5 Future Tasks

The following are the future tasks that can be done to improve the project :

i) More Administration tasks / capability

Additional administration functions should be added to the web site sections to allow better management and administrative control over the site.

ii) Firewall implementation

The implementation of a firewall would ensure secure connections and avoid intrusion of unauthorised third parties, thus protecting private and confidential information. Firewalls are able to accept , reject and filter connections from an external network . Firewalls can also trace the source of all transmissions. Firewalls can be installed in a central computer, which functions as a centralized security service.

iii) Multi – language

The project can be further improved by making it available in various languages including Bahasa Melayu . Users will be able to view the site in a language they are comfortable with , with a click of a button. This would allow the site to reach a wider audience globally.

The site can be improved by adding a more advanced error detection / recovery mechanisms.

7.6 Conclusion

The online reference and tutorial for the microprocessor was a project that was inspired by the fact that web sites usually has content that does not cover all types of users, whether they are beginners or experts in the field. With this fact in mind, a lot of effort was put into the documentation of this report as various phases of the development required different kinds of information. Efforts are already into the implementation phase as ASP and JavaScript source codes are being gathered to develop the discussion board , opinion poll and for the user interface design enhancements.

7.7 Technical knowledge

As such , throughout this semester , various preparation has been done in terms of acquiring knowledge for the coding or implementation phase.

Scripting languages such as VBScript, JavaScript, and Active Server Pages were studied to acquire a better understanding of the mechanism and the coding of the those languages. Application programs such as Macromedia Flash, Swish , Adobe Photoshop , and Macromedia Dreamweaver was also used to get myself familiarized to the interface, features and the tools that the programs offer.

Latest technologies such as ASP.NET and C# seems to pave the way for future Web commerce. These technologies are still new and requires time to be proven as an industrial-proven programming and scripting languages. Examples of such proven languages are C, C++, ASP and COBOL.

7.8 Non-technical knowledge

Other than acquiring skills, there are other aspects of the project which is also important. During this project , I have learned that tasks should not be delayed , as if it happens , the amount of tasks would pile up and there would a lot of tasks to be done at a very short time. It is advisable to complete the tasks according to schedule.

I have also learned time management skills during the writing of this proposal. I believe time management is important as it helps to complete the tasks at the given time. It also helps to divide the time I have to implement the necessary activities in my daily life, including allocating time to study and create the proposal of this project , as well as to spend time learning related skills and application programs. Time-management is also important in real-life working environment as deadlines on project tasks has to be fulfilled or it would incur additional cost or effort.

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Macromedia
<http://www.macromedia.com/>

World Wide Web Consortium

<http://www.w3c.com/>

PCGuide

<http://www.pcguides.com/ref/cpu/>

Intel Corp.

<http://www.intel.com/>

<http://developers.intel.com/>

AMD

<http://www.amd.com/>

AnandTech - CPU

<http://www.anandtech.com/>

DevASP

<http://www.devasp.com/>

ASP101

<http://www.asp101.com/>

Hardware Central – CPU

<http://www.hardwarecentral.com/hardwarecentral/subjects/50/>

Sharpened

<http://www.sharpened.net/glossary/index.php>

APPENDIX
University of Malaya

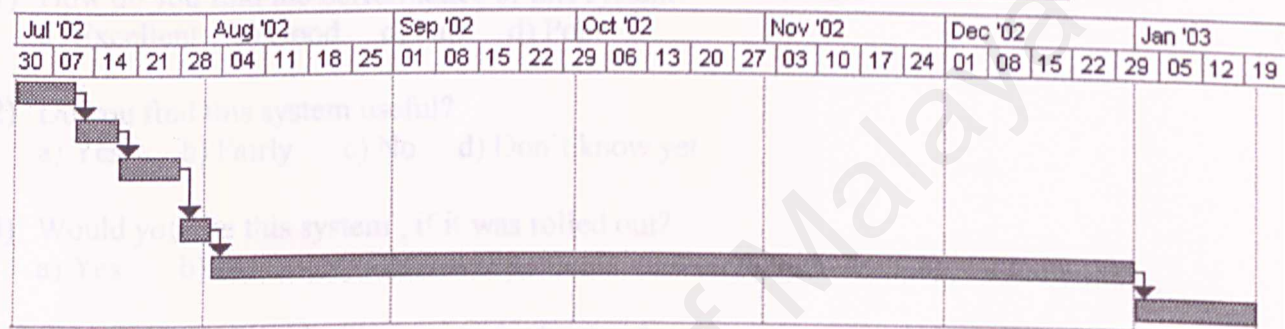
PROJECT SCHEDULE (GANTT CHART)



APPENDIX

PROJECT SCHEDULE (GANTT CHART)

ID		Task Name	Duration	Start	Finish
1		Introduction	8 days	Mon 01/07/02	Wed 10/07/02
2		Literature Review	5 days	Thu 11/07/02	Wed 17/07/02
3		System Analysis	7 days	Thu 18/07/02	Sat 27/07/02
4		System Design	5 days	Sun 28/07/02	Thu 01/08/02
5		System Implementation	108 days	Fri 02/08/02	Tue 31/12/02
6		System Testing & Documentat	14 days	Wed 01/01/03	Mon 20/01/03



User Feedback Form

Online Reference And Tutorial for Microprocessor subject

Faculty of Computer Science and Information Technology

University of Malaya

System Evaluation Form

- 1) How do you find the performance of this system?
a) Excellent b) Good c) Fair d) Poor
- 2) Do you find this system useful?
a) Yes b) Fairly c) No d) Don't know yet
- 3) Would you use this system , if it was rolled out?
a) Yes b) No c) Don't know
- 4) How does the links facilitate your navigation ?
a) Greatly b) Fairly c) Poorly
- 5) Is the system interface user-friendly?
a) Yes b) No c) Fairly
- 6) Are the system instructions clear ?
a) Yes b) No c) Fairly
- 7) Is the system response time acceptable?
a) Yes b) No
- 8) Do you intend to introduce this system to your friends?
a) Yes b) No c) Don't know yet
- 9) In your opinion , what are the future enhancements needed ?

- 10) What do you find satisfying in this site ?

11) Does the system help you in your studies and improve your knowledge , or do you prefer the traditional book approach? Explain.

12) If it was possible to improve the user interface / experience of this system , what would those improvements be?

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USER MANUAL

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Online Reference and Tutorial for microprocessor subject

WELCOME

Welcome to the Online Reference and Tutorial for microprocessor subject website.

This system is designed to be an online learning system for the students of Faculty Of Computer Science and Information Technology, University of Malaya. It is easy to learn and use. All the functions of this system can be executed by a simple point and click.

About this manual

This user manual is designed to guide you through all the functions of the system.

This manual is mainly divided into two sections :

- Administration section
- User section

Conventions and Terminology

To help interpret and locate information easily , this manual constantly uses typographic notations. This conventions are as follows :

Notation	Representation
<i>ITALIC</i>	Anything must be typed in exactly as it appears. Example : if you were to type <i>http://www.yahoo.com</i> , type exactly like so.
[Button]	Indicates a button/link in the system.
DB	Short form for Database
mp	Short form for microprocessor
OS	Short form for Operating System
ORT	Short form for Online Reference and Tutorial for microprocessor subject
Nav bar	Used to describe the navigational links located below the title image on most of the pages. Refer to Chapter 2: Getting Started for more information.

CHAPTER 1 : HARDWARE AND SOFTWARE REQUIREMENTS

Hardware requirements

The following are the hardware requirements for the user system :

- A Pentium 1 processor system or above
- Minimum of 16MB (in a Windows 95 OS) or 32MB (in a Windows 95/98 OS) or higher
- Modem / NIC connected to the Internet
- Keyboard and mouse as input devices
- Monitor as visual output device

Software requirements

The following are the software requirements needed to run the system :

- Microsoft Windows 95 / 98 / NT 4.0 / ME / XP / 2000
- Microsoft Internet Explorer 5.0 or above
- Adobe Acrobat 4.0 or above
- Microsoft Word 6.0 or above (to view the helpfile / user manual)

CHAPTER 2 : GETTING STARTED

The ORT is not like a software system that requires installation process before running it. ORT is a web application that can be accessed from the Internet by typing the address of the site in the address bar of your favorite browser. Before you access the ORT site make sure your system fulfills the minimum hardware and software requirements as stated in the previous chapter.

2.1 Starting ORT

To use ORT, first, just start the web browser . Second, in the address bar, type the web site address of the ORT and press Enter, to access the ORT site.

A successful connection will cause the Web browser to display the index page (main page) of ORT , as displayed in Figure 2.1.

Please take note that every page has links on the top or the bottom of each page for the user's convenience. The navigational links (or nav bar) is located on most of the pages, as displayed in Figure 2.1 , just below the main title image. There is also text links at the bottom of each page for the user's convenience.

Also take note that most pages are made to be printer-friendly , which means users can save the pages using the browser's Save As option on the File menu, and view offline , and even print it with minimal ink usage.

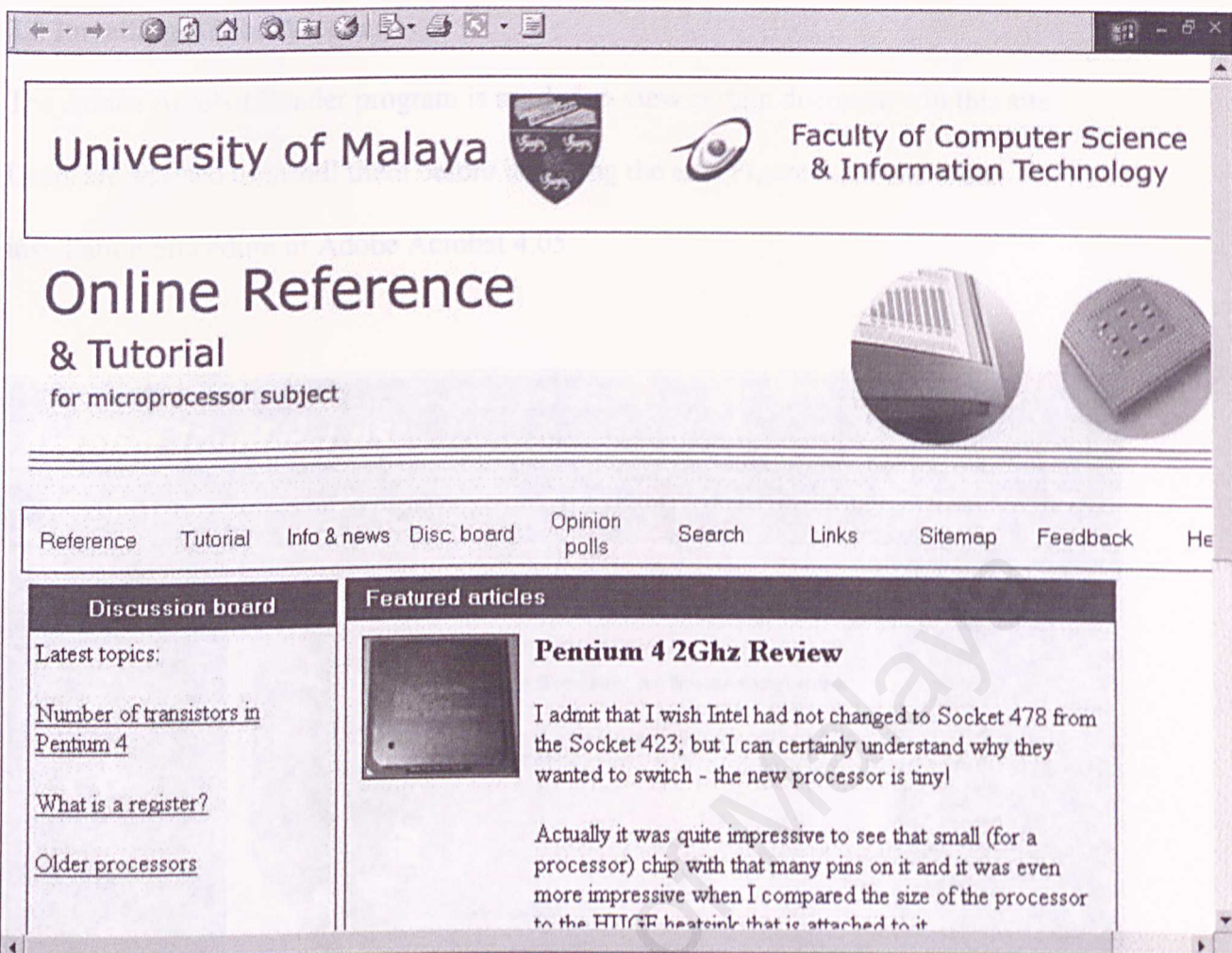


Figure 2.1.1 : Main page of ORT

Within this main page , you can :

- i) Log in to the tutorial section and try out the tutorials (if you are registered)
- ii) Join in the discussion board and discuss **mp** related issues
- iii) Take part in the opinion polls and see the votes
- iv) Go to the Reference section and view the notes and article text
- v) Go to the Info & news and get to know the microprocessor technical data and it's latest news
- vi) Use Search to search the site for a keyword

2.2 Installing Adobe Acrobat

The Adobe Acrobat Reader program is needed to view certain documents in this site. Users are advised to install them before browsing the site. Figure 2.2.1 show the installation procedure of Adobe Acrobat 4.05.

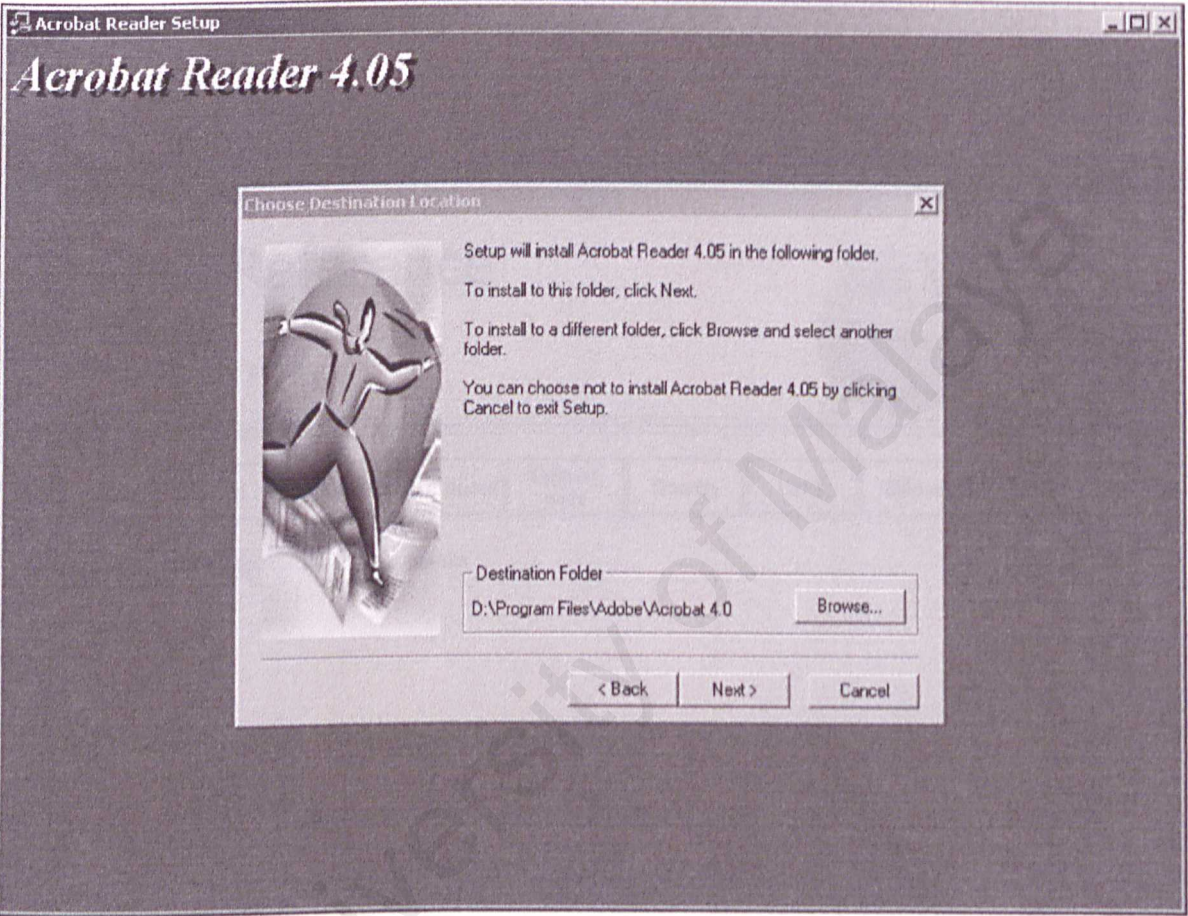


Figure 2.2.1 : Adobe Acrobat installation procedure

The installation procedure would ask where to store the program files. Make sure you choose the appropriate area / directory. Click [Next] to proceed to the file copying . After this, the installation is complete and you can use the reader.

CHAPTER 3 : USER SECTION

3.1 Reference Section

The reference section is the section where all the subject information and articles are located.

To go to the Reference section , first click [Reference] on the main page . The subjects page will appear , as displayed in Figure 3.1.1

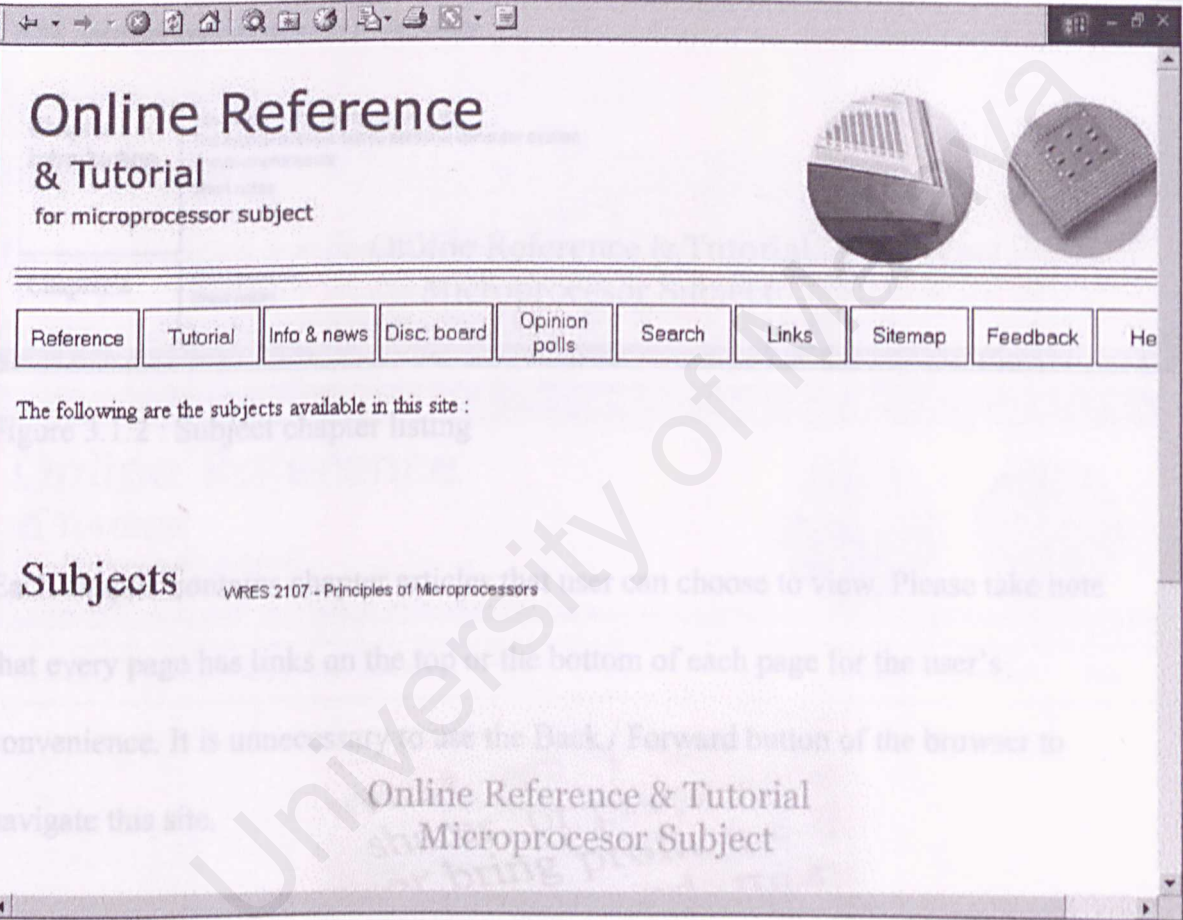


Figure 3.1.1 : Subjects page

The subjects page shows all the subjects related to the microprocessor. Click on the subject title to go to the subject’s chapter list.

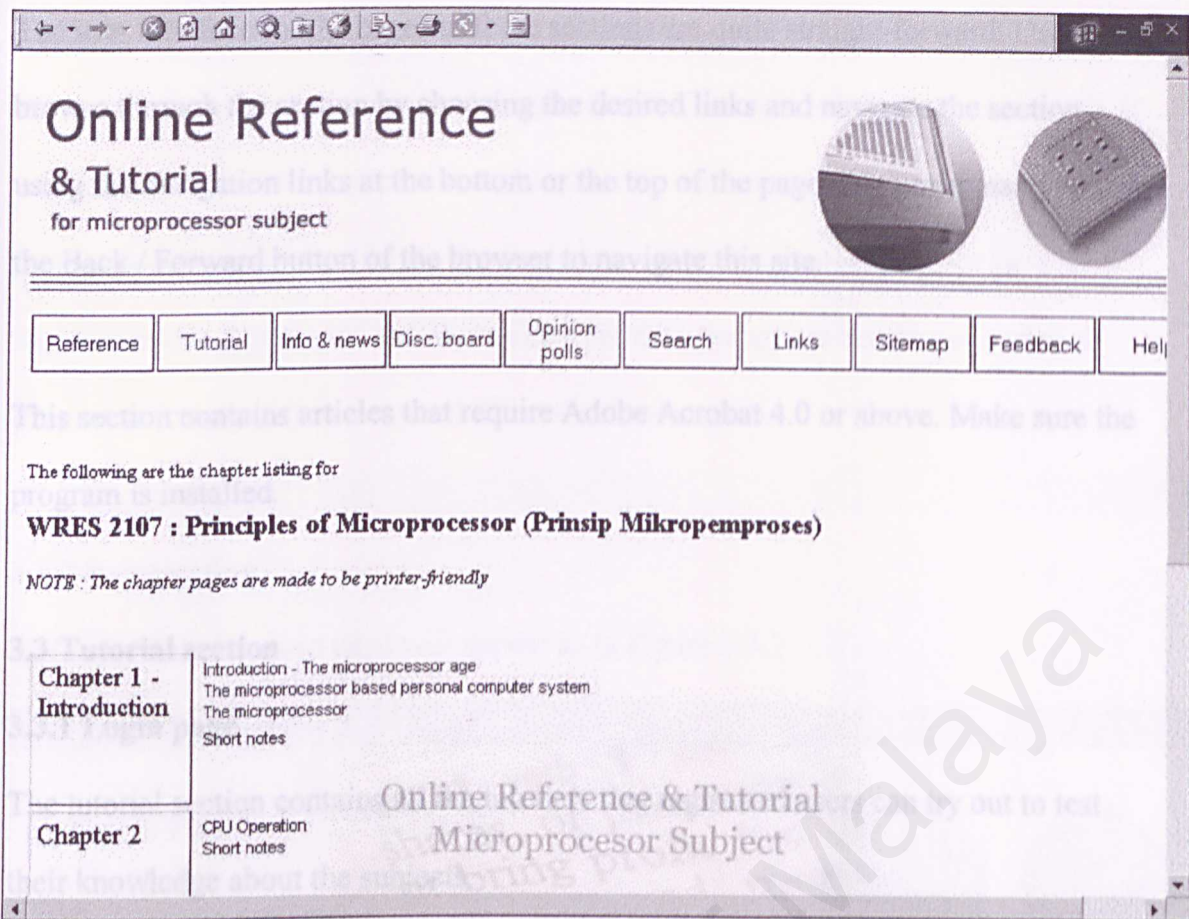


Figure 3.1.2 : Subject chapter listing

Each chapter contains chapter articles that user can choose to view. Please take note that every page has links on the top or the bottom of each page for the user's convenience. It is unnecessary to use the Back / Forward button of the browser to navigate this site.

3.2 Info & news section

The information and news section is the section that contains the news and information of the microprocessors. These information will be divided according to the microprocessor.

Figure 3.3.1 : Tutorial Login page

The user interface for the pages of these sections are quite straight-forward. Users can browse through the section by choosing the desired links and navigate the section using the navigation links at the bottom or the top of the page. It is unnecessary to use the Back / Forward button of the browser to navigate this site.

This section contains articles that require Adobe Acrobat 4.0 or above. Make sure the program is installed.

3.3.2 Registration

3.3 Tutorial section

3.3.1 Login page

The tutorial section contains all the tutorials that registered users can try out to test their knowledge about the subjects.

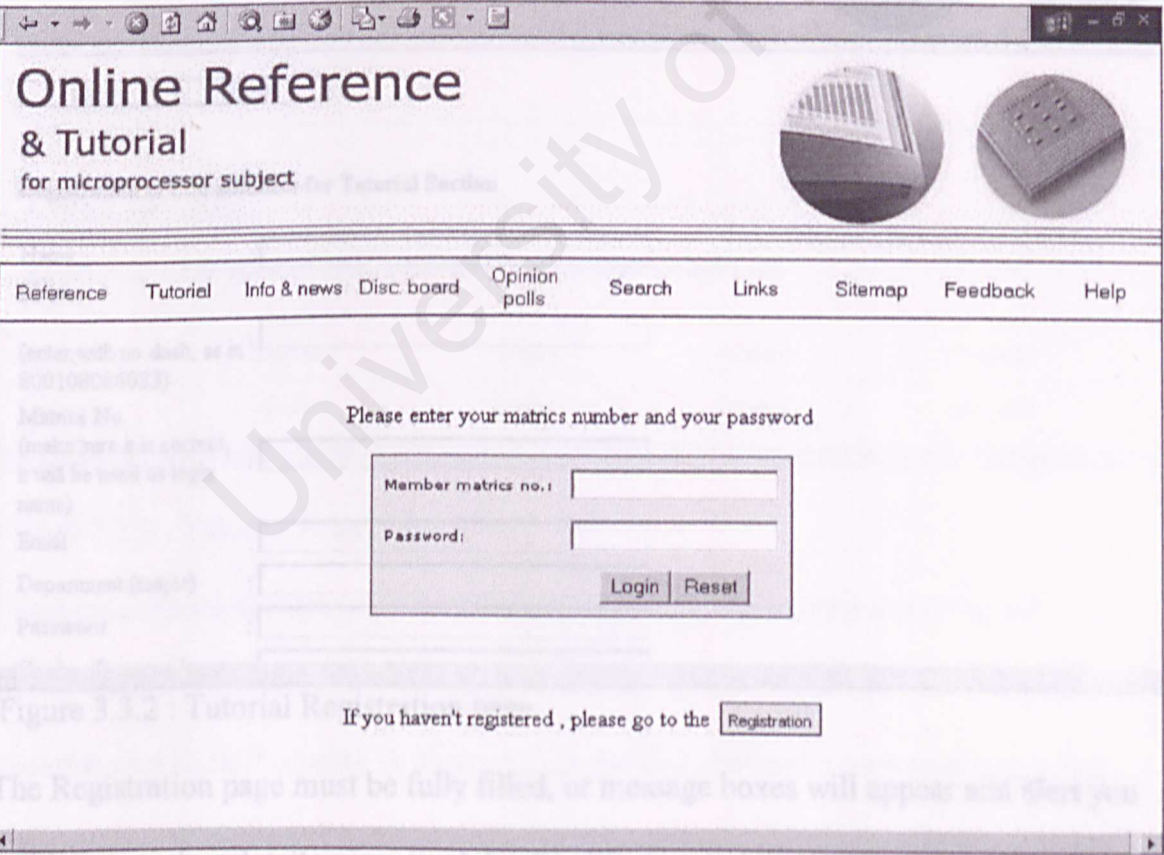


Figure 3.3.1 : Tutorial Login page

Enter the tutorial section by clicking the [Tutorial] in the nav bar. The login page will show up, where you have to enter the login details (matrices number and password). If you haven't registered your details and login information, or you are a new user please click [Registration] below the login box. If you have registered, or have registered before, just enter the login details in the appropriate text boxes and click [Login]. Click [Reset] to clear and fill in the details again.

3.3.2 Registration

The tutorial registration page will appear as in Figure 3.3.2.

The screenshot shows a web browser window with the title "Online Reference & Tutorial for microprocessor subject". The page has a header with navigation links: "Home", "About", "Contact", "Search", and "Login". Below the header are two buttons: "LOGIN" and "HOME". The main content area is titled "Registration of new students for Tutorial Section". It contains several text input fields with labels: "Name", "IC No." (with a note: "(enter with no dash, as in 800108086033)"), "Matrics No." (with a note: "(make sure it is correct, it will be used as login name)"), "Email", "Department (major)", and "Password". There are also two circular images on the right side of the header: one showing a computer monitor and keyboard, and the other showing a microprocessor chip.

Figure 3.3.2 : Tutorial Registration page

The Registration page must be fully filled, or message boxes will appear and alert you and inappropriate details or omitted details. After everything is filled , just click [Register] at the bottom of the page. Click [Reset] if you choose not to register or if

you want to fill the form all over again. A success page will appear if your registration is successful. Click the link on that success page to go back to the main page.

3.3.3 Tutorial Area

The tutorial area contains the listing of tutorials according to subject. Figure 3.3.3 shows the Tutorial Area.

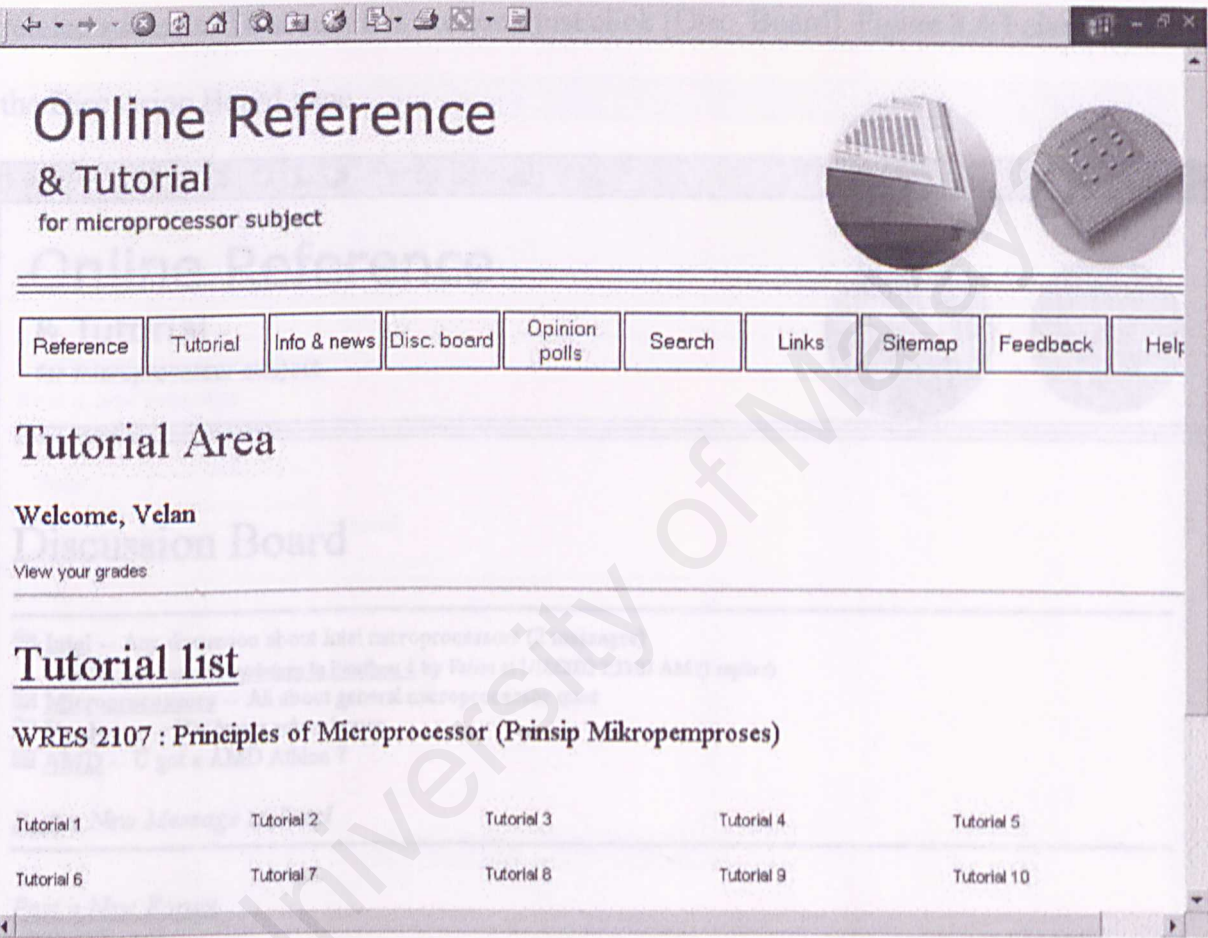


Figure 3.3.3 : Tutorial Area page

Users can choose and answer tutorials from this list . The tutorial questions are objective and are very straight forward. Users just choose the answer for every question and click [Submit]. A page will appear that shows the correct answers and the user-picked answer. The final grade for that tutorial will also be shown. additional information such as amount of messages, and amount of replies will appear. You can then post messages to the highlighted forum by clicking [Post a new message to ...].

Users can also find out their tutorial grades by clicking the ‘View your grades’ link near the Welcome text. Thus, users can find out their previous tutorial grades and find out which tutorials are not tried.

3.4.1 Posting a new message

3.4 Discussion board section

The discussion board allows students to post and reply questions concerning IT related subjects. To access this section , just click [Disc. Board]. Figure 3.4.1 shows the Discussion Board page.

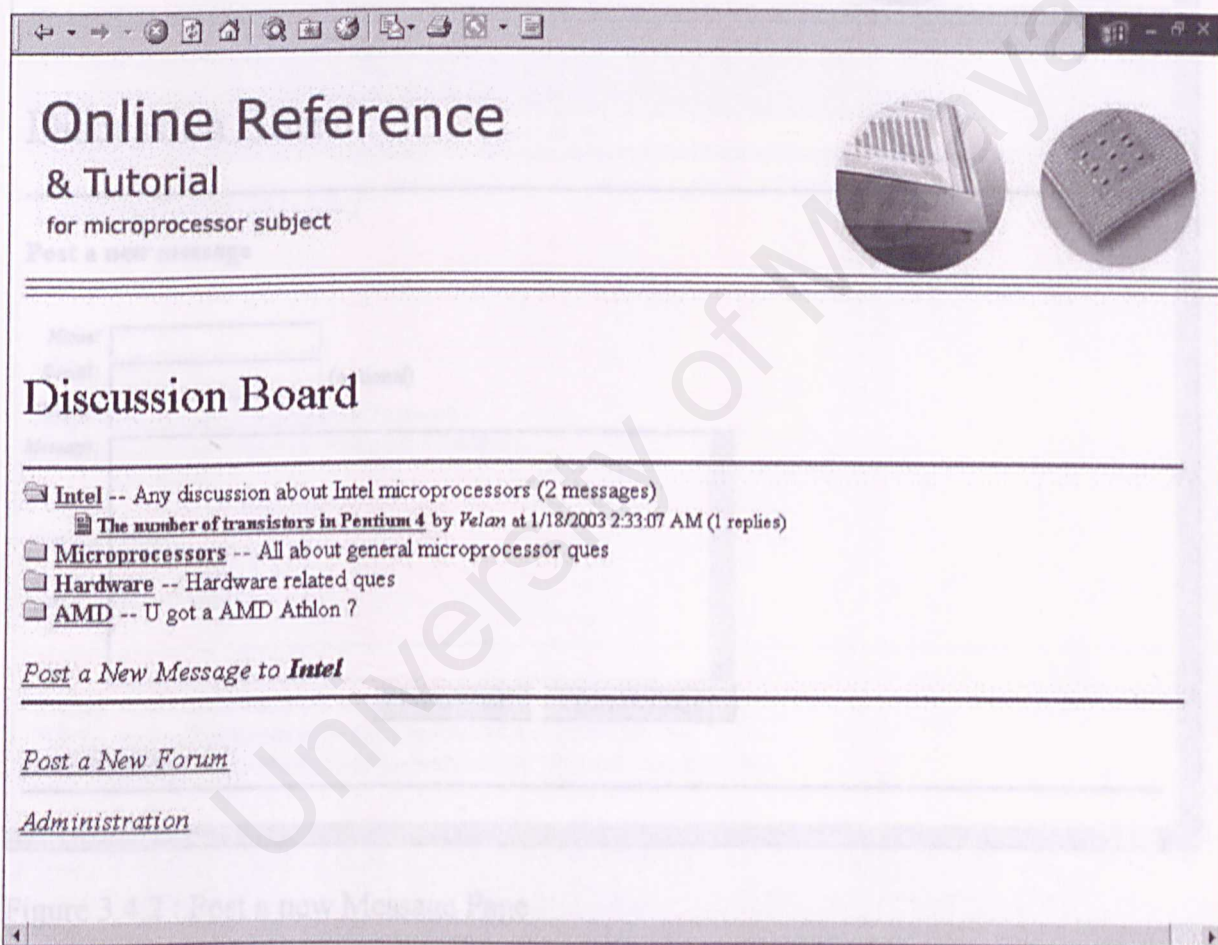


Figure 3.4.1 : Discussion Board page

This page shows the forums available , with forum details such as description , amount of messages, and amount of replies. Click on one of the forum, and additional information such as amount of messages, and amount of replies will appear. You can then post messages to the highlighted forum by clicking [Post a new message to....].

Users can view messages in the forum by clicking presented message titles of the highlighted forum. Users can also post new forums. There will be viewed, with several available options. Users can browse through other messages in the forum by looking

3.4.1 Posting a new message

To post a new message, click the forum you want to post the message and press [Post a new message to....]. The New message posting page will appear, as displayed in Figure 3.4.2.

The screenshot shows a web browser window with a title bar. The main content area has a heading 'Discussion Board' followed by a horizontal line. Below this is the section 'Post a new message'. It contains four input fields: 'Name:' (a single-line text box), 'E-mail:' (a single-line text box with '(optional)' to its right), 'Subject:' (a single-line text box), and 'Message:' (a large multi-line text area). At the bottom of the form are two buttons: 'Reset Form' and 'Post Message'. Below the buttons is a link that says 'Back to the Folder'. The browser's address bar and various icons are visible at the top.

Figure 3.4.2 : Post a new Message Page

Fill in the appropriate details, type in the message, and click [Post Message] to post the new message. Press [Reset Form] to clear all text boxes.

3.5 Opinion poll

The opinion poll allows users to cast votes on certain poll questions. The poll section is quite straight – forward . To access the poll section, just click [Opinion poll].

3.4.2 Replying a posted message

Click on the message you want to reply. The message will be viewed, with several available options. Users can browse through other messages in the forum by looking at the folder listing at the bottom of the view page. There is also two link options , [Back to folder] and [Post a reply].

Click [Post a reply] and the new message page will appear . Fill in the details, type in the message and click [Post message].

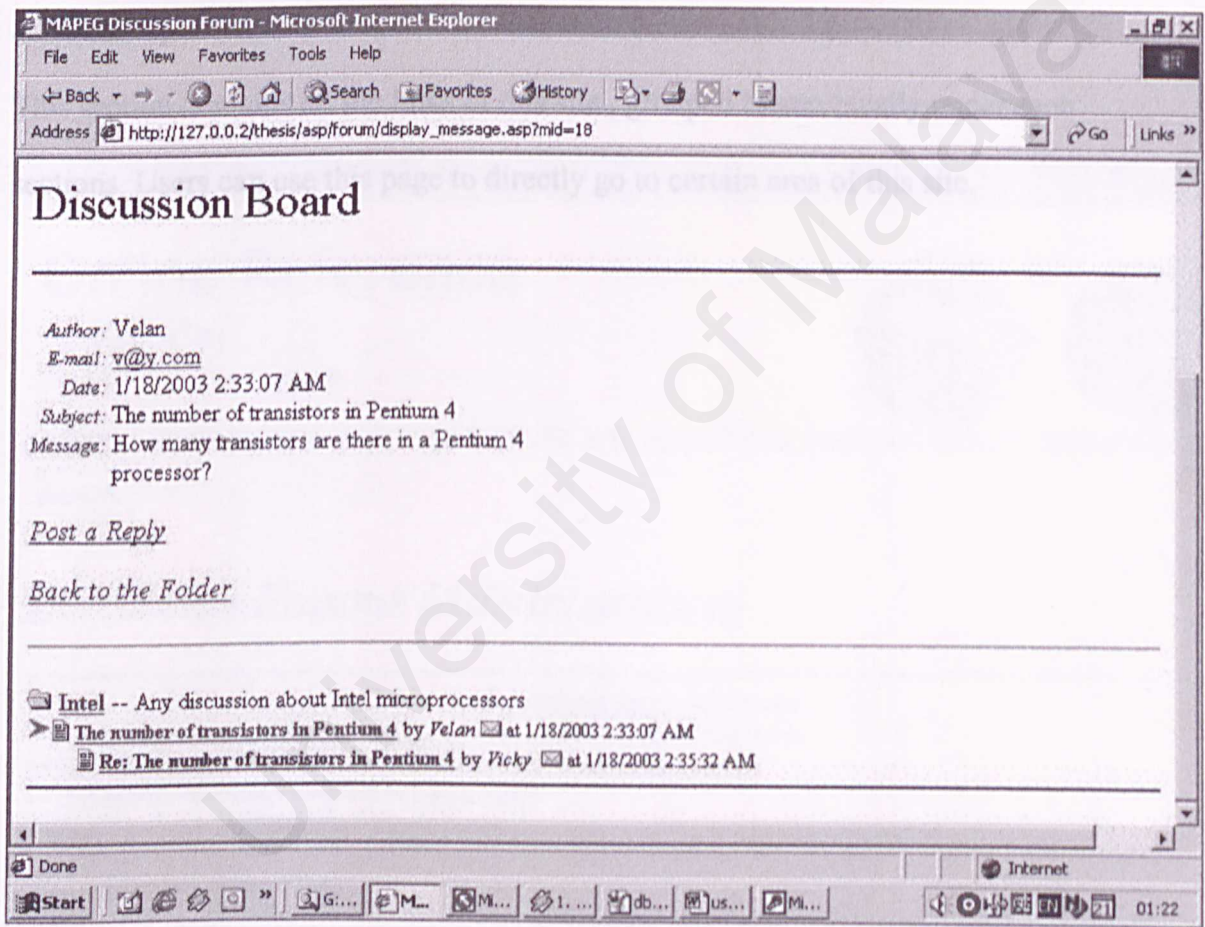


Figure 3.4.3 : Message viewing page

3.5 Opinion poll

The opinion poll allows users to cast votes on certain poll questions. The poll section is quite straight – forward . To access the poll section, just click [Opinion poll].

3.6 Search

The search page allows the user to search the site for a particular content. Click [Search] to go to the Search page. Type in the search keyword in the Search textbox and press [Search]. Press [Reset] to clear the textbox. The search result will show the list of pages that contains the keyword typed in by the user. User can pick the pages in the list and read the page.

Enter the administrator login details and press [Login]. The discussion board

3.7 Sitemap

This section contains all the links of this site , grouped hierarchically under each sections. Users can use this page to directly go to certain area of this site.

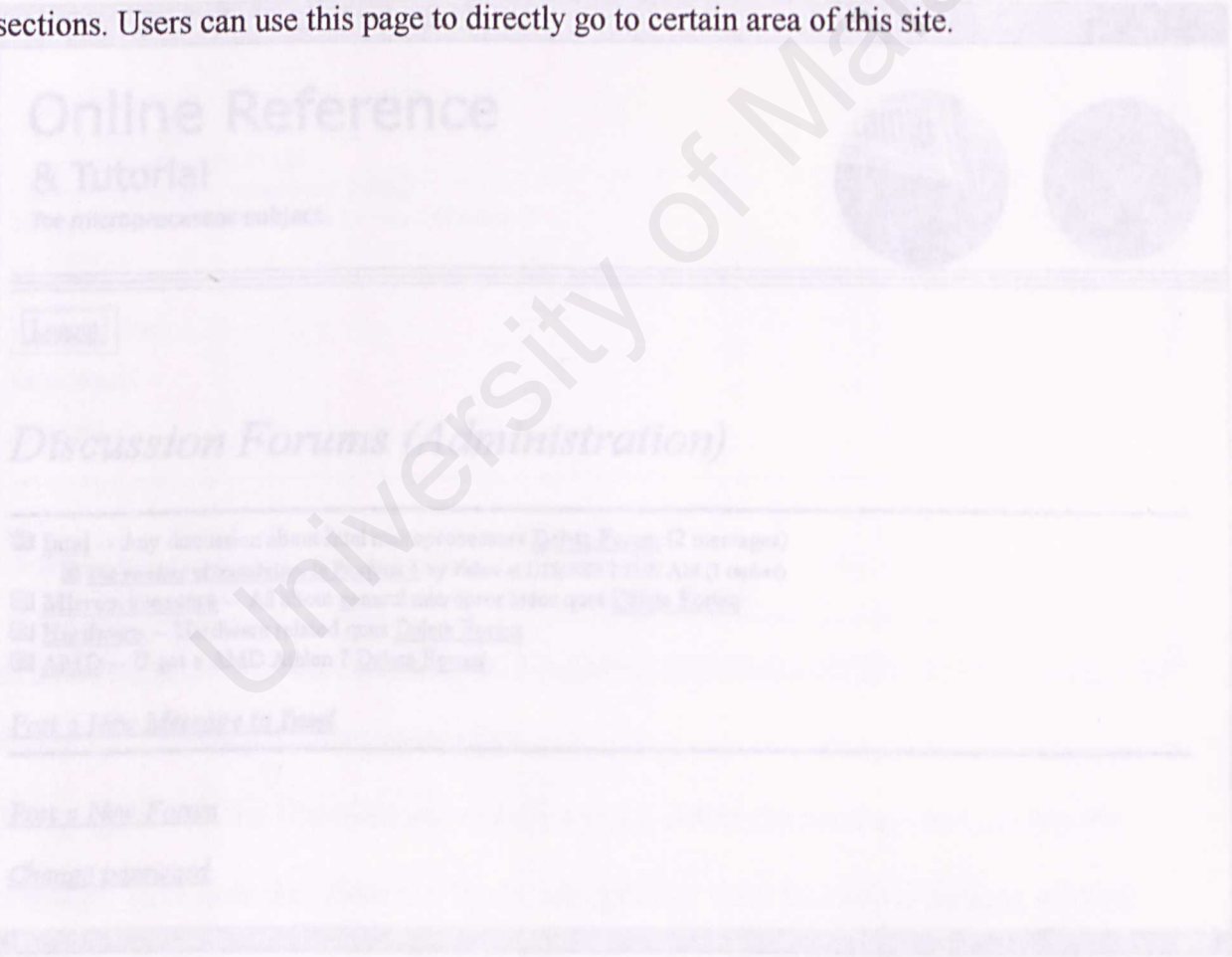


Figure 4.1 : Discussion Forum – Administration

CHAPTER 4 : ADMINISTRATION SECTION

4.1 Discussion board administration

The discussion board contains a separate set of pages meant for managing the discussion board.

4.1.2 Message management

To access these pages, click the [Disc. board] in the main page and then click [Administration] in the discussion board page. The admin login page will appear.

Enter the administrator login details and press [Login]. The discussion board administration page will appear, as Figure 4.1.1 shows the Discussion board – Administration.

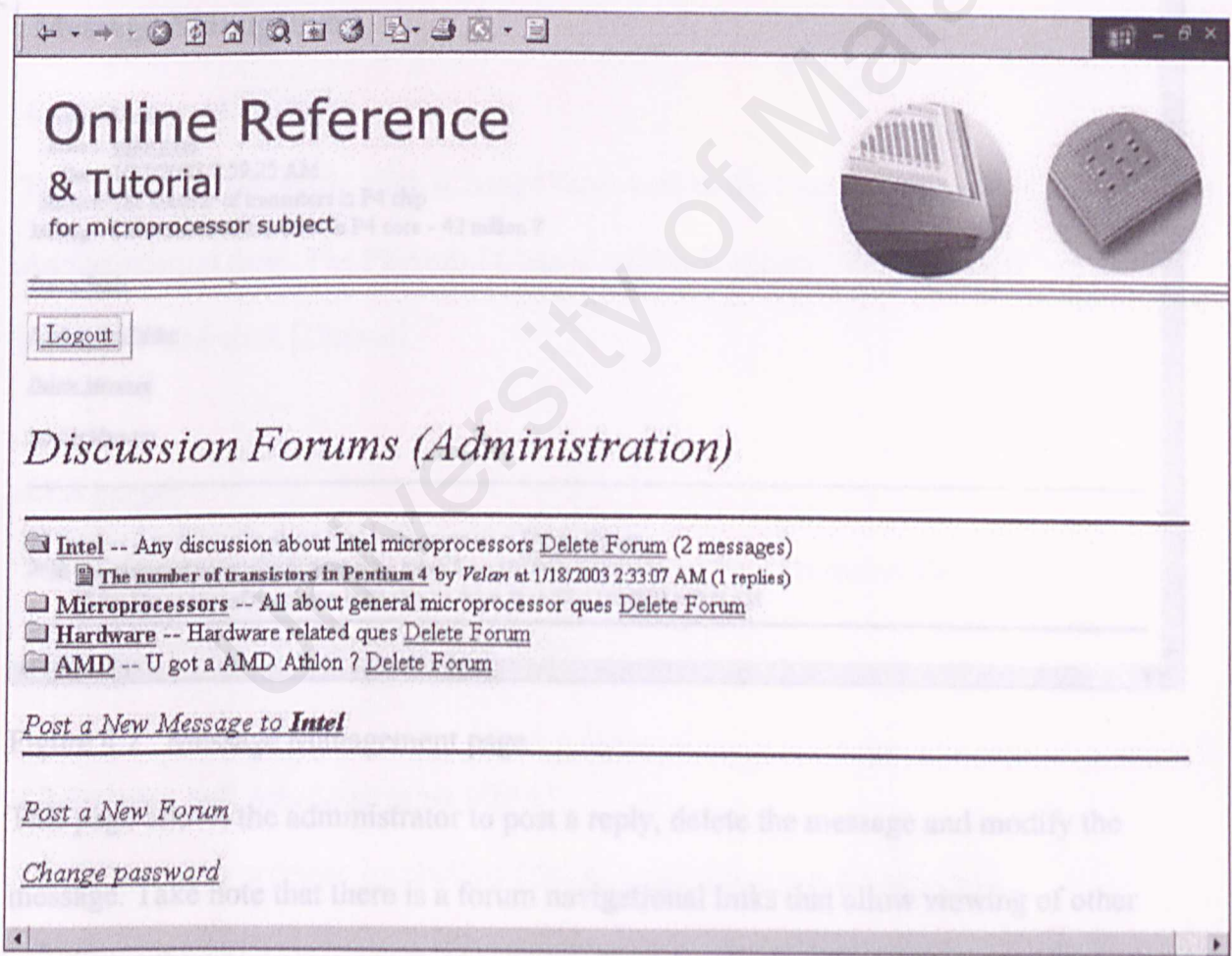


Figure 4.1 : Discussion Forum – Administration

4.1.1 Delete forum

To delete a forum , just click [Delete forum] beside the forum you want to delete. The deletion confirmation page will appear. Confirm to delete the forum.

To delete the current message , click [Delete Message] . The message will be deleted

4.1.2 Message management

To edit a specific message, click the message in the highlighted forum. The forum should be chosen , so it is highlighted. The Message Management page shows up.

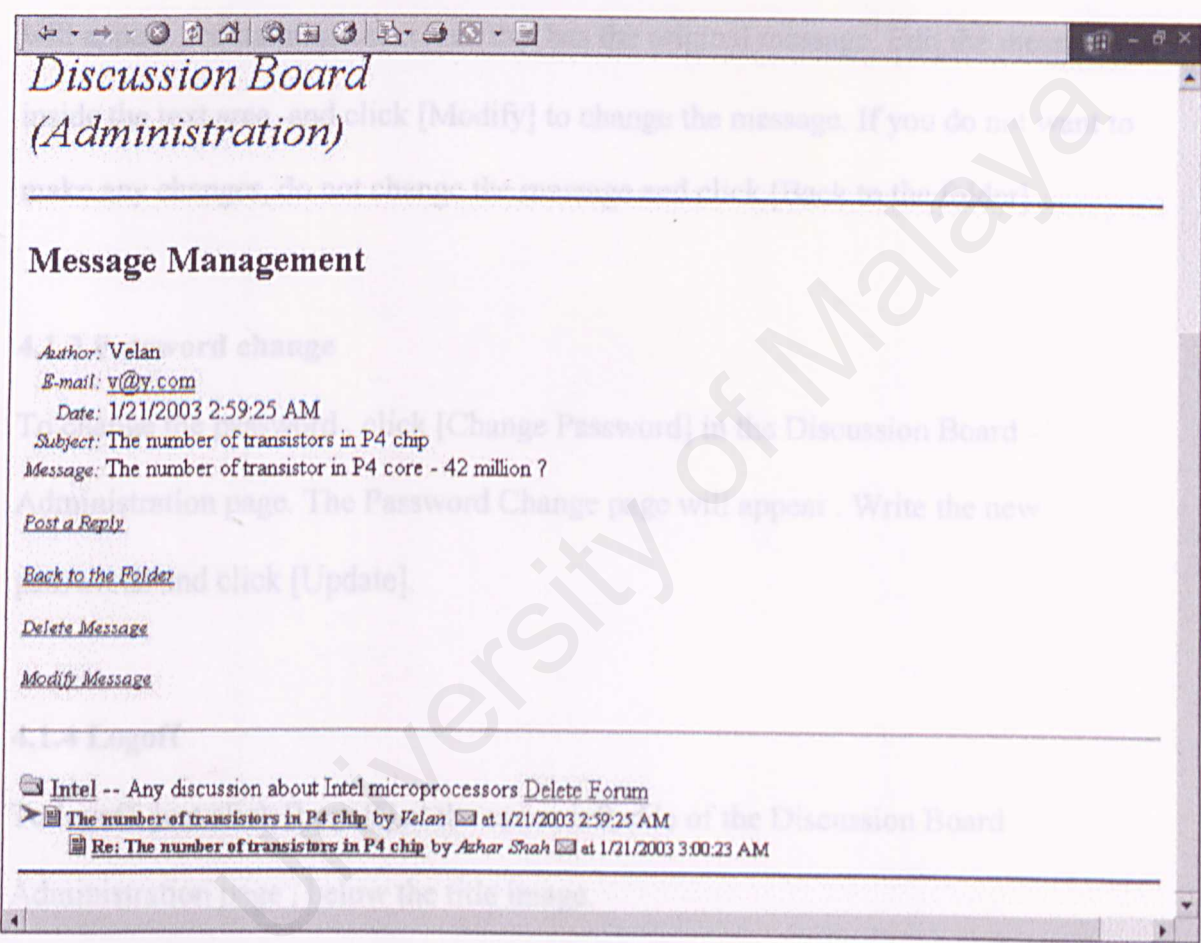


Figure 4.2 : Message Management page

This page allows the administrator to post a reply, delete the message and modify the message. Take note that there is a forum navigational links that allow viewing of other messages instantly.

To post a reply , click [Post a Reply] . A Post a Message page will appear. Fill in the details and message content and press [Post Message]. [Reset] will clear the forms.

ii) Poll answers

To delete the current message , click [Delete Message] . The message will be deleted immediately.

To modify the message, click [Modify Message]. The Message Modification page will appear , containing a text area that has the original message. Edit the message inside the text area, and click [Modify] to change the message. If you do not want to make any changes, do not change the message and click [Back to the folder].

4.1.3 Password change

To change the password , click [Change Password] in the Discussion Board – Administration page. The Password Change page will appear . Write the new passwords and click [Update].

4.1.4 Logoff

To logoff, just click [Logoff] at the upper left side of the Discussion Board Administration page , below the title image.

4.2 Opinion poll Administration (OPA)

The OPA can be accessed by clicking [Opinion polls] in the main page and [Administration] in the opinion poll page. The OPA page contains the details and forms to add and customise poll questions, answers, and output color and presentation.

The administrator can set these setting at the OPA by filling the forms:

i)Poll question

ii)Poll answers

iii)Font size, color, and type

iv)Background and bar color

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