Electronic Document Management System (EDMS)

by

Mohd Haffiz Bin Mustafar

Dissertation report submitted in partial fulfillment of
the requirement for the
Bachelor of Technology (Hons)
(Information Communication Technology)

JUNE 2006

Supervised by:
Mr. Suhaimi Abdul Rahman

Universiti Teknologi PETRONAS
Bandar Seri Iskandar
31750 Tronoh
Perak Darul Ridzuan

CERTIFICATION OF APPROVAL

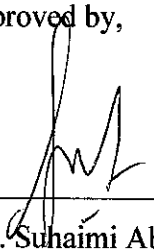
Electronic Document Management System (EDMS)

by

Mohd Haffiz Bin Mustafar

A project dissertation submitted to the
Information Communication Technology Programme
Universiti Teknologi PETRONAS
in partial fulfillment of the requirement for the
BACHELOR OF TECHNOLOGY (HONS)
(INFORMATION TECHNOLOGY)

Approved by,

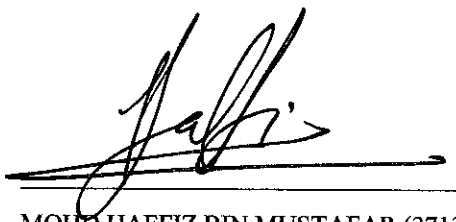


(Mr. Suhaimi Abdul Rahman)

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK
June 2006

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



MOHD HAFFIZ BIN MUSTAFAR (3713)

ABSTRACT

This document is to introduce reader to the study on electronic document management system (EDMS), an electronic system to manage, organize and publish electronic documents. This document will also detail the processes and the tools used in creating such a system which purpose is to help ease the process of storing and sharing of documents for students in the UTP campus. Electronic document are computer data that are intended to be used in their computerized form, without being printed (although printing is possible). Traditionally, people would spend significant time and effort to search for and manage a whole stack of documents. Realizing the many disadvantages of managing documents manually in its printed form, organizations are shifting towards utilizing documents in its digital form which provides more advantages. Thus, having an electronic system would provide a better capability of managing electronic documents.

ACKNOWLEDGEMENT

First and foremost, I express my gratitude to our Merciful God, Allah S.W.T because it is with His blessings that I am able to finally complete this project.

Throughout the entire course of this project, a large number of people have contributed to its development and I'd first like to thank Mr. Suhaimi Abdul Rahman who has commented on this project and made suggestions for change. It is with his guidance and knowledge that I am able to complete the project. I am also grateful to my friends who have reviewed and give suggestions regarding this project. Their helpful comments and suggestions have helped me a great deal when completing this project.

Finally, my family who has put up with my constant sway of moods and absence while I finished this project, I am forever indebted to them for their support, motivation and tolerance. This project and report is dedicated to my beloved father, MUSTAFAR AHAMAD and mother, KINTAN EVEL, sisters SHIMA and AMIRA and last but certainly not the least, NOOR FARIZAN.

Mohd Haffiz Mustafar

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS AND NOMENCLATURES

ASCII	American Standard Code for Information Interchange
EDMS	Electronic Document Management System
FTP	File Transfer Protocol
FYP	Final Year Project
GPL	General Public License
GUI	Graphical User Interface
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transfer Protocol
IRC	Internet Relay Chat
LAN	Local Area Network
OSS	Open-source Software
P2P	Peer to Peer
PDA	Personal Digital Assistance
RFC	Request for Comments
SA	System Administrator
SQL	Standard Query Language
TCP	Transmission Control Protocol
URI	Uniform Resource Identifiers
URL	Uniform Resource Locator
UTP	Universiti Teknologi Petronas

CHAPTER 1
INTRODUCTION

1.1 BACKGROUND OF STUDY

In the early years of its development, computers were initially developed for the usage of the military and research purposes. It was only when the first freely programmable computer introduced to the public in 1936 that major and multinational corporations saw it's potential as a tool in increasing the work efficiency in the office. Although not used to its fullest extent, these major corporations were using computers to smooth their daily operations such as, to create documents. It was only in 1953 when International Business Machines (IBM) came into the industry that computer gained much popularity among different organizations.

Early in its introduction, the output of the documents created using computers was still in printed form. These printed documents were then kept in file cabinets. At that time, this was considered a very efficient and effective way to store documents but as many organizations are globalizing, the amount of documents produced has more than tripled. The space needed to store these entire printed document is enormous and printed documents are easily lost and destroyed. If a disaster were to happen, these printed documents will likely to be destroyed. To add to these ever growing problems, the amount of effort and time needed in filing, storing, locating and retrieving the documents are enormous. The cost to do all those tasks is also quite expensive. According to a Coopers & Lybrand research study, companies spend on average, $20 in labor to file a document, $120 in labor to find a misfiled document, and $220 in labor to recreate a lost document [1].

Computers brought a major change in how organization regardless being a private corporation, government agencies or educational institutions in creating, editing and storing their documents. Nowadays, documents created are stored in its digital form, which is in the form of electronic document although printing is possible. With the introduction and extensive use of emails and telecommuting nowadays in almost any type of organization, electronic documents have become more important than printed document.

Below is a comparison between printed document and electronic in terms of storage space and location, ease of modification, means of mailing, searching and retrieval of document and the document's perish ability. The assumption underlying this comparison is that although printed document can be created and printed using a computer, the document is not saved in its digital form but instead stored in its printed form.

	Printed Document	**Electronic Document**
Storage Space & Location	Stored in file cabinets. In order to store huge amount of documents, a large space needs to be allocated to the cabinets.	Electronic documents can be stored in computers digitally. A computer with a large volume of hard disc is needed to store documents.
Ease of Modification	Modification is done through rewriting the whole document back. This incur a lot of time.	Corrections can be made to the document can be done instantaneously before printing. The time needed to modify is a lot shorter than the printed document.
Mailing	Printed document can be mailed through postal services. The documents usually took 2-3 days to arrive.	Documents can be sent via attachments in emails. This process is a lot faster and cheaper.
Search & Retrieval	User need to search through file cabinets in order to search for a particular document. This task is very time consuming.	User can search through the computer via the computers search function.

Perish ability	Documents can be destroyed easily. Although copies can be made, this will in turn incur cost and time to create and manage the documents not to mention the space needed to store the copies.	Documents can be replicated easily and be kept in a computer in a different location. Replicated document can be updated automatically. It saves cost, space and maintenance time.

Table 1-1: Comparison between printed and electronic document

Although electronic documents have a lot of advantages, it is not without any drawbacks. These drawbacks can be minimized with the implementation of a system called electronic document management system that can store these electronic documents, allows easier searching of document compared to the traditional way of browsing through folders and also permits the retrieval of these documents by users while at the same safeguarding the documents itself. A document management system is originally a computer program (or set of programs) used to track and store paper documents. Modern systems often also support storage and retrieval of electronic documents in the form of word processor files and the like [2].

The usage of an EDMS could help an organization in many ways either financially or strategically. An electronic document management system (EDMS) addresses the problem of storage and retrieval of electronic documents. Examples of EDMS in the market are Document Management from Laserfiche [3], doQument from Itaz [4] and WORLDOX GX from WORLDOX [5].

1.2 PROBLEM STATEMENT

1.2.1 Problem Identification

Being a university that strives to create well-rounded students, UTP incorporates modern and sophisticated facilities and systems in order to facilitate the learning process. These facilities and systems are intended to improve information sharing and dispersion of knowledge. One such system is the E-Learning. It is without a doubt a system that makes learning easier as students can get updated academic announcements and lecture material. If one look closely at the E-Learning, they will find that that it employs some of document management system's features for lectures to upload lecture materials and let it be downloaded by student. In the E-Learning system, only lecturers are given accounts and permission to upload documents and share them.

Students have a tendency to share various multimedia files amongst themselves including lectures and educational material, songs, videos and etc. The absence of a system that permits them to share such materials made the students use other solution such IRC or other P2P programs. Although the initial intention of setting such a system was to share educational materials such as lecture slides and other educational document, but as time goes and as the network community grows bigger, other immoral materials such as pornographic videos are also being shared. As the system is decentralized, it is hard to regulate and enforce what is permissible to be shared and downloaded.

A solution in countering this problem is by having a centralized EDMS that permits students to share and download educational material via a web-based system. By having a centralized system, all the uploaded and shared files can be monitored and thus preventing immoral and unnecessary materials to be shared to others. Students can benefit from the system as they will have now a means of uploading, sharing and downloading educational documents.

1.2.2 Significance of the Project

With the successful development of the project, it is hoped that it will be significant towards the users and future developers. It is hoped that the system will be able to:

- Provide targeted users (students) with a system that enables them to store, share, locate and retrieve intended documents. It is hoped that the system will enhance information sharing and the dispersion of knowledge amongst students.
- Monitor the content of the uploaded and shared document so as to make sure that students are sharing educational materials. This can be done as the document repository is located at the server and the system administrator has the permission to check and delete any document that contents prove to be inappropriate.
- It is also hoped that this project will also inspire and allow other developers to refine and enhance the tools and techniques used in this project to enhance the system so that it could manage the documents inside it better and at the same time, improve the system's reliability, maintainability and availability.

1.3 OBJECTIVE AND SCOPE OF STUDY

1.3.1 Objective

The objectives to be achieved by the completion of this project are:

- To build and develop an electronic document management system (EDMS) to the intended user which is the students of UTP. The system should provide students with functionalities that enable them as users, the functionalities of storing, sharing, locating and retrieving documents amongst each other in the campus.
- To try to incorporate the aspects of maintainability and availability into the system:
    - Maintainability can be incorporated by creating an administrator's module into the system so system administrator can perform maintenance function (e.g. add/ delete users, add/ delete news) from any terminal using a web-browser. The integration with software to manage the database can also help in the maintenance of the system and at the same instill some aspects of maintainability into it.
    - Availability can be incorporated into the system by integrating it with software to create a backup copy of the data and the system itself. This ensures that an updated copy of the system is available whenever the system is corrupted or down for any reason and the backup copy can be used to up the system. As the software will make an updated backup copy of the system constantly, the system will ensure that users will be equip with the latest data if in any case the backup copy will replaced the primary copy. Thus, increasing the availability of the latest data to users.

1.3.2 Scope of Study

All projects done must have a scope of study or implementation. These projects also have several scopes of studies which are:

- The target user for this system although other users such as lecturers or other faculty members can be given access to the system. The system is primarily developed with the intention to provide students with the ability store, share, locate and retrieve documents with educational values (e.g. lecture notes, assignment, etc.).
- This project focused on developing an electronic document management system (EDMS) using PHP, JavaScript and MySQL as the database for the system. This system will have a web-based interface so as to allow students to access it without having to install any additional software into their personal computers.
- The implementation of the system will be on an intranet environment (e.g. LAN). Through it, students can access the system which resides in a server from their respective personal computers.
- The testing of the system will be done on a subset group of students (e.g. 50 students) due to constraints in time and cost.

1.3.3 Relevancy of the Project

This project is aimed in developing an effective and efficient system for user to store, share, locate and retrieve documents. This system is also designed so that it incorporates the elements of maintainability, availability through data replication, integration with other software and creation of an administration module. Although this system is targeted for the usage of UTP students within the campus but it can also be applied to any organizations, preferably small and medium sized organizations. It is hoped that the system will become a platform for students to share document which possesses educational values (e.g. presentation slides, assignments) amongst each other.

1.3.4 Feasibility of the Project

The development of the project stretches for a period of 2 semesters which are divided into two phase; FYP Part I in the first semester while FYP Part II in the second semester. This allocated time frame will be used to carry out necessary research as well as developing the final product as according to the identified requirements.

The project is estimated to finish within the provided time frame as most of the analysis; planning and designing are done in FYP Part I. The other processes in the development of the system are to be done in FYP Part II. The processes involved in FYP Part II are transforming the design into workable codes, operation and maintenance and last but certainly not the least, unit and system testing.

This project can be considered feasible in terms of cost, time and effort. Most of the codes and software are obtained from open sources and modified to meet the requirements of the system. The use of readily available codes also shortens the time to build the system and there are a lot support (e.g. tutorials, instructions) available on the Internet for open sources. The programs integrated into the system are also free for educational and non-profit usage (e.g. Allway Sync, SQLyog). Most of the open source codes and OSS are obtained from the OWL Document Repository System and is bind under the GNU GPL license which grants the recipient of the computer program the following rights [6]:

- The freedom to run the program, for any purpose.
- The freedom to study how the program works, and modify it. (Access to the source code is a precondition for this)
- The freedom to redistribute copies.
- The freedom to improve the program, and release the improvements to the public. (Access to the source code is a precondition for this)

CHAPTER 2
LITERATURE REVIEW

2.1 ELECTRONIC DOCUMENT MANAGEMENT SYSTEM

Great advances in electronic information technology have made the creation, storage and flow of electronic documents not only feasible but economical, and consequently have led to great increases in productivity [7]. Comparing paper document to their electronic counterpart, paper documents are easier to work with especially when large and they require little technological infrastructure for reading and writing. However, electronic versions of documents also holds an advantage to paper document in that they offer superior search, storage, and transfer capabilities.

Organizations spend significant time and effort to create and organize documents on internal networks [8]. The rapid rise of popularity of the World-Wide Web and the lowering of cost of individual computing and the internetworking of computers means that firms have little technological or financial barrier to creating documents locally, thus making them available to the organizational community. Document management, though, is more than publication and organization—it also includes efficient access and retrieval.

Since documents constitute such an important part of a firm's knowledge assets, a well-designed electronic document management system (EDMS) should provide collaboration and coordination mechanisms to provide the users with an active role in growing the knowledge base and linkage mechanisms between readers and authors, as well as providing a basis for evaluating the system [9]. Most of these organizations require representation, processing, storage, and dissemination of information composed of multiple media types such as text, image, audio, and video. Multimedia technologies

are expected to significantly increase productivity, effectiveness, and usability of information systems, and can provide an effective medium for computer-to-human and human-to-human communications. Use of multimedia documents over the Internet and Intranet is becoming a major source of information dissemination and sharing. Internet and the Intranet provide a global platform for distribution of information for large-scale enterprises.

An electronic document management system (EDMS) is originally a computer program (or set of programs) used to track and store paper documents [2]. But now, the definition is a lot more different as modern systems often also support storage and retrieval of electronic documents in the form of word processor files and the like. Nowadays, an electronic document management system (EDMS) typically store, retrieve, and manage unstructured data, such as files, text, spreadsheets, images, sound clips, multimedia data, and compound documents [10]. Document management systems are made up of software designed to manage all types of documents, including scanned, electronic and paper. All documents are stored in a single repository that facilitates all actions that need to take place from search and retrieval to email and printing [11].

Typical systems have the user scan in the original paper document, and store the image of the document in the document management system. The image is often given a name containing the date and the user is often asked to type in additional "tags" in order to make finding the image easier [11]. Slightly more advanced versions also perform an OCR on the image, storing the text along with the image. Although most OCR systems are notoriously inaccurate, even a few correct words scanned off the page can eliminate the need for the user to type in their own tags. Once the document is stored, it is typically retrieved using an application that is aware of the way the tags (or scanned text) and image are related. That way when you search for "invoice", opening the document will in fact open the original image.

2.1.1 Advantages of an EDMS

The development of EDMS is growing rapidly and they are increasingly being used for business critical applications in financial, services, insurance, manufacturing, government, educational institutions and many other industries [8]. The reason for this is that it brings a lot of benefits to the company. Among of the reasons are improved productivity, cash flow, customer service and better access and use of information. Below are some of the advantages of implementing an EDMS:

- ***Storage***

  Once uploaded to the system, files are instantly shared are stored in a centralized location (e.g. server) making it easy to manage and safeguard the files.

- ***Searching***

  The system will have a database that contains information regarding the files uploaded (e.g. file name, file location, metadata). The search will look into the database instead of scouring through folders and this in turn, will deliver faster results.

- ***Sharing***

  Every file uploaded to the system is automatically shared throughout the network. File is shared instantaneously as they are uploaded to the system.

- ***Retrieving***

  User can download the files from the system while at the same maintaining the files integrity. Permission can be set to the files so that other user may not change the content of the original or delete the document from the system. User can download the files and modify the downloaded file. This insures the integrity of the original document. User can access the system as long as the server is running.

2.2 TYPES OF EDMS

Traditionally, an electronic document management system is based on the client/server architecture [12]. Before the advancement in internet technologies, many EDMS is designed to be proprietary software. The electronic document management system (EDMS) runs on the corporate server system, while every client runs proprietary software, which provides user interface and access to documents. The link between clients and the server is via a local area network. This approach requires expensive client software for every desktop.

The advancements in the Internet technologies have contributed to the rapid development of the electronic document management systems. Examples of EDMS that utilizes the Web-technologies are Document Management from Laserfiche [3], doQument from Itaz [4] and WORLDOX GX from WORLDOX [5]. It is necessary to notice that the special value Internet/ intranet/ Web-technologies represent for organizations, because the use of either ones for creation of an EDMS is the cheapest solution in comparison with traditional systems that is accessed using an application installed on every individual computer in the network. Below is a comparison between traditional system and a web-based system:

	Traditional System	Web-based System
Development Time	Developers need to code into the individual installed application functions so that they could connect, communicate and transfer files with the server. This will incur more time.	Use of web technologies enables the quick development time of a system which is able to communicate and transfer files with the server using web-browsers.
Installation Time	Instead of the program that needs to be installed at the server, client programs need also be installed on every computer that is designated to use the system. This will incur longer time.	Only the server needs to be installed with the application. User can accessed the application via web browser. Additional installation will not be needed although new users are being added to the system.
Cost	As the development will be required to produce two sets of programs and that the client programs will needed to be installed on each computer, the cost will increase as the labor and resources needed to accomplish this is increased.	The cost will be substantially lower than of the proprietary software as only the server program needs to be developed. Installation need only be done on the server. Less labor and resources used will result in a lower cost.
Mobility/ Access	Mobility is limited as user can only accessed the system via a workstation that is installed with the client program.	High mobility as user can access the system using any workstation provided that they use a web browser.

Table 2-1: Comparison between Traditional and Web Based System

CHAPTER 3
METHODOLOGY

3.1 PROJECT METHODOLOGY OVERVIEW

Software engineering is the practice of using selected process techniques to improve the quality of a software development effort. A methodical approach to software development results in fewer defects and, therefore, ultimately provides shorter delivery times and better value. Availability of a number of software process models such as the waterfall model, evolutionary development, formal system development and reuse-based development [13] makes the process of selecting the appropriate model an important one. The reward of selecting the appropriate model is the deliverance of quality required in the system, while avoiding steps that waste time and other resources [14].

A prototyping-based methodology used in this project performs the analysis, design and implementation phase concurrently, and all three phases are performed repeatedly in a cycle until the system is completed [15]. With these methodologies, the basics of analysis and design are performed, and work immediately begins on a system prototype.. The prototype is shown to students who provides comments through a survey done, which are used to re-analyze, re-design, and re-implement another prototype that provide a few more features. This process continues in a cycle until everyone agrees that the prototype provides enough functionality and meet their requirements

3.2 PROCEDURE IDENTIFICATION

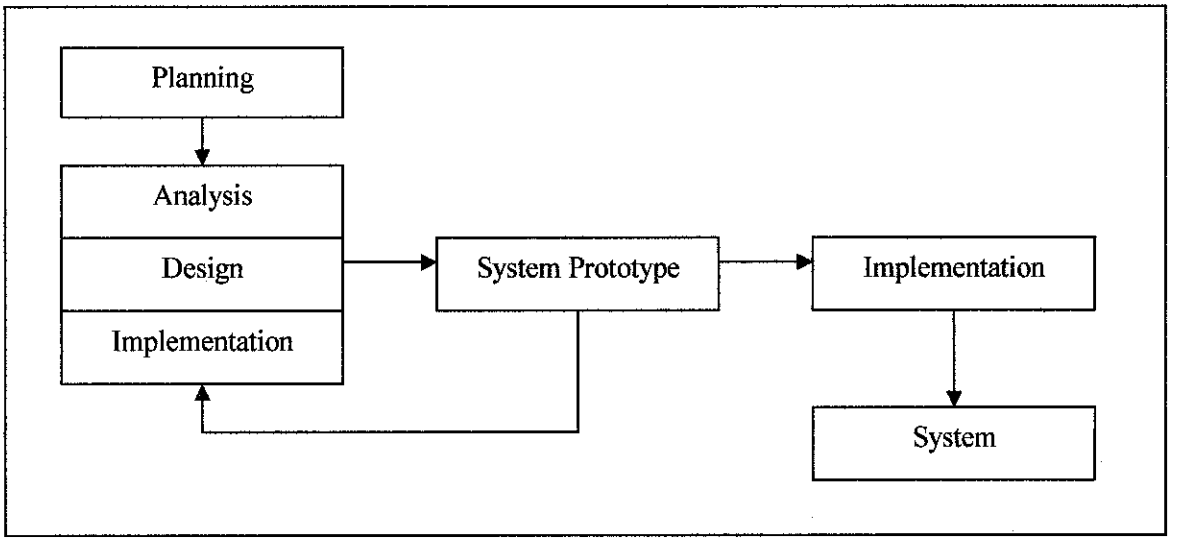


Figure 3-1: The Prototyping-based Methodology

3.2.1 Planning

It is the fundamental process of understanding why an information system should be built and determining how to build it. The first step is called Project Initiation, during which the system's business value to the organization is identified. To smooth out the development process, Gantt Charts are developed so that the development process will be able to meet its deadline. Please refer to Appendix I and II to see the Gantt chart for the project. Among the other activities done during this stage are the allocation of resources such as time, cost and etc. for the analysis and the development and documentation of the system. The allocation of resources is vital to the project so as to finish it within the time frame provided.

3.2.2 Analysis

The analysis phase answers the questions of who will use the system, what the system will do, and where and when it will be used. Various techniques and approaches were utilized in order to better understand the requirement of the system and to answer the questions that were stated earlier. During this phase, any current system is investigated, improvement opportunities identified and a concept for the new system is developed. During this stage, research has been done towards the topic of the project to better understand it and its concepts. Resources gathered are from journals, books, web sites and etc. The understanding of the concepts is important so as to know the working of an EDMS and how to create one.

3.2.3 Design

The design phase decides how the system will operate, in terms of the hardware, software and network infrastructure; the user interface, forms and reports and the specific programs, databases, and files that will be needed. In this stage, the EDMS system architecture is specified so as to know in what networking environment the EDMS will be residing in and what facilities, programs, database and equipment are needed for its development and implementation. Various diagrams are also created so as to increase the understanding of the system's structure, functions and flows. This will make the process of coding the system easier. The system's storyboard is created so as to design the interface that will interact with the users. It has been decided that the system will have a web based interface. Documentations are also being constantly done and revised so as to report what has been done and what needs to be done during the development process.

3.2.4 Implementation

It is the final phase during which the system is actually built. This phase usually gets the most attention for most systems it is the longest and most expensive single part of the development process. In this phase, the system is being coded and developed so as to meet user's requirement. If the system does not fulfill the requirement, this phase can be repeated again until the system has fulfilled the user's requirement and the objective of project. This stage mainly involves in the coding of the system and setting up of the EDMS networking implementation so that it can work properly. Comments received from either user and supervisor is important to better the system and to make sure that it serves its purpose.

3.2.5 System Prototype

There are two types of prototype that can be developed which are the Exploratory and Throw-away prototyping. Exploratory development/ prototyping are chosen as the objective of the process is to work with clients/ users to explore their requirements and deliver a final system. The development starts with the parts of the system which are understood. The system evolves by adding new features as they are proposed by the students or that is considered important to provide better service towards them. Their feedbacks are gained by conducting a survey which requires them to answer several questions and provide their own opinion regarding the system. Please refer to Chapter 4.4 for the survey question and its result.

3.3 SYSTEM TECHNICAL REQUIREMENT

3.3.1 Hardware Requirement

Table shows the hardware requirement of the computer for the development of the electronic document management system:

Operating System	Microsoft Windows XP
Processor	Intel® Pentium® 4 CPU1.7 GHz
Memory	128 MB of memory
Disk Space	20GB of free space
Other Peripherals	Monitor (1024 x 768), Keyboard, Mouse, DVD-ROM drive

Table 3-1: Development Hardware Requirement

3.3.2 Software Requirement

Web-browser	Microsoft Internet Explorer
Scripting Language	PHP and JavaScript
Database	MySQL
Web-editor	Macromedia Dreamweaver
Image-editor	Adobe Photoshop

Table 3-2: Development Software Requirement

CHAPTER 4
RESULTS AND DISCUSSIONS

This chapter details the research done and results and also the actual development and implementation of the system itself. Various methods and techniques are implemented to depict the system's functionalities and its flow. This chapter also details the survey done in which to find out whether the developed system has met the requirement of its intended user which is the students.

4.1 SYSTEM ANALYSIS

As stated earlier, the UTP E-Learning system does provide some functions and possesses some characteristics of a document management system but it only provides sharing capabilities to faculty member (e.g. lecturer). Besides that there are some other weaknesses and inadequacy which the proposed system needs to overcome. Below are stated some of the weaknesses and how the proposed system will overcome it:

4.1.1 Current System

Some of the weaknesses of the currently implemented UTP E-Learning system are:

I. UTP E-Learning do provide some electronic document management system capabilities such as granting its users the function of uploading documents (e.g. lecture slides, assignments) to the system and allowed it to be downloaded by other users. The problem with this is that only faculty members (lecturers) are given the permission to upload documents while the students only downloaded it.

II. Some system also does not have searching capability that will enable users to search for specific documents. Users have to browse through to search for specific document.

III. Download of multiple documents are not permitted. If a user has several documents to be downloaded, they have to do it one by one.

IV. Users are also not given any means to indicate the existence of new uploaded files and also the existence of updated files.

4.1.2 Proposed System

The proposed system should overcome the weaknesses and drawbacks of existing systems

I. For the proposed system it is proposed that in order for an unregistered user to register to the system, they would have manually register to the system by filling and submitting a form to the SA (refer to APPENDIX V). After that, they will be give a username and password by the SA which they can change after they have login to the system.

II. The system should allow students as users to upload material as they have sometimes have educational and important document to be shared with each other.

III. The proposed system should have a search function to allow users to search for specific documents faster and more efficient.

IV. Allow downloads to make the process of downloading of documents easier and faster. Sometimes, users need to download several documents but without this function; they have to download it one by one instead of the whole bulk.

V. To decrease the cost of development and implementation of the system, it is best that the system be a web-based system as it will not require additional installation in user's computers in order to use the system. They can just simply use their web browsers to access it.

4.2 SYSTEM DESIGN

4.2.1 System Architecture

The figure below represents a typical architecture of a setup for this electronic document management system (EDMS) environment:

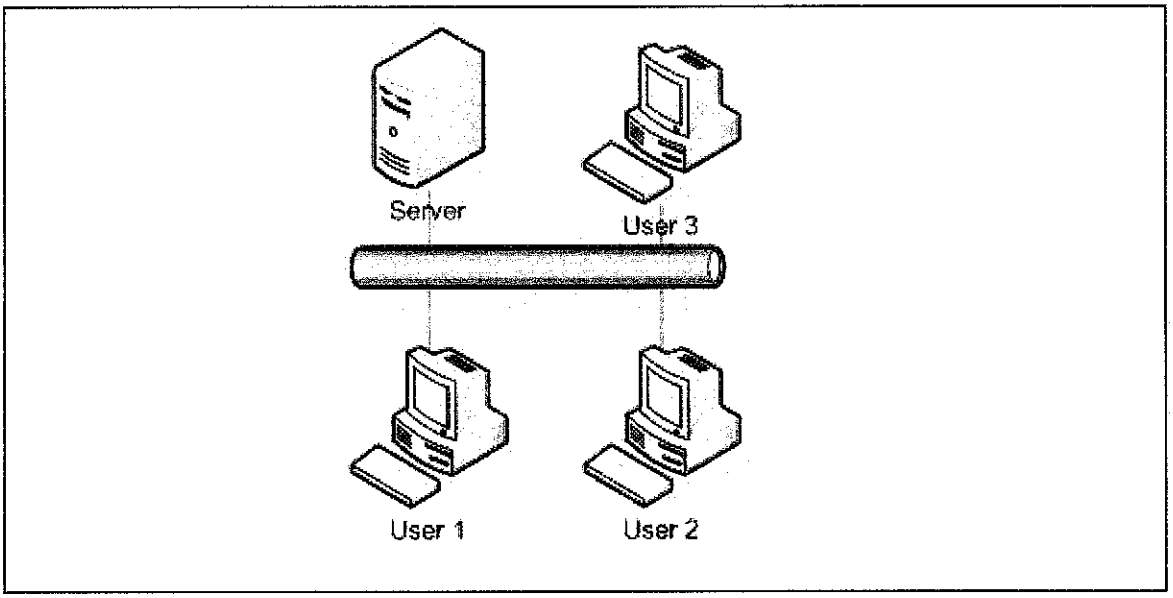


Figure 4-1: EDMS System Architecture

The configuration used for this system is the client-server architecture. The source file, program code and database are stored in a server and user can access the system via their workstation by using the web-based interface of the system. A web-based interface can be easily accessed by a web browser and it does not require any additional installation on the user's computers. By having all the data stored in a server, it can be maintained easily as the data is centralized and not scattered and also, a replica of the data could be made in order to safeguard the data in the case of any unwanted incident involving data loss and corruption occurring.

4.2.2 Class Diagram

A class diagram is a static model that shows the classes and the relationships among the classes that remain constant in the system over time [15]. The class diagram depicts classes, which include both behaviors and states, with the relationship between the classes. In this class diagram, the attributes of the classes is not detailed.

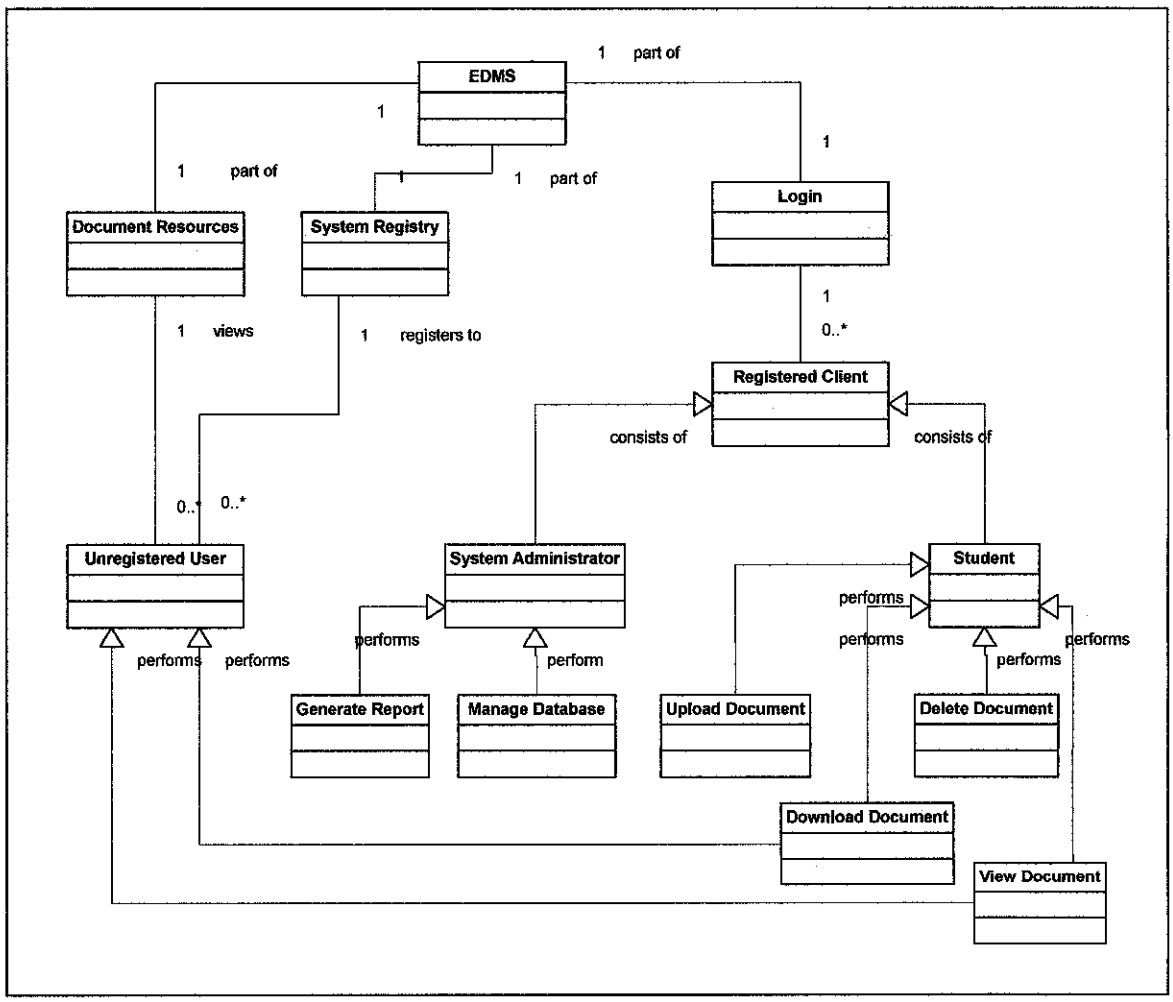


Figure 4-2: Class Diagram

The diagram above depicts the class diagram of the EDMS. Basically, there are two categories of user in the system which are the registered and the unregistered user. Unregistered user has the option of viewing the list of documents searched using a

keyword and also downloading it. Unregistered user can become registered user by registering to the system registry.

Meanwhile, registered user is divided into two groups which are the normal user (e.g. student) and also the system administrator. Normal group has the option to view, download, upload and also delete the previously uploaded files. System administrator has the same functions as the normal user but added with a few privilege. They can view and edit the databases in the system. The database in the system includes the database on the user and the database on the document information in the system.

4.2.3 Use Case Diagram

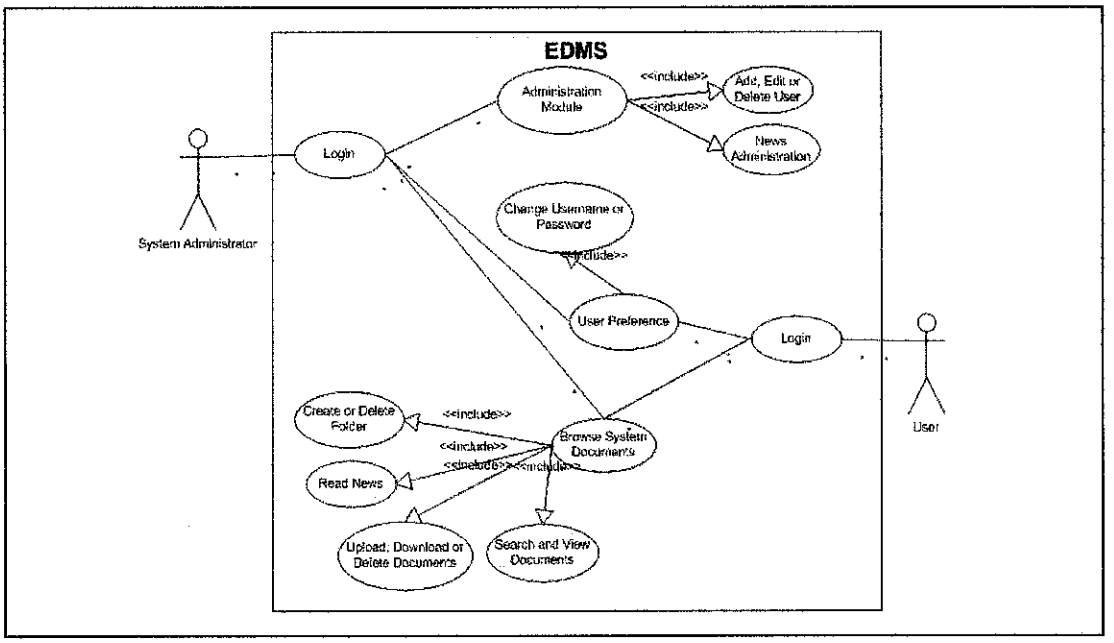


Figure 4-3: Use Case Diagram

Use case diagram is used to model the activity to be done. Use case diagrams show the actor and the use cases within the framework of the system [15]. The use case diagram provides a bird's eye view of the actors and use cases within the system and provides an overall description of the external functionality of the system. The diagram below depicts the use case diagram for this system. This system has 2 main groups of users; students and system administrator. There are basically 3 modules or subsystem in the EDMS which are:

- Administration Module
  - Add, delete and edit user and groups.
  - News administration for adding, deleting and editing news.
- User Preference
  - Change respective username and password.
  - Edit user respective information.
- Browse Folders/ Files
  - Create, delete or edit folders and its information.
  - Upload, delete or edit files and its information.

- Download documents.
- Search for respective documents.

As stated earlier, there are two types of users which are System Administrator and normal users. System Administrator can access all three modules while normal users can access only the User Preference and Browse Folders/ Files modules only. This restriction is intended to ensure integrity of the system whereby only a few authorized personnel can access the crucial and important function of the system.

4.2.4 Process Flow Diagram

Process Flow: Overall Process Flow for System Administrator Login

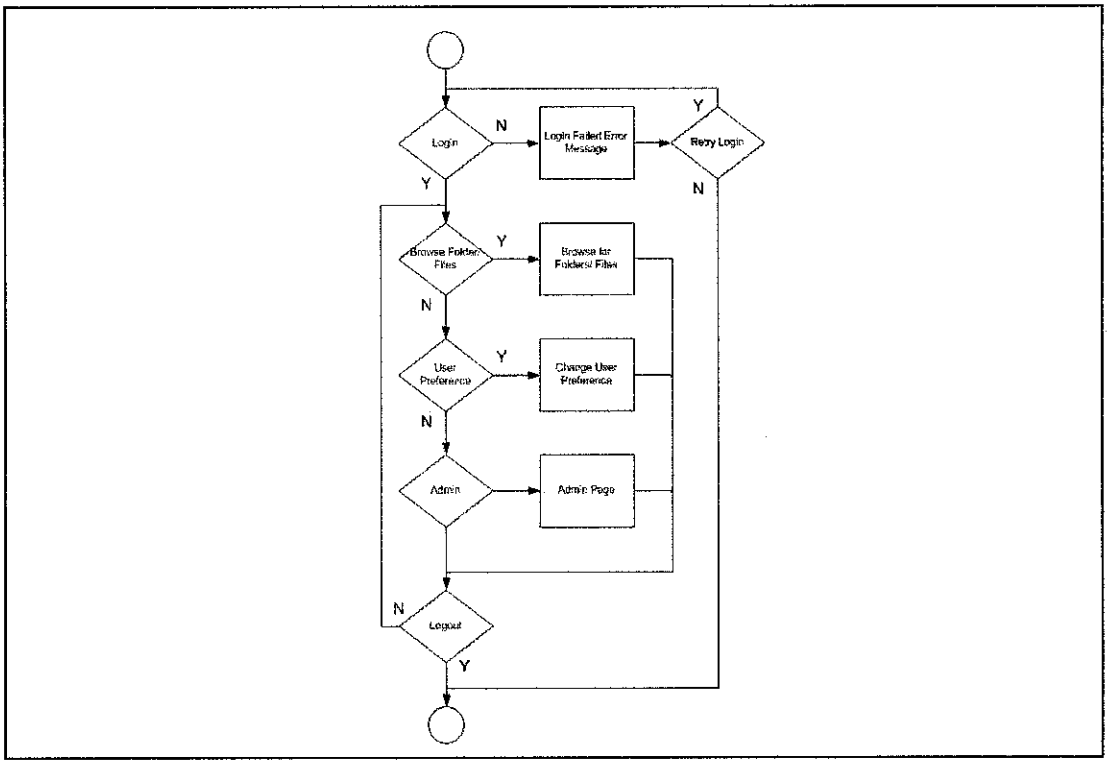


Figure 4-4: Overall process flow for System Administrator login

The above diagram depicts the flow of action when a system administrator accesses the system. An error message will be shown if either the username or the password is incorrect. After a successful login, the system administrator can access the three modules which are the Admin, User Preference or the Browse Folders/ Files modules. The diagram does not show the details of each module. Other flow diagrams below will try to explain the flow of each module although not in extreme detail.

Process Flow: Overall Process Flow for User Login

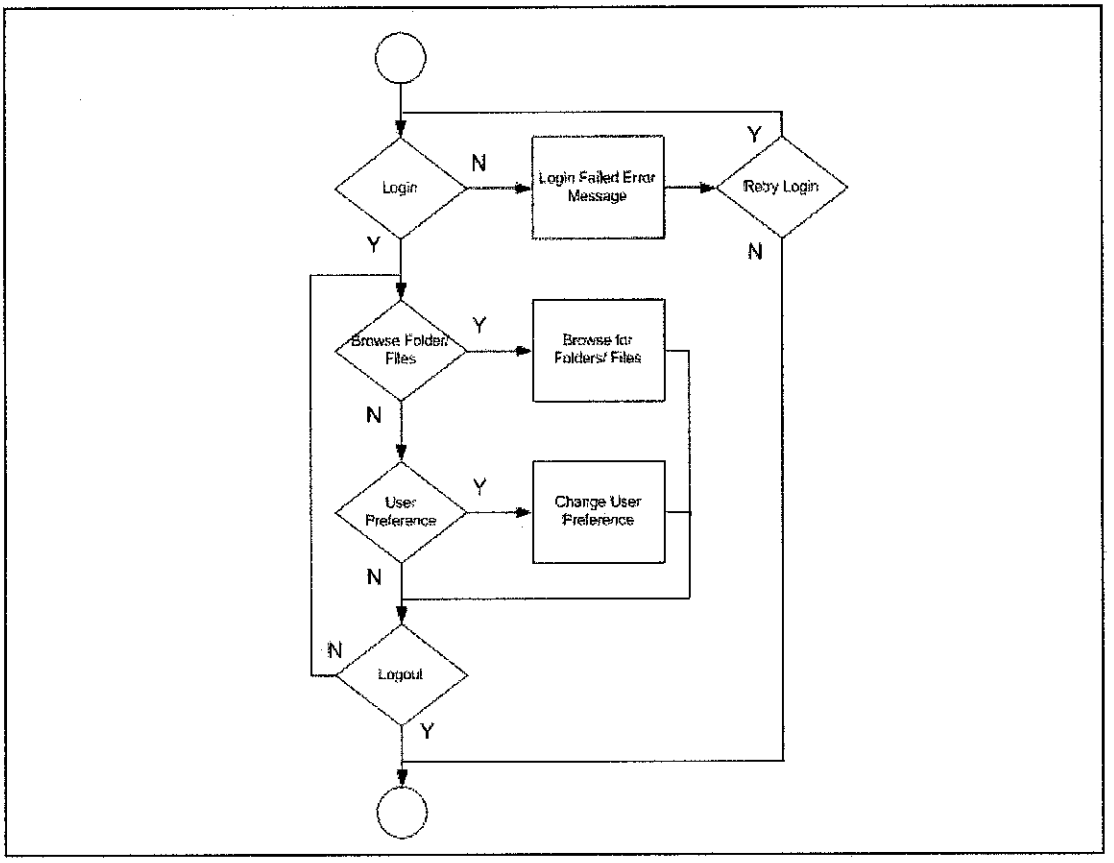


Figure 4-5: Overall process flow for User login

The above diagram depicts the flow of action when a normal user accesses the system. An error message will be shown if either the username or the password is incorrect. After a successful login, the normal user can access the two modules which are the User Preference and the Browse Folders/ Files modules. The diagram does not show the details of each module. Other flow diagrams below will try to explain the flow of each module although not in extreme detail.

Process Flow: Process Flow for Admin Module

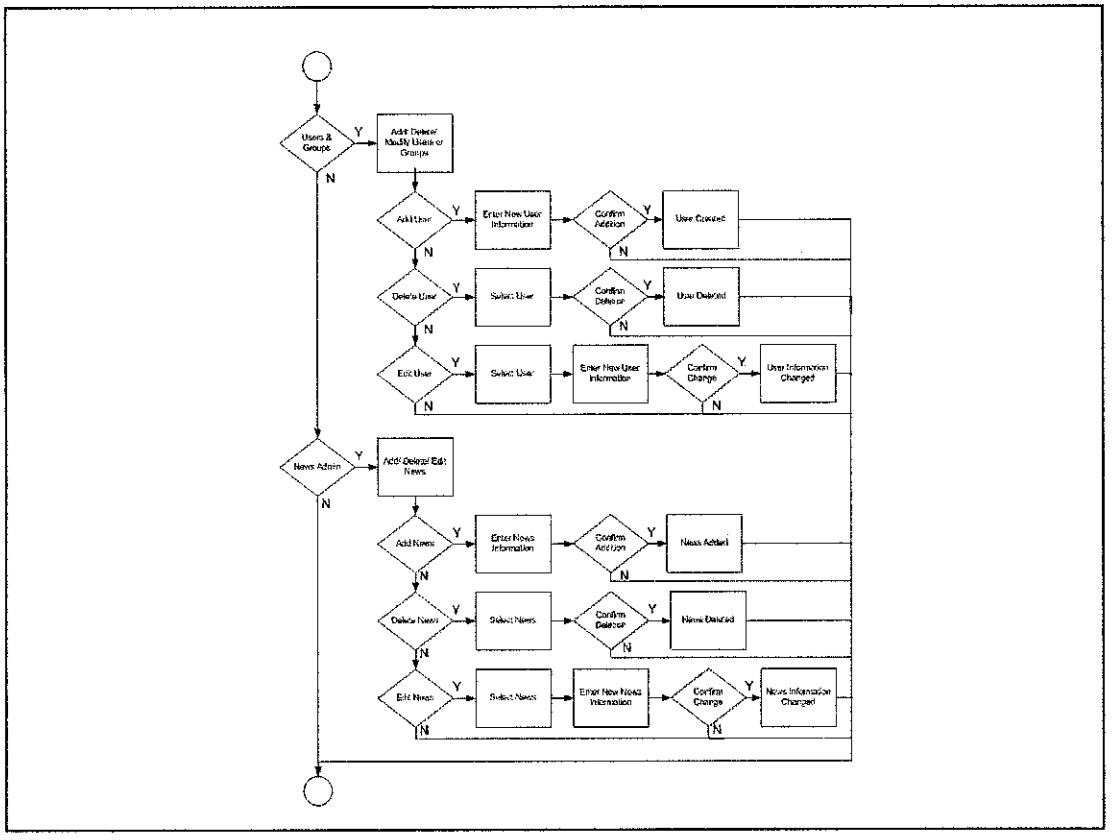


Figure 4-6: Process flow for Admin module

In the Admin module, the system administrator can opt to either go to the User & Groups section or the News Admin section. In the User & Groups section, the system administrator can add, delete or edit user and their profile. New user can register to the system by filling a form as shown in APPENDIX IV. After filling the required information, they will be given a username and password. Users can change the username and password after their first time login. On the other hand, in the News Admin section, the system admin can add, delete, or edit news. The system administrator can also specify to which group the news is intended or the news can be sent and read by all users.

Process Flow: Process Flow for Browsing Module

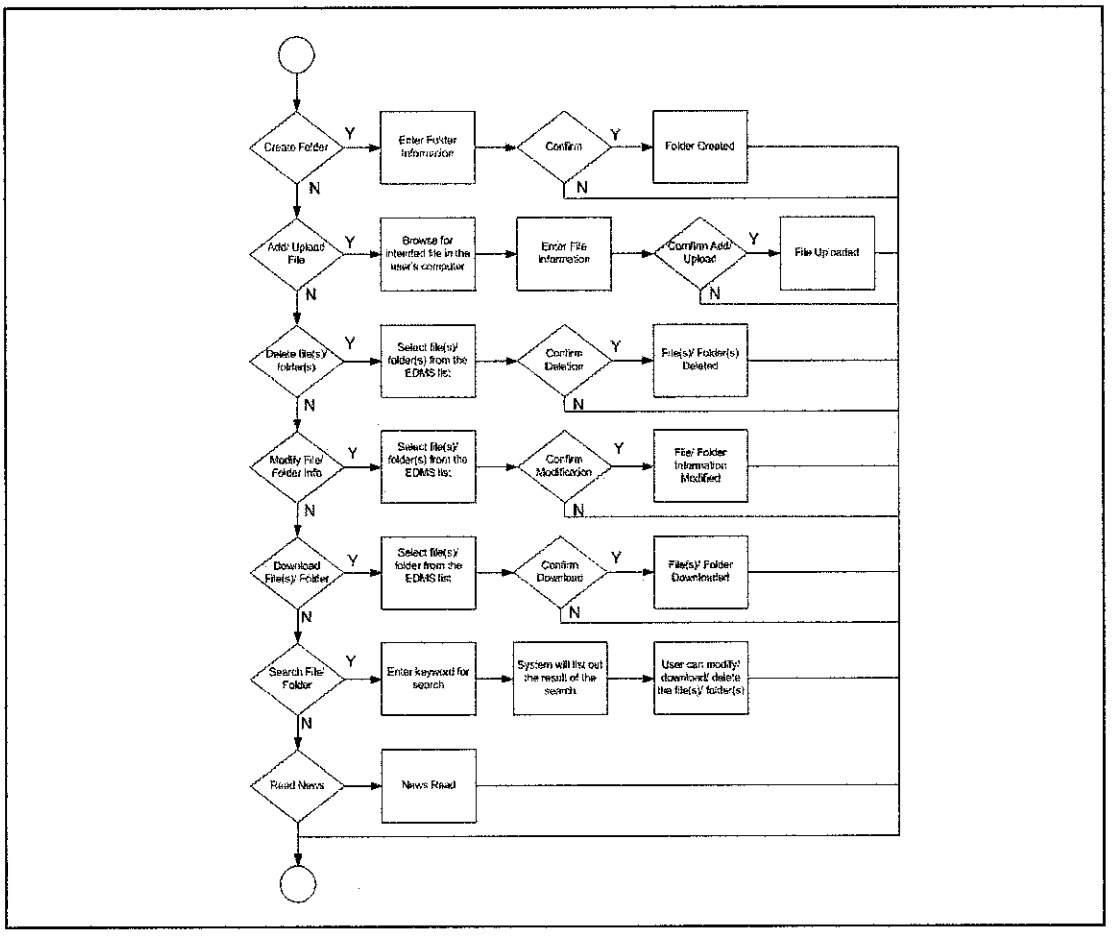


Figure 4-7: Process flow for Browsing module

In the Browse Folders/ Files module, users have a lot of option in terms of the functionality. Users either system administrator or normal users can create, delete or change folder and its information/ profile; download, upload, delete or edit files and its information; read news; and search for intended folders or files. In the folder and files profile, users can specify the permission. This enables the respective folder/ files to be downloaded or accessed by certain groups only.

Process Flow: Process Flow for User Preference Module

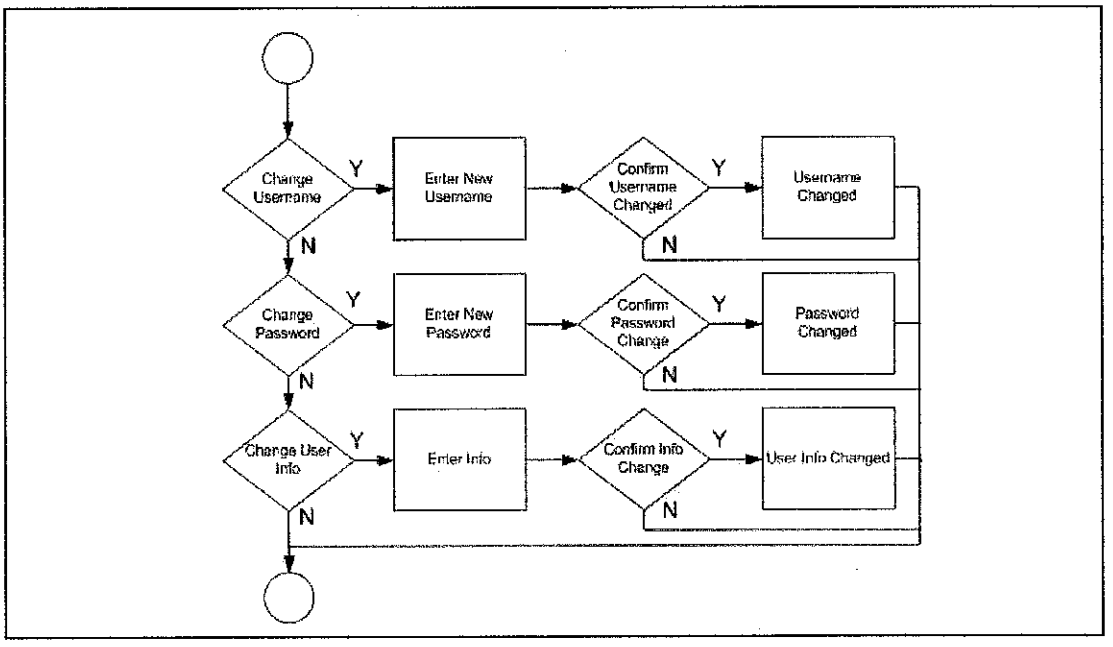


Figure 4-8: Process flow for User Preference module

In the User Preference module, users can have the option to change their username; password and other information such e-mail and etc. This feature can be accessed by either system administrator or normal users.

4.2.4 Sequence Diagram

Sequence diagrams can illustrate a succession of interactions between object instances over time. Sequence diagrams are often used to illustrate the processing described in use case scenarios. In practice, sequence diagrams are derived from use case analysis and are used in system design to derive the interactions, relationships and methods in the system. Below are the scenarios and sequence diagrams for the use case.

Use Case: Login to restricted session

1. Student login to the system.
2. System request for student's login and password information.
3. Student provides the details needed.
4. System verifies on the login data and able to find a match in the Database regarding the user's information and if there is a match, the system enters the user's data in the active sessions so that students will have restricted session (one session per student).
5. Student granted access to the system.

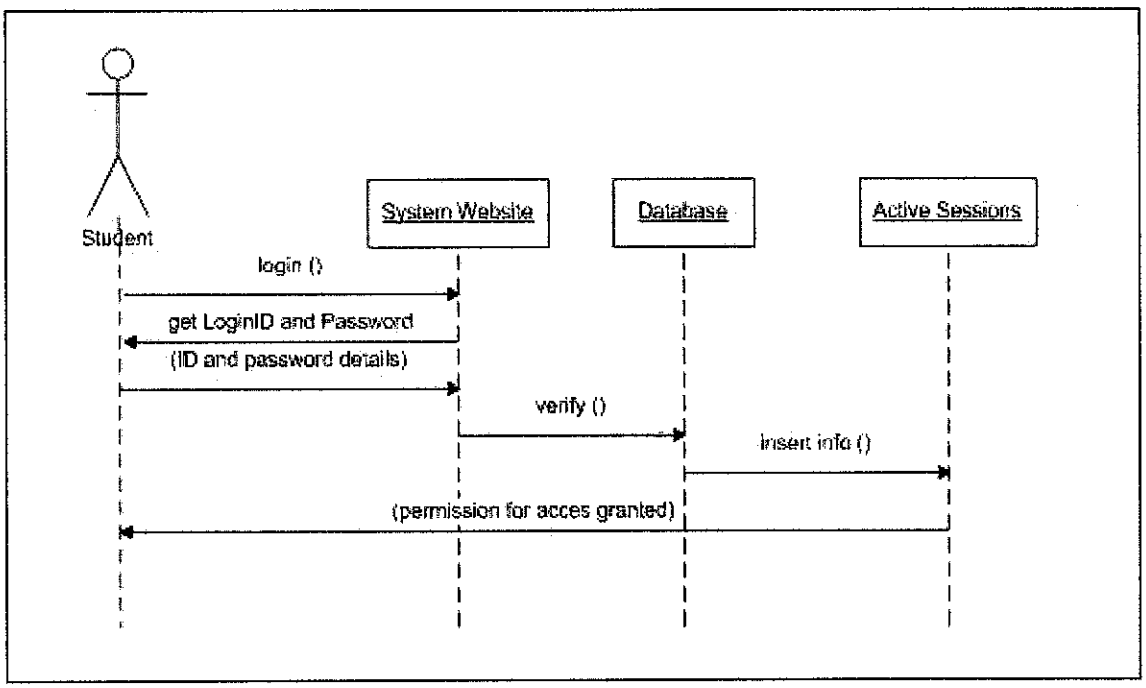


Figure 4-9: Login to restricted session

Use Case: Logout from restricted session

1. Student login to the system.
2. System request for student's login and password information.
3. Student provides the details needed.
4. System verifies on the login data and able to find a match in the Database regarding the user's information and if there is a match, the system enters the user's data in the active sessions so that students will have restricted session (one session per student).
5. Student granted access to the system.
6. Student logout from the system.

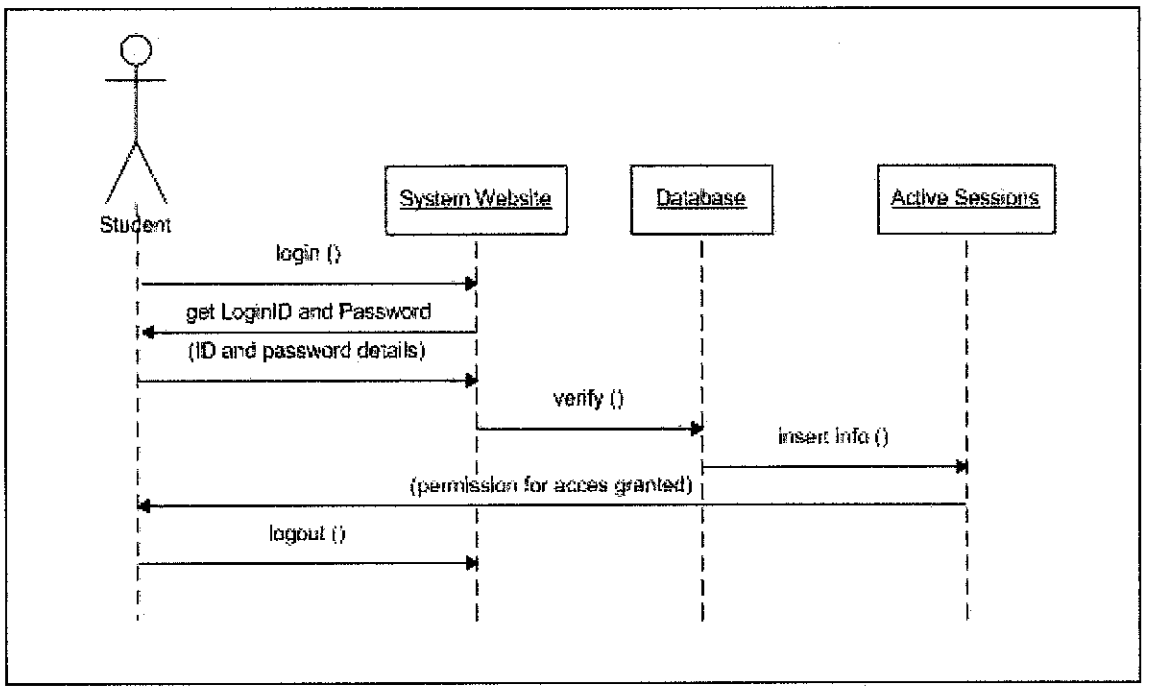


Figure 4-10: Logout from restricted session

Use Case: User upload file to the system.

1. Student login to the system.
2. System request for student's login and password information.
3. Student provides the details needed.
4. System verifies on the login data and able to find a match in the Database regarding the user's information and if there is a match, the system enters the user's data in the active sessions so that students will have restricted session (one session per student).Student granted access to the system.
5. Student goes to the upload session.
6. Student enters the files information in the upload session page and selects file from their personal computer.
7. Then, the uploaded file will be stored in a document repository in the server while the Database is updated with the file's information which has been entered earlier.

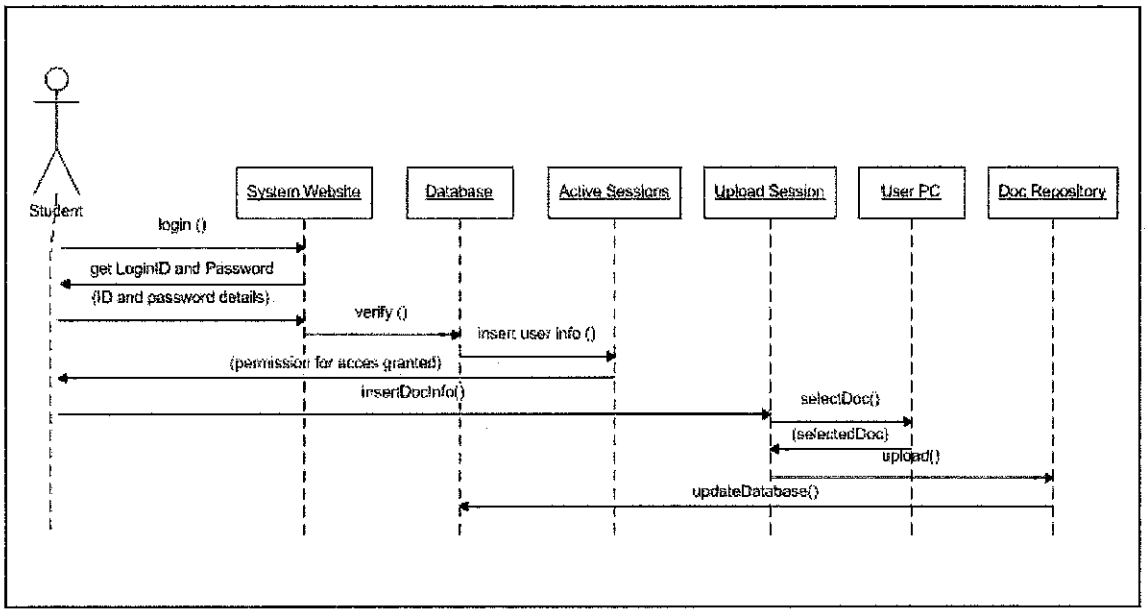


Figure 4-11: User upload file to the system.

Use Case: User download files from the system.

1. Student login to the system.
2. System request for student's login and password information.
3. Student provides the details needed.
4. System verifies on the login data and able to find a match in the Database regarding the user's information and if there is a match, the system enters the user's data in the active sessions so that students will have restricted session (one session per student).Student granted access to the system.
5. Student granted access to the system.
6. Student select files from a list made available once students is granted access. The list shows the available documents available in the document repository.
7. Once students have selected the documents, they can download the files. Then, a copy of the files will be transferred to the student's computer from the system.

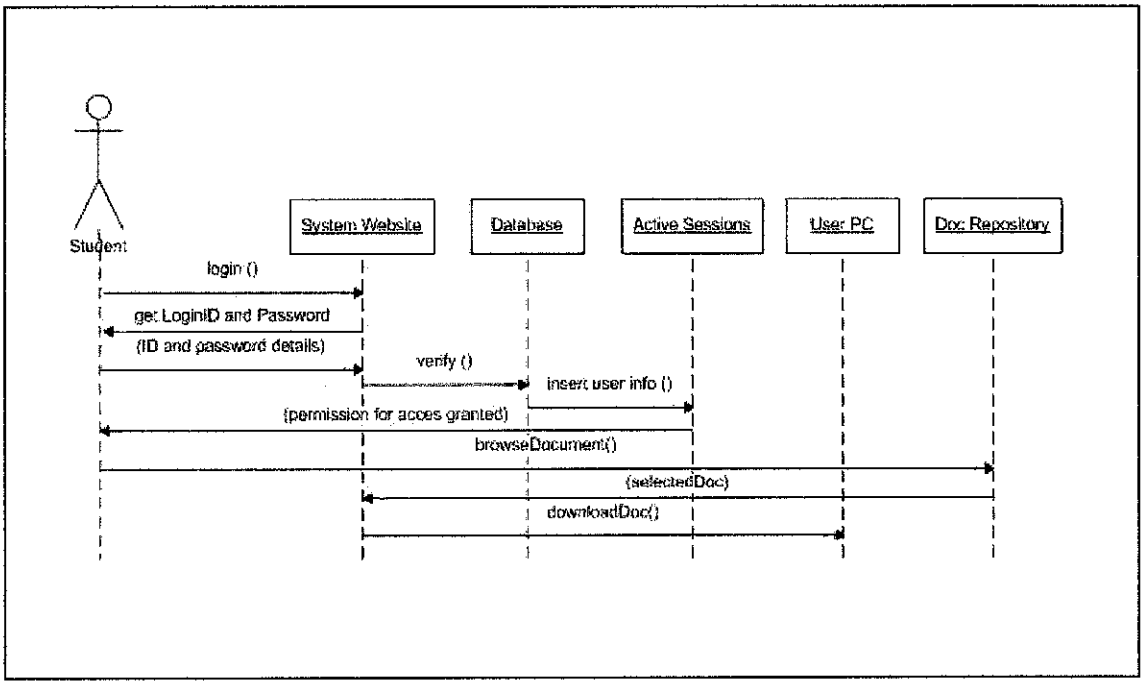


Figure 4-12: User download files

Use Case: User adds a folder into the system.

1. Student login to the system.
2. System request for student's login and password information.
3. Student provides the details needed.
4. System verifies on the login data and able to find a match in the Database regarding the user's information and if there is a match, the system enters the user's data in the active sessions so that students will have restricted session (one session per student).Student granted access to the system.
5. Student granted access to the system.
6. Student goes to add folder session and enters the folder's information (e.g. name, permission)
7. After student has entered the relevant information and confirms the creation of the folder, the folder's information will saved in the Database and the folder is created and is shown on the web page.

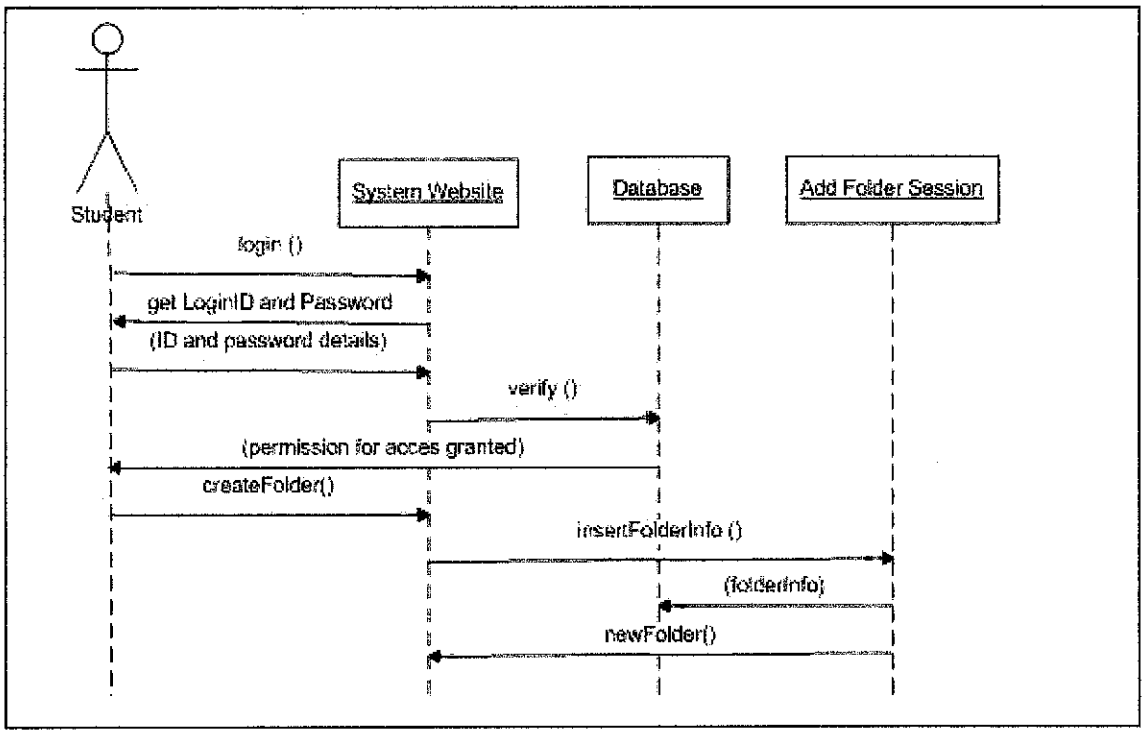


Figure 4-13: User adds a folder into the system.

Use Case: User deletes a fil/ foldere in the system.

1. Student login to the system.
2. System request for student's login and password information.
3. Student provides the details needed.
4. System verifies on the login data and able to find a match in the Database regarding the user's information and if there is a match, the system enters the user's data in the active sessions so that students will have restricted session (one session per student).Student granted access to the system.
5. Student granted access to the system.
6. Student selects a file/folder and deletes it.
7. Database is updated as the file/ folder has been deleted.

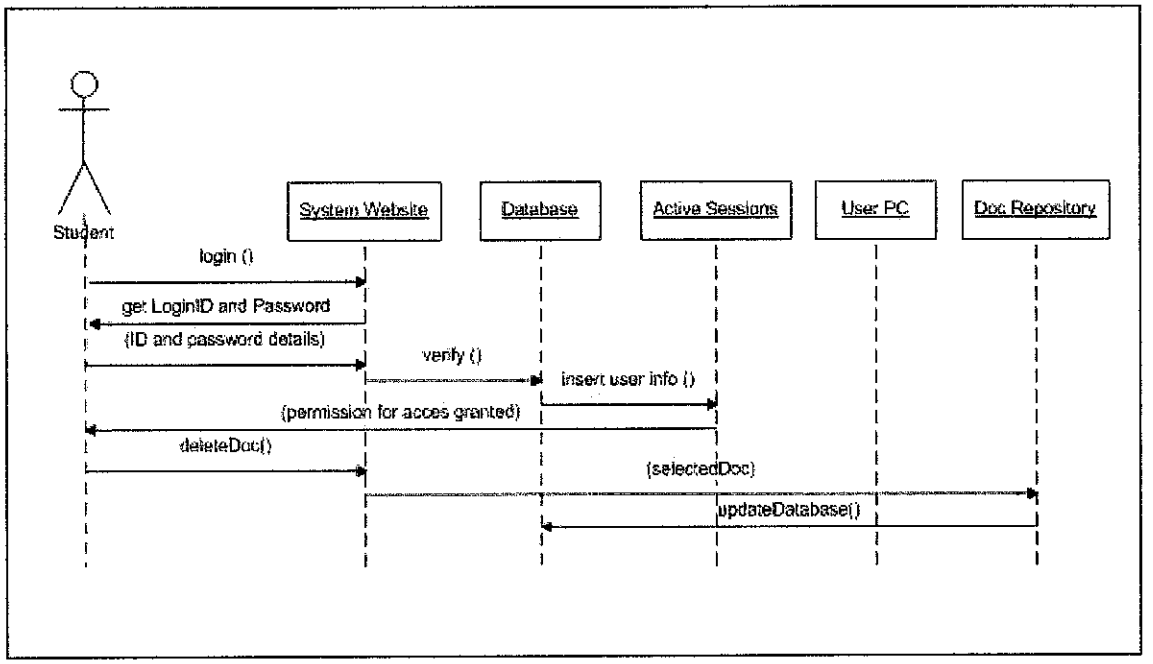


Figure 4-14: User deletes file/folder in the system.

Use Case: SA manages users and groups.

1. SA login to the system.
2. System request for student's login and password information.
3. SA provides the details needed.
4. System verifies on the login data and able to find a match in the Database regarding the user's information and if there is a match, the system enters the user's data in the active sessions so that students will have restricted session (one session per student).Student granted access to the system.
5. SA granted access to the system and is directed to the admin module which then they can go to the users & groups module.
6. SA either adds, delete or edit users and groups from this module.
7. Database is updated everytime any operation is done.

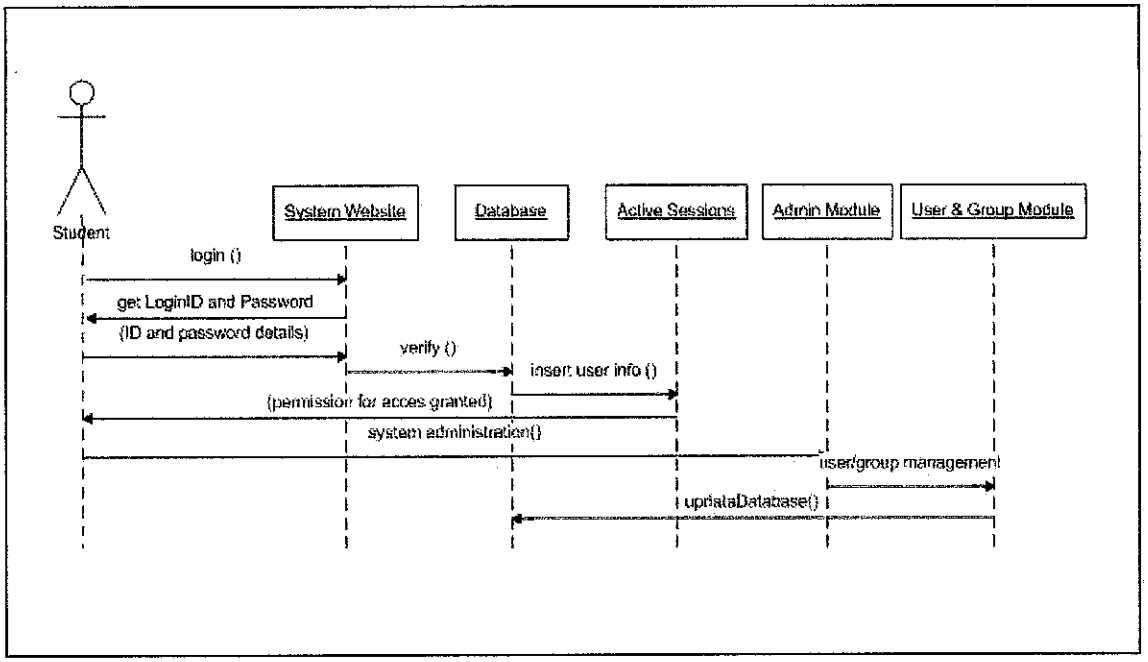


Figure 4-15: SA manages users and groups.

Use Case: SA edits the system's news.

1. SA login to the system.
2. System request for student's login and password information.
3. SA provides the details needed.
4. System verifies on the login data and able to find a match in the Database regarding the user's information and if there is a match, the system enters the user's data in the active sessions so that students will have restricted session (one session per student).Student granted access to the system.
5. SA granted access to the system and is directed to the admin module and then they can go to the news admin module.
6. SA can either adds, delete or edit the system's news.
7. Then, the Database is updated is any of the operations is done.

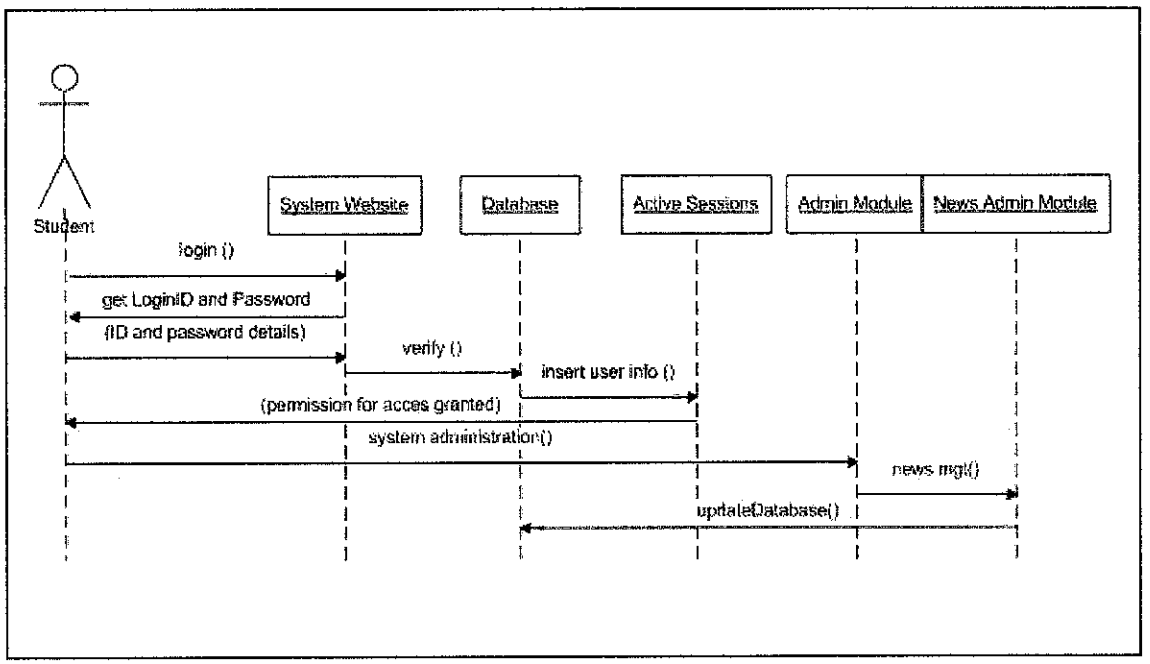


Figure 4-16: SA edits the system's news

4.2.5 State Chart Diagram

State chart illustrates on object states which transition to another form is involved. The charts below illustrate the three changes for this system:

1. A web page transit from its empty state to updated state when data is updated.

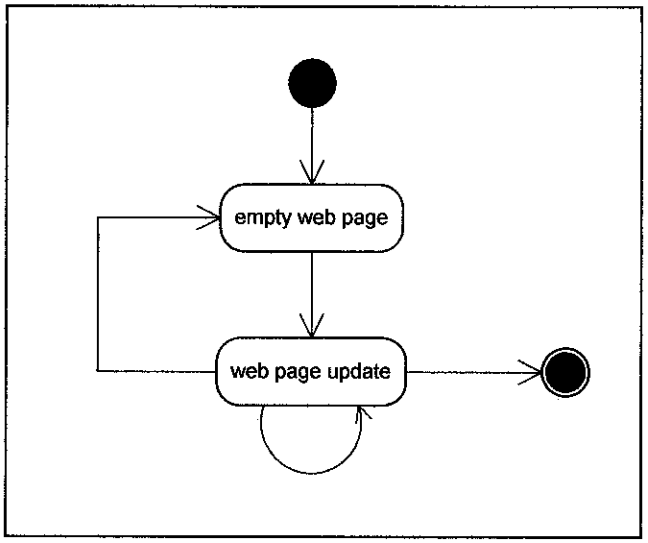


Figure 4-17: Empty to updated state transition

2. A client login and granted access to the system and subsequently logout from the session.

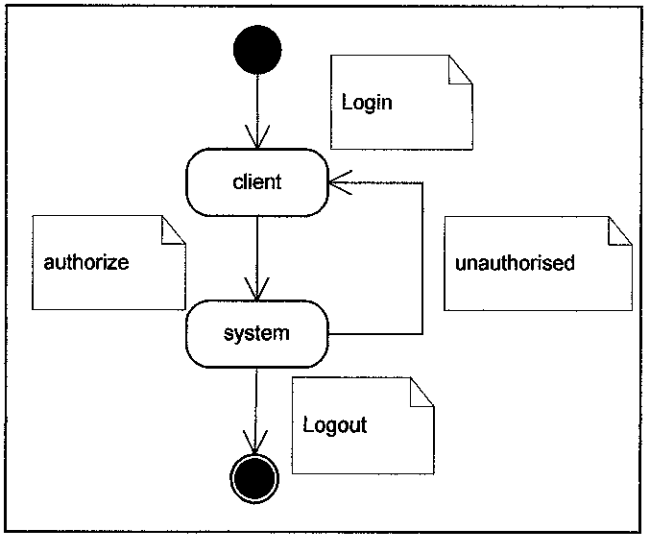


Figure 4-18: Login and logout state transition

4.3 SYSTEM INTERFACE DESIGN

4.3.1 Login and Logout Page

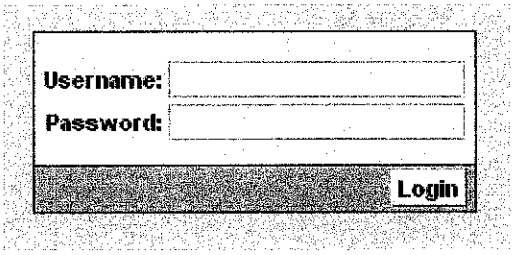


Figure 4-19: Login Page

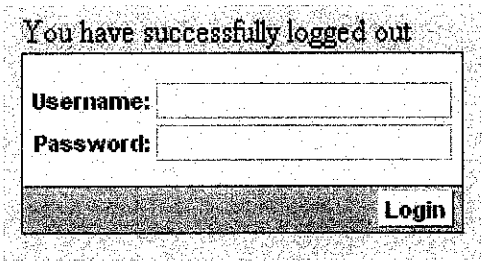


Figure 4-20: Logout Page

Every time a user tries to accesses the EDMS, they will be directed to the login page whereby they will have to insert their username and password. A user can register their username and get an initial password by filling a form which can be seen in APPENDIX V. If a user entered a wrong username or password, the system will display an error message. After a user has logout from the system, they will be directed to the logout page which can be seen in Figure 4-20.

4.3.2 Admin Module

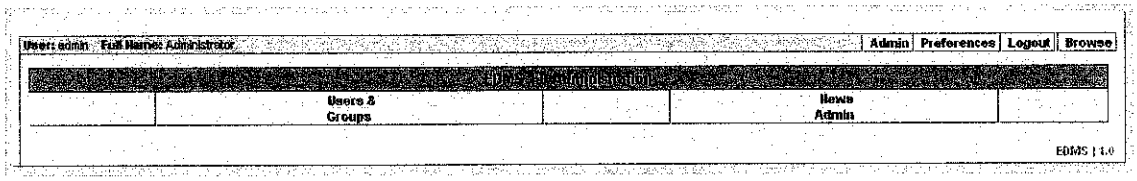


Figure 4-21: Admin Module

Once a system administrator logins to the system, they will be directed to admin module whereby they can choose to go to Users & Groups to add, delete or edit users and groups or to the News Admin to add, delete, edit the news.

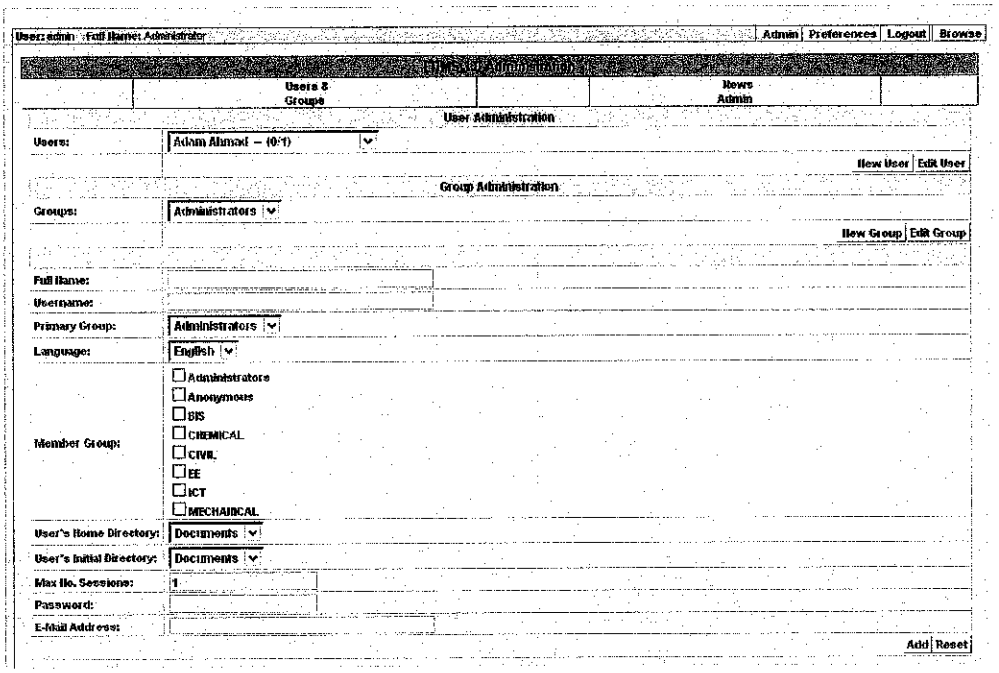


Figure 4-22: Create New User

If an SA wants to create a new user, they would have to fill all the required information as shown above. Unregistered users can register by filling a form as shown in APPENNDIX V. Then, for the very first login session, a new user will be given a password by the SA. After the first login, the users can change their password.

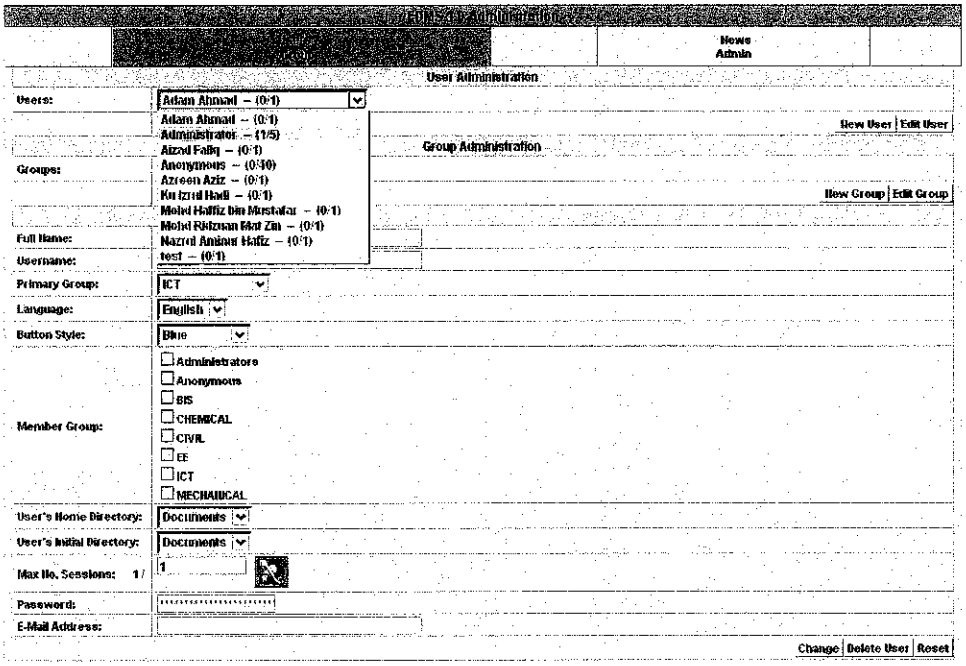


Figure 4-23: Edit/ Delete Existing User

If an SA wants to either delete or edit a user profile/ account, first they would have to choose the specific user from the list as shown above. From there, the SA can choose whether to edit or delete the account.

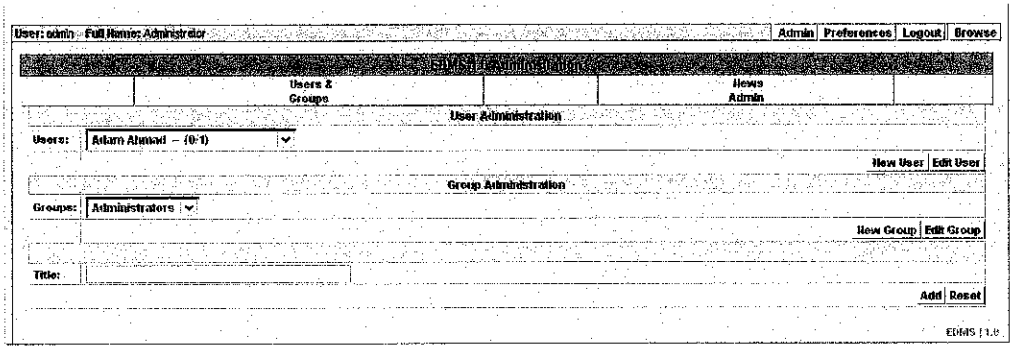


Figure 4-24: Create New Group

In the Admin module also, the SA can create new groups, they would just need to press the Add button and enter the name of the new group.

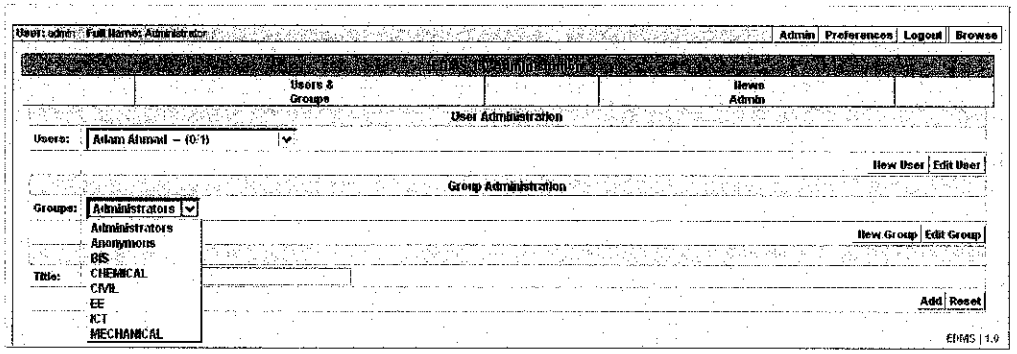


Figure 4-25: Edit/ Delete Existing Group

To delete or edit and existing group, the SA would have to choose the specific group from the list above. Only after selecting the specific group, can they edit the name or delete the group.

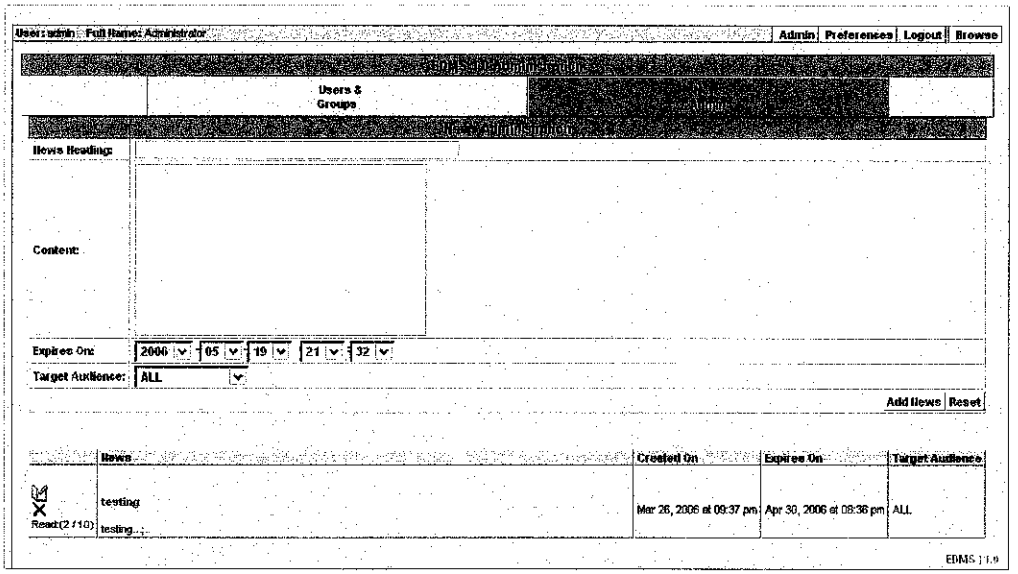


Figure 4-26: News Administration

If the SA chooses the News Admin function, they can add new news, delete or edit existing news as shown in the figure above.

4.3.3 Browse Module

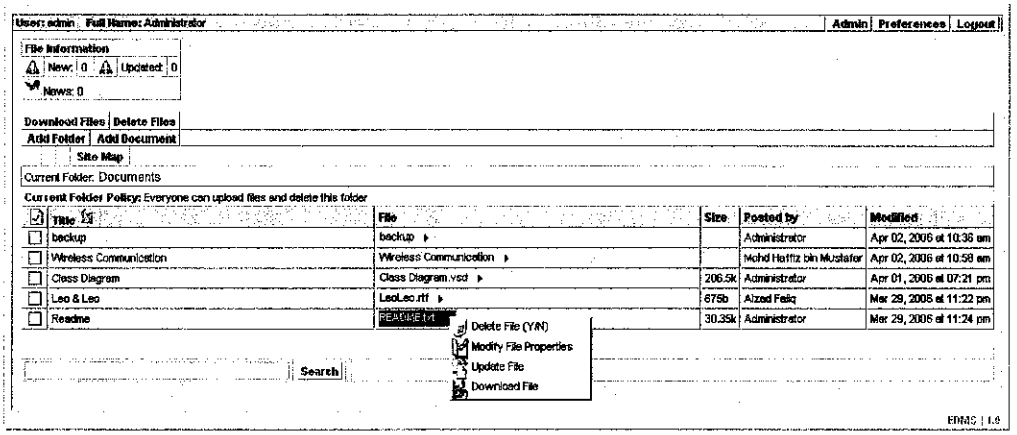


Figure 4-27: File Options

Shown above are the browse module and the options and functions that a user can perform on a file. An authorized user can delete, modify the file's information, upload and download the file. On the top left of the interface, is a file information box where information regarding the number of new and updated files are shown.

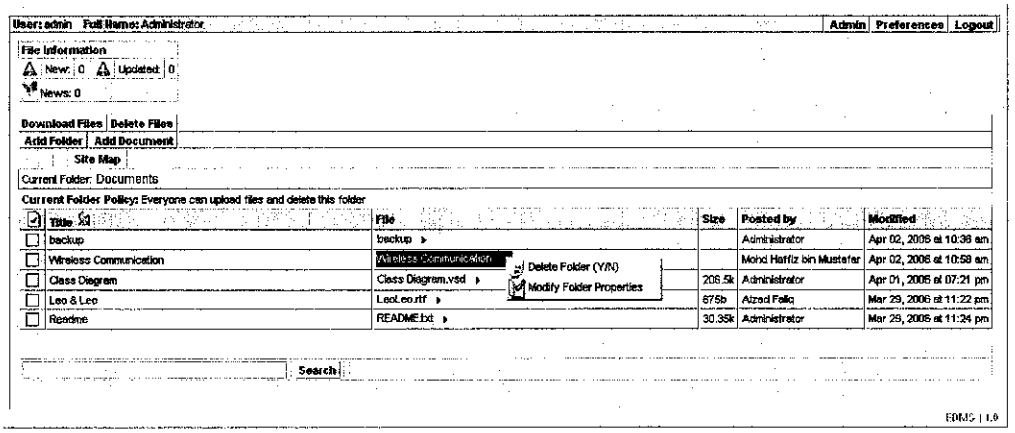


Figure 4-28: Folder Options

Shown in the figure above are the options and functions that an authorized user can perform on a folder which includes deleting it or modify the folder's properties.

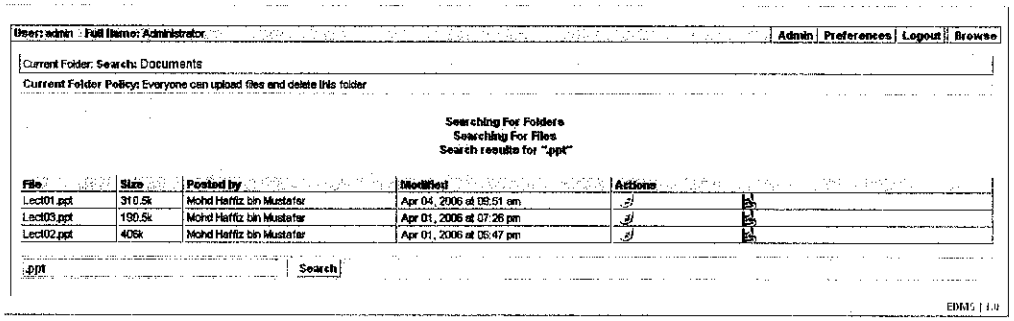


Figure 4-29: Search Function

In the Browse module also a user can search for a particular file or folder by using the search function. The search function will display all the files and folders related to the keyword entered earlier.

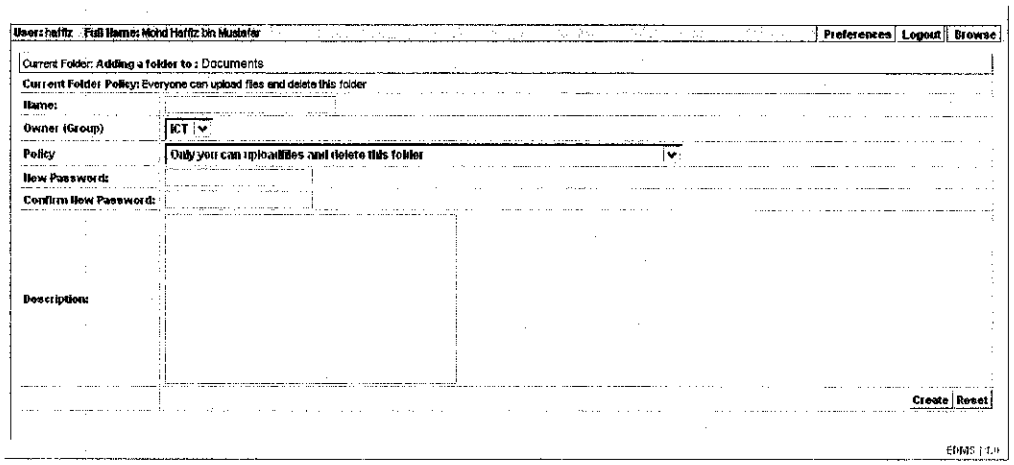


Figure 4-30: Add Folder

In the Browse module, a user can add a folder into the system. Upon pressing the add folder button at the initial browser module page, the user will be directed to the; add new folder page. User would have to fill all the information (e.g. folder name, permission).

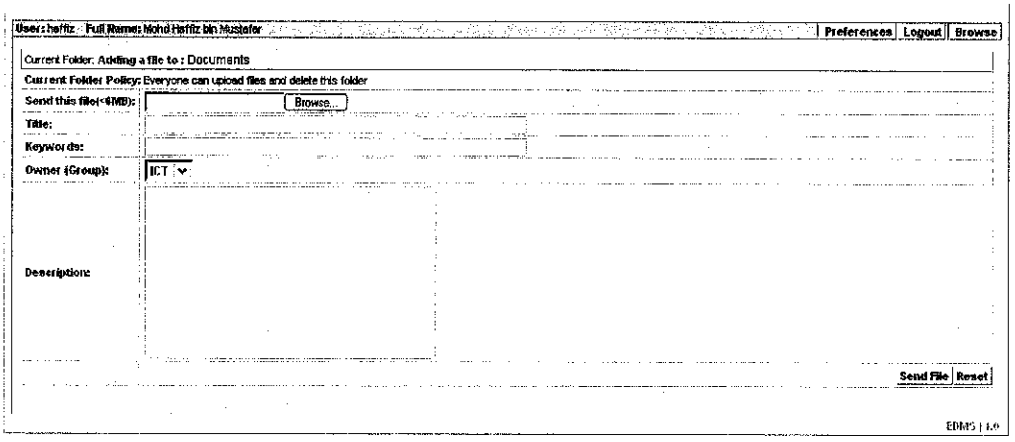


Figure 4-31: Add File

The process to add/ upload a file is similar to the; add new folder process but the user need to press the add file button instead of the add folder button. Then, the user will be directed to the add new file page. User would have to fill all the information as shown above and browse for the file to be uploaded.

4.3.4 User Preference Module

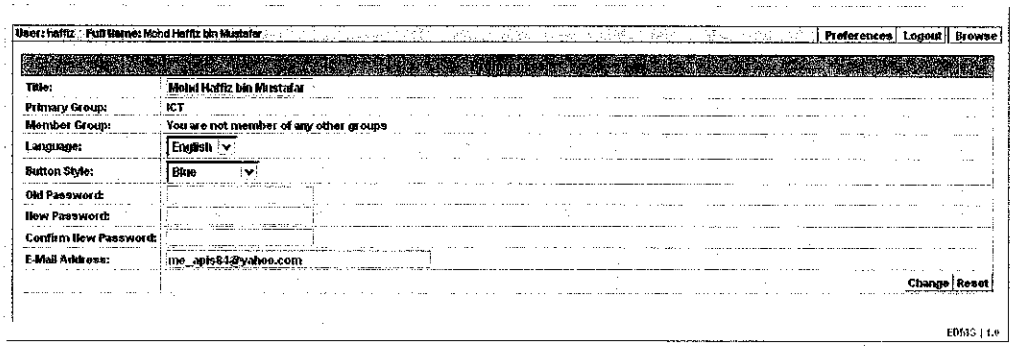


Figure 4-32: User Preference Page

If a user chooses the User Preference module, they will be directed to this page whereby they can change their username and also their password.

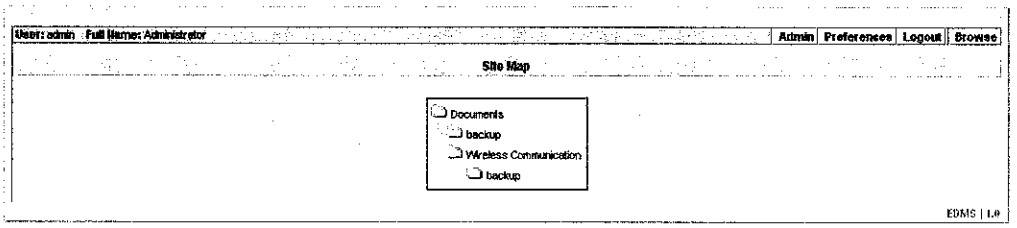


Figure 4-33: Sitemap Page

If a user wants to see the overview of the system in terms of the folders and files contained in the system, they can choose the sitemap function for this.

4.4 PROJECT SURVEY

In this part, a survey has been conducted in order to gain the feedback from the users regarding the implementation and effect of the system. The intention of this survey is to make an enquiry on whether this system has fulfilled its objective and objectives and also at the same provide the ease of use to users. This inquiry includes a questionnaire consisting of several questions which needs to be answered by users of the system. For the purpose of the questionnaire and user testing, the system is up and online for duration of 7 days (May 1, 2006 – May 7, 2006) from 9.00 a.m. to 12 midnight. That means duration of 14 hours a day. The survey and testing was done in a short amount of time due to constraints of time, money and the server which is actually a personal computer that is being used as a server (not a dedicated server). The questionnaire's structure is shown as follow:

4.4.1 Survey Questions

For the purpose of the survey, a similar login account is given. The username and password is 'guest'. In this survey, users have to answer a total of 6 questions and they would have to rate the system given a scale from 1 to 5, 1 = worst, 3 = average and 5= best. A total of 50 users were given this questionnaire and the results were tallied and analyzed after all 50 users have submitted back their questionnaire. Below are the questions asked. For further inquiries, please refer to APPENDIX IV.

1. During the time specified, how would rate the availability of the system in terms of the ability of accessing the system during the hour specified.
2. How would you rate the functionalities of the system? Does the intended function works?
3. From your point of view after using the system, does the usage of the system saves time and effort in terms of sharing and searching of documents?

4. Does the interfaces in the system easy to understand and use. How would the system in terms of the ease of use of its GUI?
5. How would you rate the consistency of data/ documents in the system? Are the data/ documents uploaded on your previous login/ session available on your next login and other logins after that?
6. How would you rate the security of the system in terms of the login and the permission that can be set to the folders by the folder's owners?

4.4.2 Survey Results and Analysis

The survey was conducted on 50 people (students of UTP) using the prototype. The result gained from the survey was compiled and a chart was made. The results are as follow:

*Using 1 = worst, 3 = average and 5 = best

*Numbers in each ranking based on the response from 50 peoples

Question number	**Ranking**				
	1	**2**	**3**	**4**	**5**
1 (availability)			4	6	40
2 (functionality)				8	42
3 (efficiency)	5		10		35
4 (interface)				10	40
5 (consistency)			3		37
6 (security)	5		37	8	

Table 4-1: Survey Results

Question 1: *During the time specified, how would rate the availability of the system in terms of the ability of accessing the system during the hour specified.*

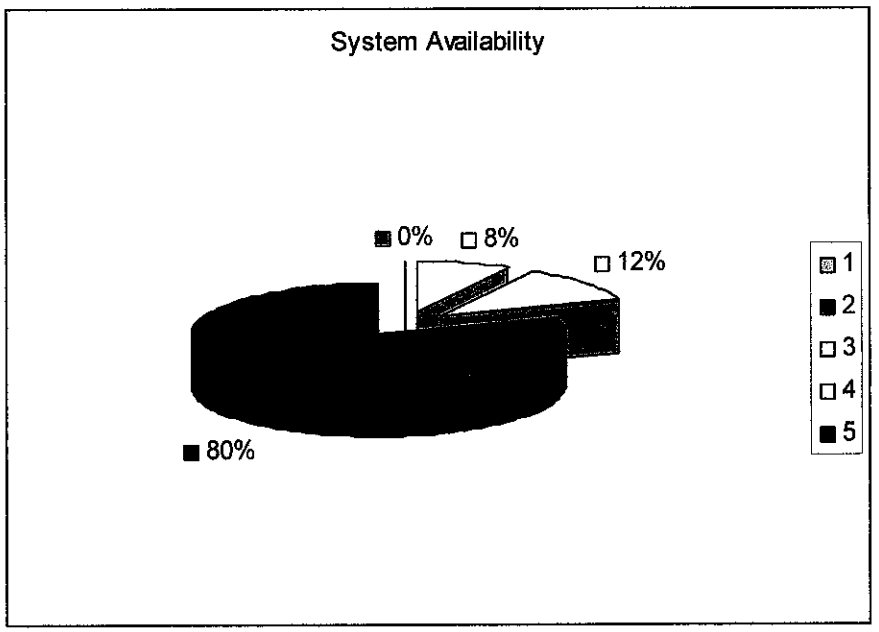


Figure 4-34: System Availability Pie Chart

From the survey, it is found that all of the users regard the system as having good system availability. The reason for some of the user to regard the system' availability as average is due to power shortages that resulted in the server to shutdown which happens frequently during the course of the survey and testing. After the power is turn backed on, the data in the system are not loss or corrupted. In the case of data loss, the system does incorporate software to make a backup copy of the data after 5 minutes of detecting a change in the system data.

Question 2: How would you rate the functionalities of the system? Does the intended function works?

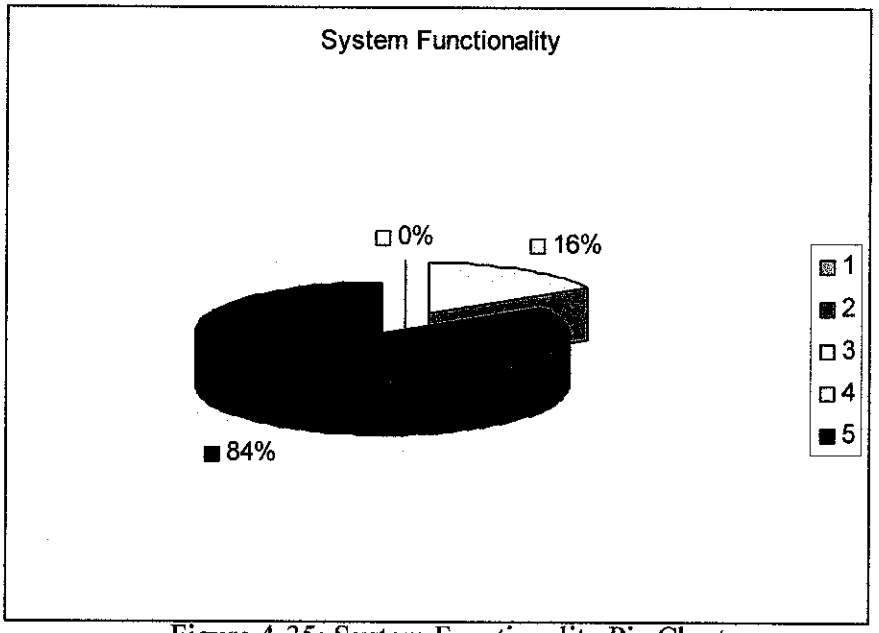


Figure 4-35: System Functionality Pie Chart

Majority of the users rate the system functionalities as best. This means that the system's functionalities have perform their intended function as expected by the users. From this question, we can see that users are satisfied with the functionalities provided but from the suggestions and recommendations received, they recommended that in future upgrades that the system provide a lot more functionalities such as:

- User can set up the permission for the files they uploaded or owned.
- A 'forget your password' function at the login page in case users forgot their password.
- E-mailing function so that user can send or forward via e-mail the documents inside the system to another person not residing in the campus.

Question 3: *From your point of view after using the system, does the usage of the system saves time and effort in terms of sharing and searching of documents?*

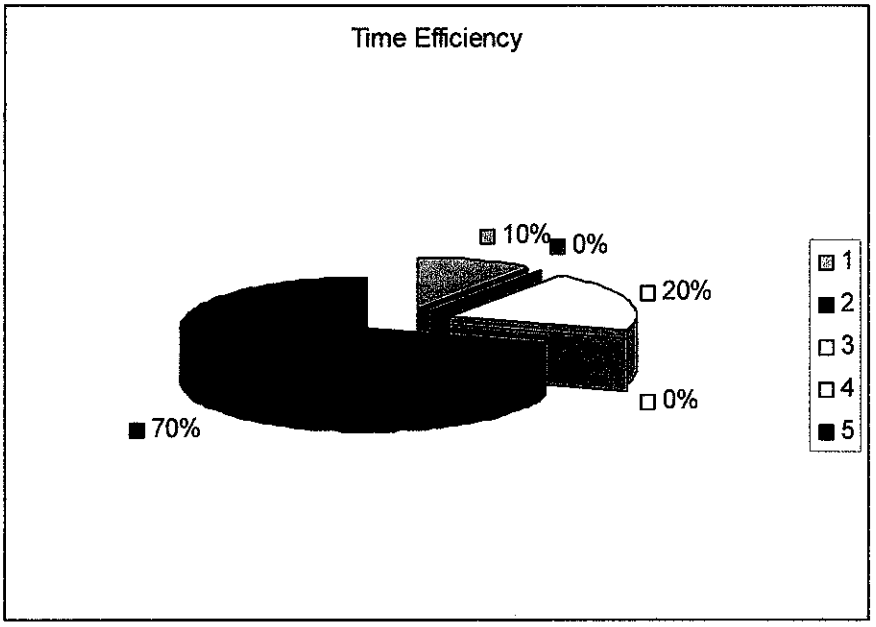


Figure 4-36: Time Efficiency Pie Chart

Although we can see that majority of the users regards the system as saving their time and effort in sharing and searching of documents, there are some who disagree. This is due to these users who dependent heavily and preference to the usage of other programs such mIRC which enables them to share files and chat at the same time. The majority liked the system because it is easily accessible via a web browser and need no installation and unlike the mIRC which needs the owner of the user to be online in order for them to share their documents, this system does not. In this system, only the server needs to be online and this means that the documents are available anytime and that's way they think it as saving time and effort in terms of sharing.

Question 4: ***Does the interfaces in the system easy to understand and use. How would the system in terms of the ease of use of its GUI?***

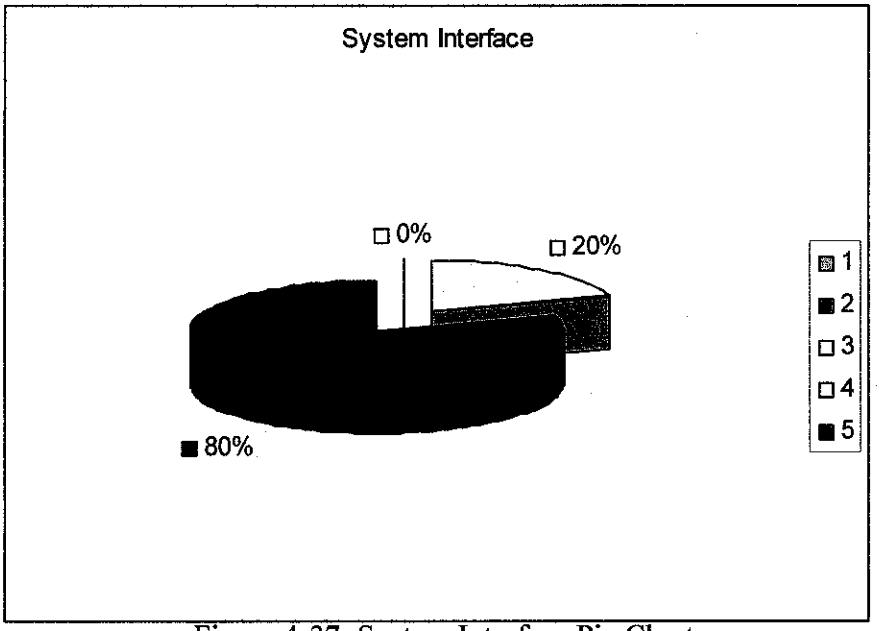


Figure 4-37: System Interface Pie Chart

All of the user given the questionnaire rated the ease of use and understand of the system as above average. This means that the system interfaces are easy to use and understand and it helps people to use the system without additional training of how to use it. This is due to the interface being designed so that it would only display what is important and what the users needs to see. The interfaces are straight forward and do not have any animation or unnecessary images that would have cause any confusion to the users.

Question 5: ***How would you rate the consistency of data/ documents in the system? Are the data/ documents uploaded on your previous login/ session available on your next login and other logins after that?***

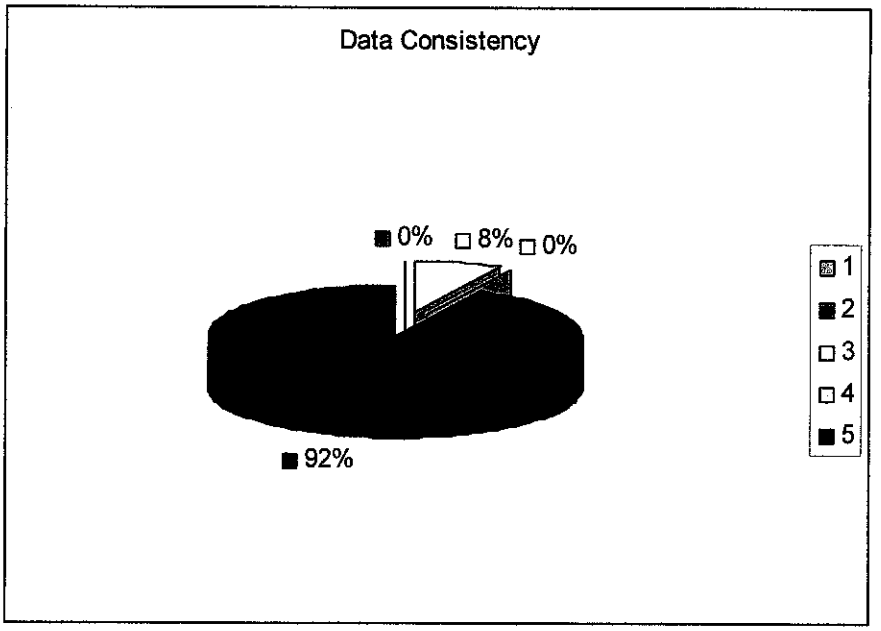


Figure 4-38: Data Consistency Pie Chart

A huge majority of the users rate the system a having a high degree of data consistency in terms of the data/ documents uploaded on their previous login/ session are available on their next login and other logins after that. This high degree of consistency is due to the system having implemented software to make the system's backup copy after 5 minutes the software detected a change in the system and its data. A total of 8% of the users rate it as average due to the power shortages which occurred right after they have uploaded their documents. As the time of upload and the power shortage is under 5 minutes, the system is unable to make any copy of it. Although the primary data is not corrupted, it is replaced by the backup data to simulate the occurrence of a data loss or corruption of the primary data.

Question 6: ***How would you rate the security of the system in terms of the login and the permission that can be set to the folders by the folder's owners?***

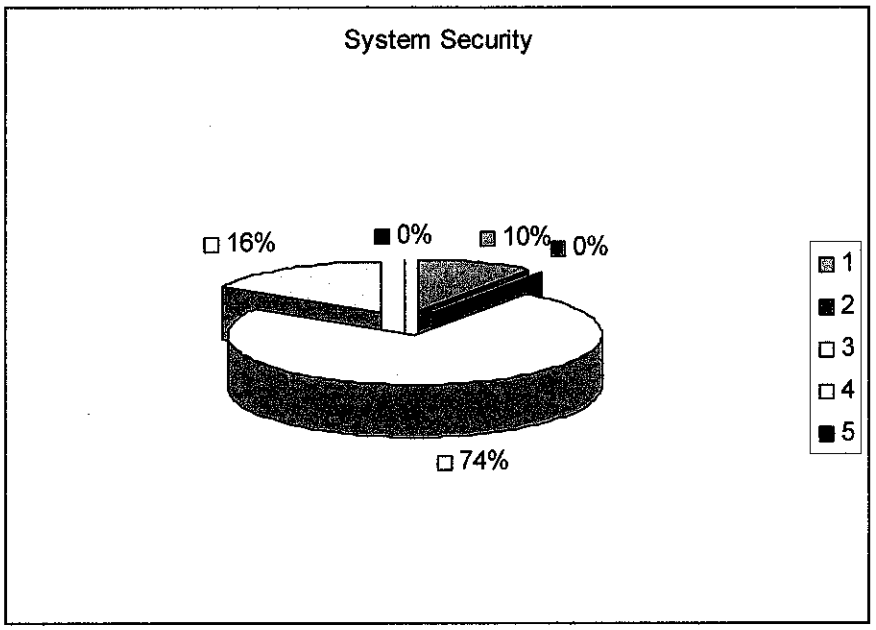


Figure 4-36: System Security Pie Chart

Most of the users rate the system as providing an average protection of the data inside it. Although the system does implement some security aspects in terms of the login session and also the permission that can be set to folder, security is not the main objective in this project. Some users suggested that the system incorporate more secure measures such as setting permission to the files uploaded as well. Some of the users even suggest that SSL encryption is used in sending of file and the encryption of the file itself.

CHAPTER 5
CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

Today, virtually all organizations, regardless of size, possess a legacy of electronic documents and at the same time accumulate a rapidly growing store of electronic documents. Thanks to modern computer applications, organizations of all sizes are increasingly adept at handling these documents. To manage their increasingly abundance of electronic document information, organizations rely on electronic document management system.

As the developed system is intended for the usage of UTP student, it is hoped that the system will enable students to store, share, locate and retrieve documents. Unlike the traditional paper document filing system, having a system like this will help and benefit students in terms of the time and resources needed to find a specific document and sharing of documents throughout the entire campus.

5.2 RECOMMENDATION

Based upon the comments and feedback received from students during the survey, there are some improvements that needs to be incorporated to improve the EDMS so that it could better serve its purpose as a tool for students to share documents amongst them. Although it can be concluded that the system's objectives are achieved in this project, the recommendations on its improvement can be incorporated if the project is continued to be carried on at a later time by other developers. Amongst the recommendations are:

- Instead of limiting the size of the documents that can be uploaded, some users suggested that there shouldn't be any restriction on the size of the file but instead the system should incorporate a feature that will enable uploads or downloads at a rate that will not cause network congestion. This feature should control the bandwidth rate of uploads and downloads so as not to cause network congestion.
- Another recommendation is to have a more robust security feature. Currently, access permissions can be set to folders only but some users are recommending that it is implemented to the files as well. This means that an owner of a file can set a permission to their files to restrict the access and downloads of their files to a certain groups only.
- Some users also suggested that the system should incorporate e-mailing capabilities so that users can send the files in the system via e-mail. They also recommended that the system sends an e-mail message automatically at certain period of time informing them about new and updates files.
- Last but certainly not the least is the recommendation regarding the implementation of the system. Some users recommended that the system incorporates wireless communication infrastructure. This is to provide users access to the system using wireless devices.

REFERENCES

[1] Web-Based Document Management. Retrieved October 11, 2005, from the World Wide Web:
http://www.inquesttechnologies.com/DM-embedded.asp

[2] Information on Document Management Software. Retrieved October 11, 2005, from the World Wide Web:
http://www.jargons.org/document-management.htm

[3] Document Management System. Retrieved May 21, 2006, from the World Wide Web:
http://www.laserfiche.com/resources/it.html

[4] Document Management System. Retrieved May 21, 2006, from the World Wide Web:
http://www.itaz.com/

[5] Document Management System. Retrieved May 21, 2006, from the World Wide Web:
http://www.worldox.com/product/product.html

[6] GNU General Public License. Retrieved May 21, 2006, from the World Wide Web:
http://en.wikipedia.org/wiki/GNU_General_Public_License

[7] AbuSafiya, M. & Mazumdar, S. (2004). *Accommodating Paper in Document Databases*. Wisconsin: DocEng.

[8] Ginsburg, M. (2000). *Intranet Electronic document management systems as Knowledge Ecologies.* Hawaii: IEEE.

[9] Joshi, J. B. D. et al. (2002). *A Model for Secure Multimedia Document Database System in a Distributed Environment.* West Lafayette: IEEE.

[10] Furht, B., Sheen, J. & Aganovic, Z. (2001). *Internet-Based Delivery and Deployment of Electronic document management systems.* Hawaii: IEEE.

[11] Document Management System. Retrieved May 21, 2006, from the World Wide Web:
http://en.wikipedia.org/wiki/Document_management_system

[12] Kernytskyy, A. et al. (2003). *Usage of Network Technologies for Creation of Small Machinery Building Enterprise's Electronic document management system*. Ukraine: CADSM.

[13] Sommerville, I. (2001). *Software Engineering 6th Edition.* London: Addison-Wesley.

[14] Chapman, J. R. Software Development Methodology. Retrieved October 12, 2005, from the World Wide Web:
www.hyperthot.com/pm_sdm.htm

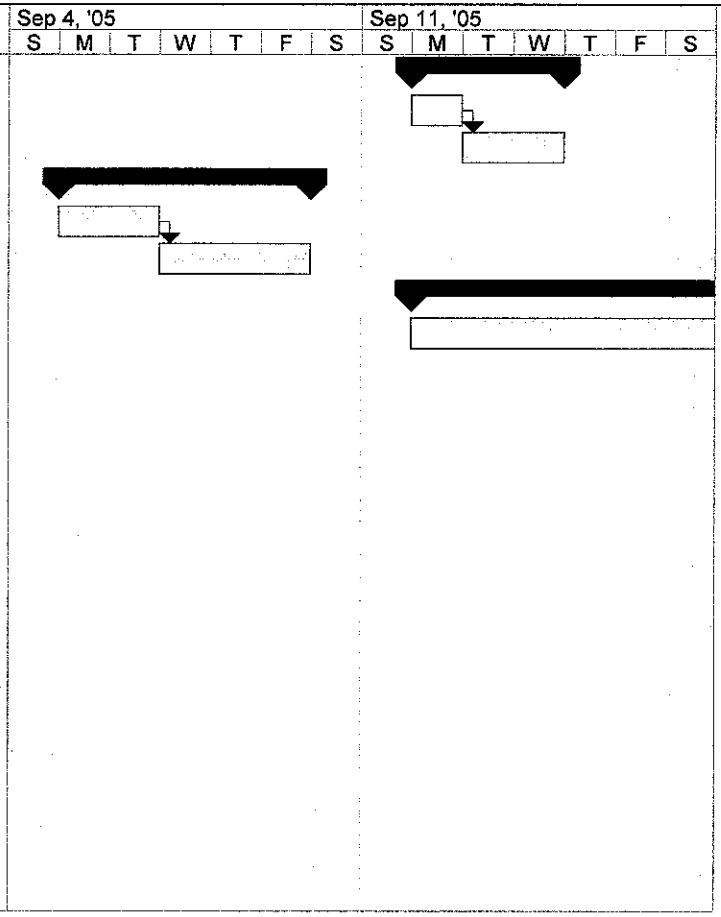
[15] Dennis, A., Wixom, B. H. & Tegarden, D. (2002). *Systems Analysis & Design: An Object-Oriented Approach with UML*. USA: John Wiley & Sons, Inc.

APPENDICES

APPENDIX I:	Gantt chart for Final Year Project Part I
APPENDIX II:	Gantt chart for Final Year Project Part II
APPENDIX III:	EDMS Story Board
APPENDIX IV:	Project Survey Questionnaire
APPENDIX V:	User Form

APPENDIX I - Electronic Document Management System (EDMS) Gantt Chart for FYP Part I

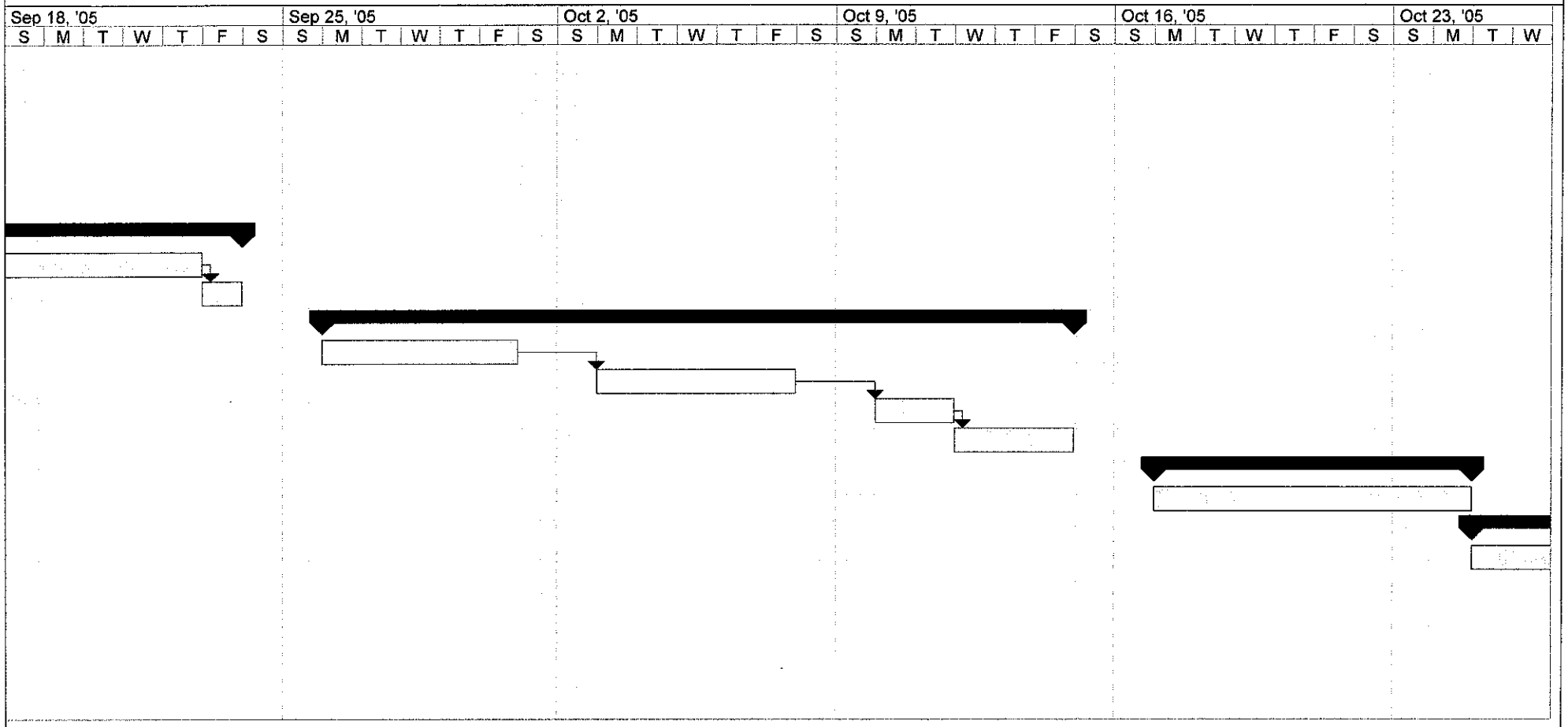
ID	Task Name	Duration	Start	Finish
1	**Defining the problem statement**	**3 days**	**Mon 9/12/05**	**Wed 9/14/05**
2	Perform research and analysis	1 day	Mon 9/12/05	Mon 9/12/05
3	Defining the project scope	2 days	Tue 9/13/05	Wed 9/14/05
4	**Identify processes and objectives**	**5 days**	**Mon 9/5/05**	**Fri 9/9/05**
5	Identify the tools and solutions required	2 days	Mon 9/5/05	Tue 9/6/05
6	Setting the project objectives	3 days	Wed 9/7/05	Fri 9/9/05
7	**Documentation of findings**	**10 days**	**Mon 9/12/05**	**Fri 9/23/05**
8	Proposal preparation	9 days	Mon 9/12/05	Thu 9/22/05
9	Proposal approval	1 day	Fri 9/23/05	Fri 9/23/05
10	**Analyzing the system requirement**	**15 days**	**Mon 9/26/05**	**Fri 10/14/05**
11	Re-define the project scope	5 days	Mon 9/26/05	Fri 9/30/05
12	Perform research on selected areas	5 days	Mon 10/3/05	Fri 10/7/05
13	Defining the possible case study	2 days	Mon 10/10/05	Tue 10/11/05
14	Gather system requirement	3 days	Wed 10/12/05	Fri 10/14/05
15	**Documentation of findings**	**6 days**	**Mon 10/17/05**	**Mon 10/24/05**
16	Preparation of preliminary report	6 days	Mon 10/17/05	Mon 10/24/05
17	**Analysis and design**	**14 days**	**Tue 10/25/05**	**Fri 11/11/05**
18	System architecture	4 days	Tue 10/25/05	Fri 10/28/05
19	Use case, sequence and state chart diagram	1 day	Fri 11/11/05	Fri 11/11/05
20	**Documentation of findings**	**10 days**	**Mon 11/14/05**	**Fri 11/25/05**
21	Preparation of interim report	10 days	Mon 11/14/05	Fri 11/25/05
22	**Oral presentation**	**5 days**	**Mon 11/28/05**	**Fri 12/2/05**
23	Finalize documentation (interim report)	5 days	Mon 11/28/05	Fri 12/2/05



Project: FYP Part I - EDMS
Date: Sun 6/25/06

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

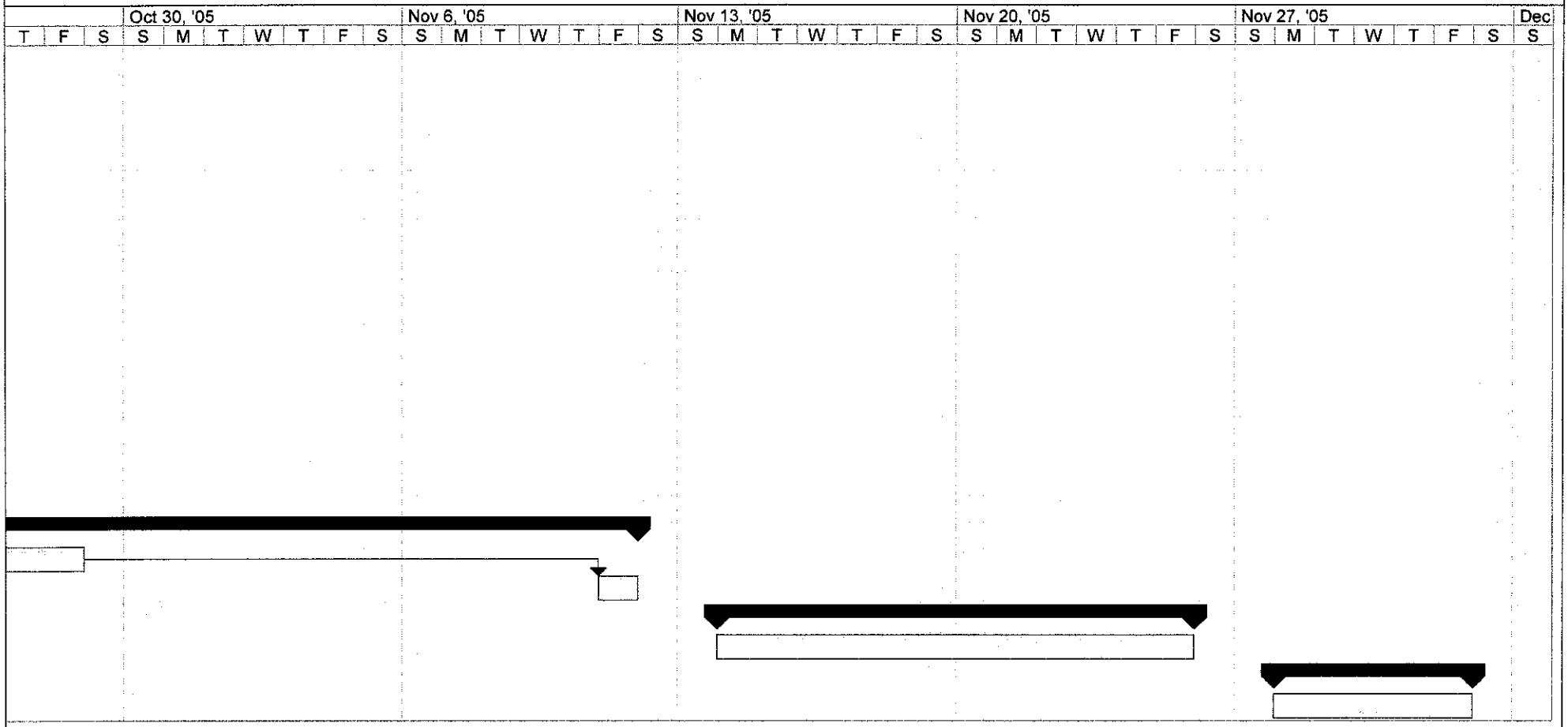
APPENDIX I - Electronic Document Management System (EDMS) Gantt Chart for FYP Part I



Project: FYP Part I - EDMS
Date: Sun 6/25/06

Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

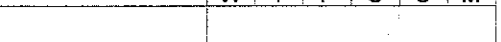
APPENDIX I - Electronic Document Management System (EDMS) Gantt Chart for FYP Part I



Project: FYP Part I - EDMS
Date: Sun 6/25/06

APPENDIX II - Electronic Document Management System (EDMS) Gantt Chart for FYP Part II

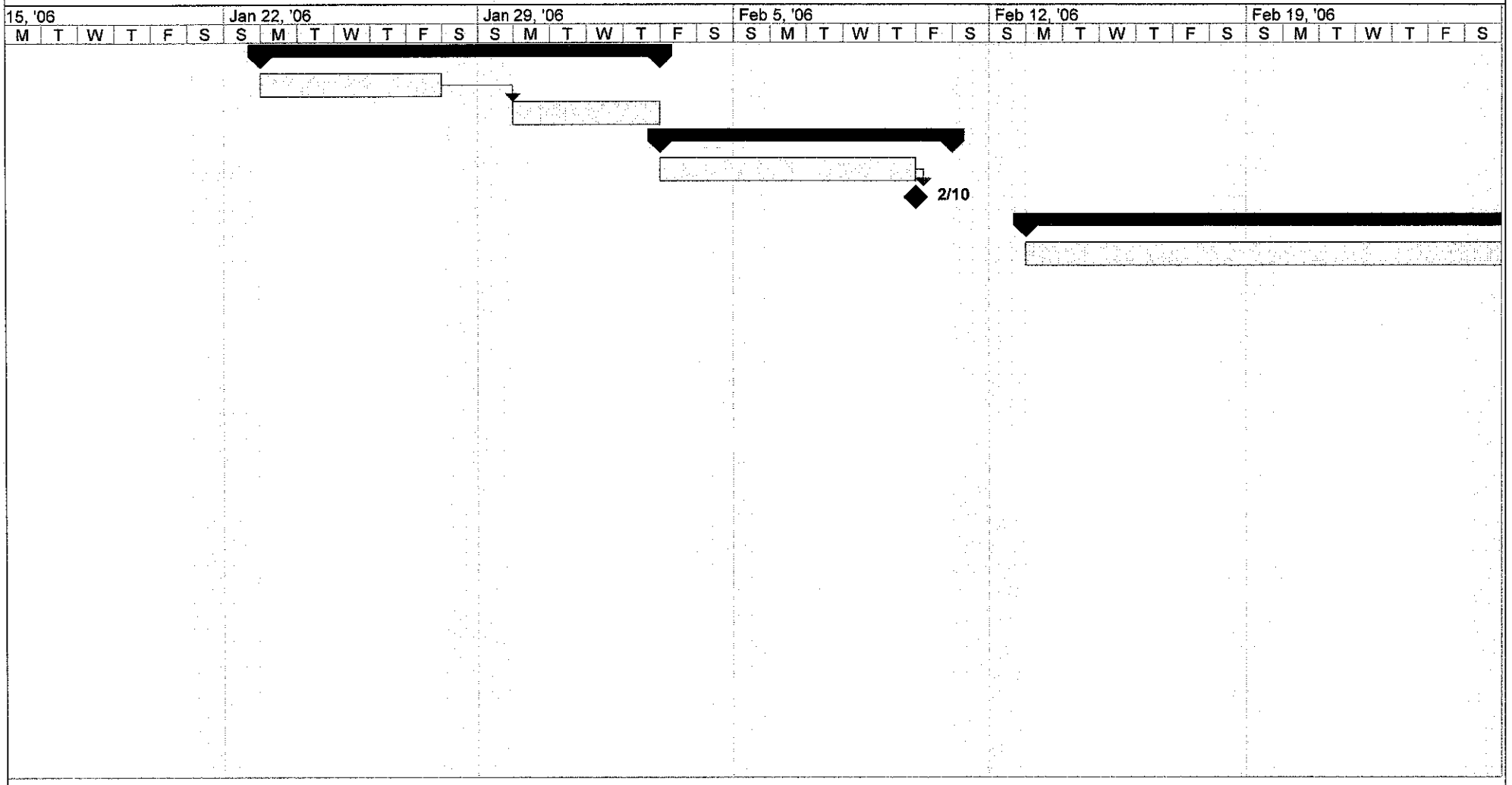
ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1	**Interface Design**	**9 days**	**Mon 1/23/06**	**Thu 2/2/06**		
2	User module interface design	5 days	Mon 1/23/06	Fri 1/27/06		
3	System administrator interface design	4 days	Mon 1/30/06	Thu 2/2/06	2	
4	**Documentation of findings**	**6 days**	**Fri 2/3/06**	**Fri 2/10/06**		
5	Preparation of progress report	5 days	Fri 2/3/06	Thu 2/9/06		
6	Submission of progress report	1 day	Fri 2/10/06	Fri 2/10/06	5	
7	**System Development & Implementation**	**30 days**	**Mon 2/13/06**	**Fri 3/24/06**		
8	User module coding	15 days	Mon 2/13/06	Fri 3/3/06		
9	System administrator module coding	15 days	Mon 3/6/06	Fri 3/24/06	8	
10	**Pre-EDX Presentation Preparation**	**7 days**	**Mon 3/27/06**	**Tue 4/4/06**		
11	System testing	4 days	Mon 3/27/06	Thu 3/30/06		
12	Poster preparation	2 days	Fri 3/31/06	Mon 4/3/06	11	
13	Pre-EDX presentation	1 day	Tue 4/4/06	Tue 4/4/06	12	
14	**System Development & Implemetation**	**22 days**	**Wed 4/5/06**	**Thu 5/4/06**		
15	System development & coding	22 days	Wed 4/5/06	Thu 5/4/06		
16	**Documentation of findings**	**6 days**	**Fri 5/5/06**	**Fri 5/12/06**		
17	Preparation of final draft	5 days	Fri 5/5/06	Thu 5/11/06		
18	Submission of final draf	1 day	Fri 5/12/06	Fri 5/12/06	17	
19	**Documentation of findings**	**5 days**	**Mon 5/15/06**	**Fri 5/19/06**		
20	Preparation of final report	2 days	Mon 5/15/06	Tue 5/16/06		
21	Preparation of project web page	3 days	Wed 5/17/06	Fri 5/19/06	20	
22	**Final presentation**	**21 days**	**Mon 5/22/06**	**Mon 6/19/06**		
23	Preparation for final presentation	19 days	Mon 5/22/06	Thu 6/15/06		
24	Final presentation	2 days	Fri 6/16/06	Mon 6/19/06	23	
25	**Final Submission**	**10 days**	**Mon 6/12/06**	**Fri 6/23/06**		
26	Finalize documentation for final report	10 days	Mon 6/12/06	Fri 6/23/06		



Project: FYP Part II - EDMS
Date: Sun 6/25/06

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

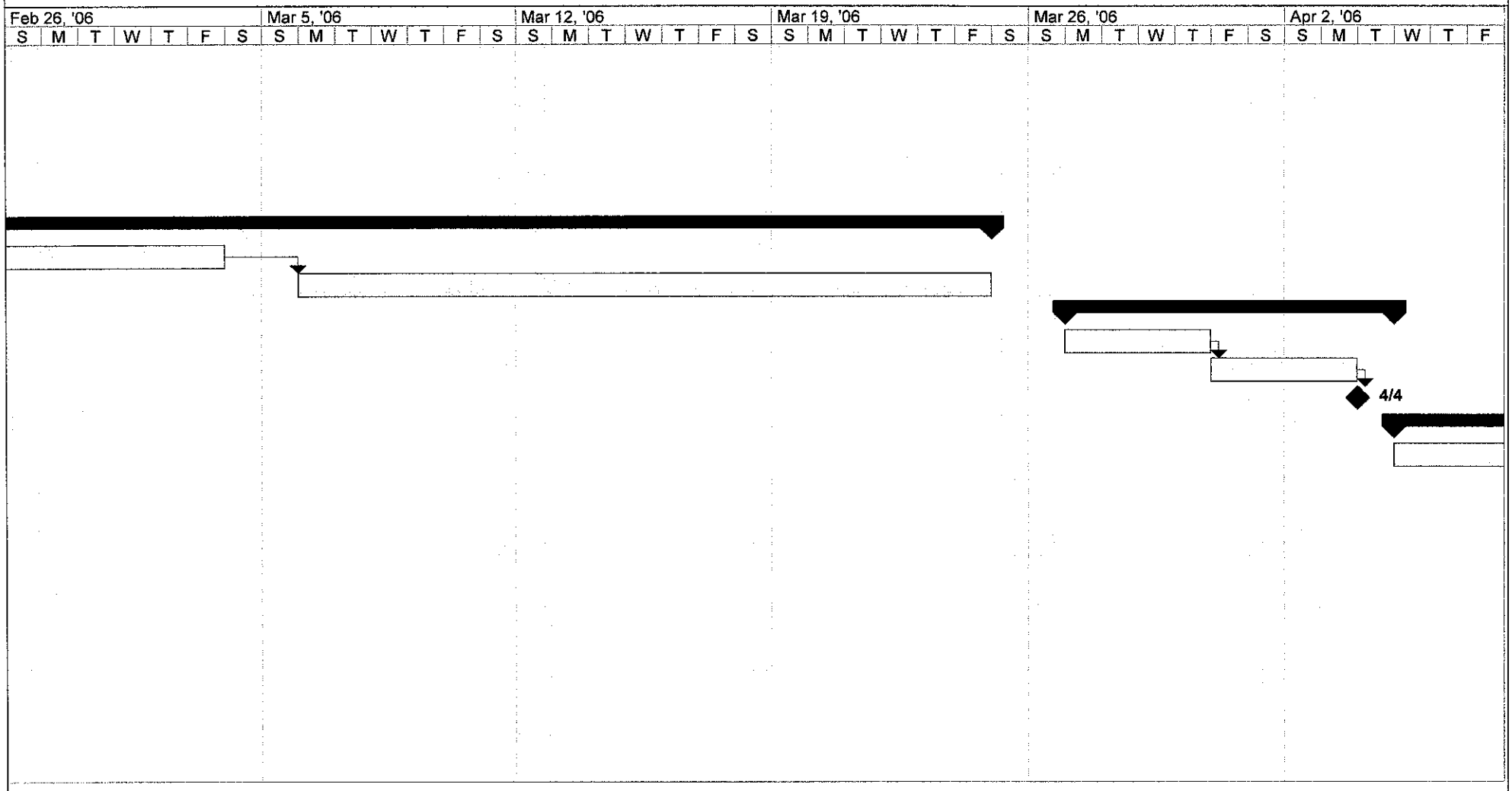
APPENDIX II - Electronic Document Management System (EDMS) Gantt Chart for FYP Part II



Project: FYP Part II - EDMS
Date: Sun 6/25/06

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

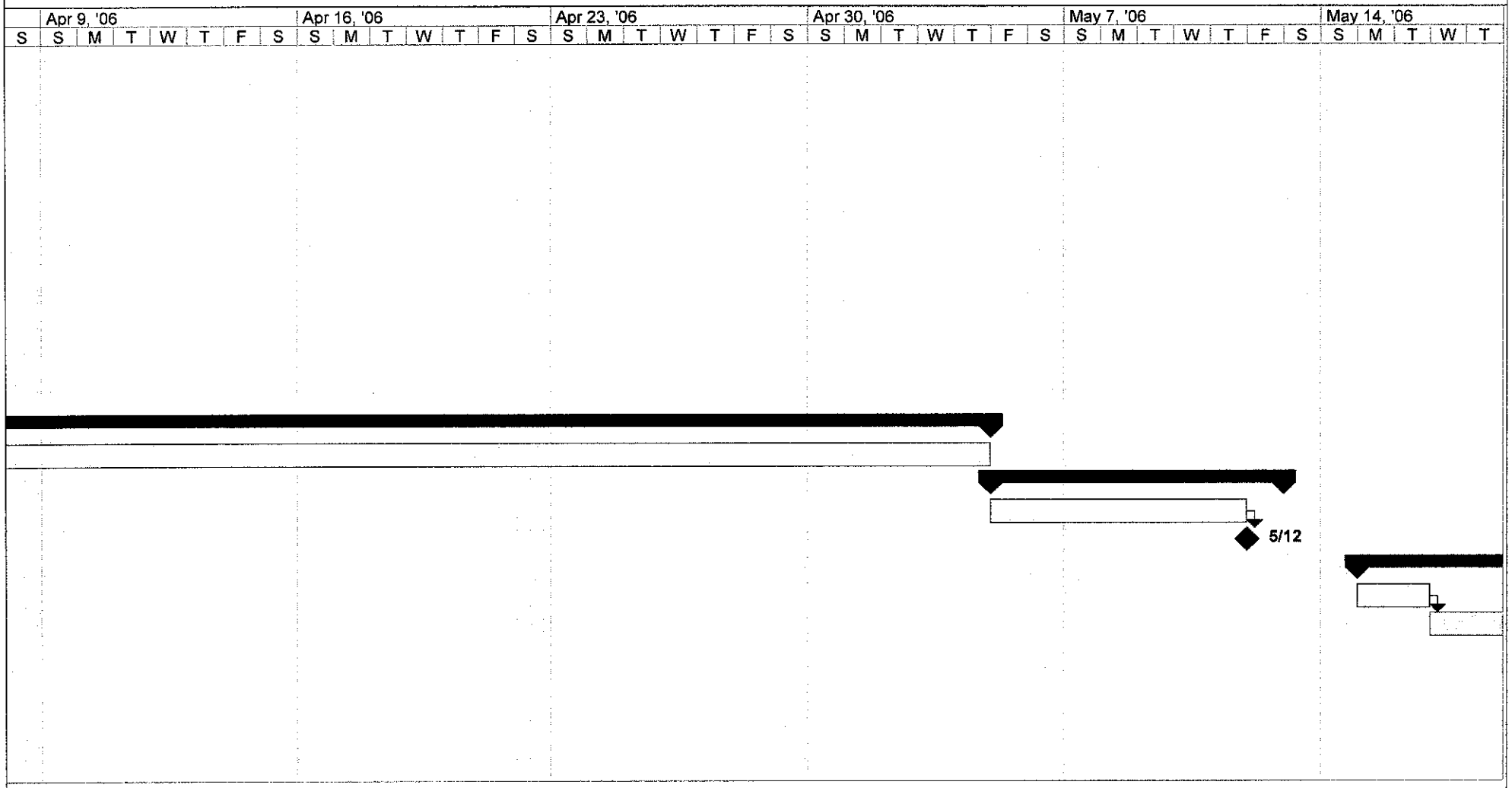
APPENDIX II - Electronic Document Management System (EDMS) Gantt Chart for FYP Part II



Project: FYP Part II - EDMS
Date: Sun 6/25/06

Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

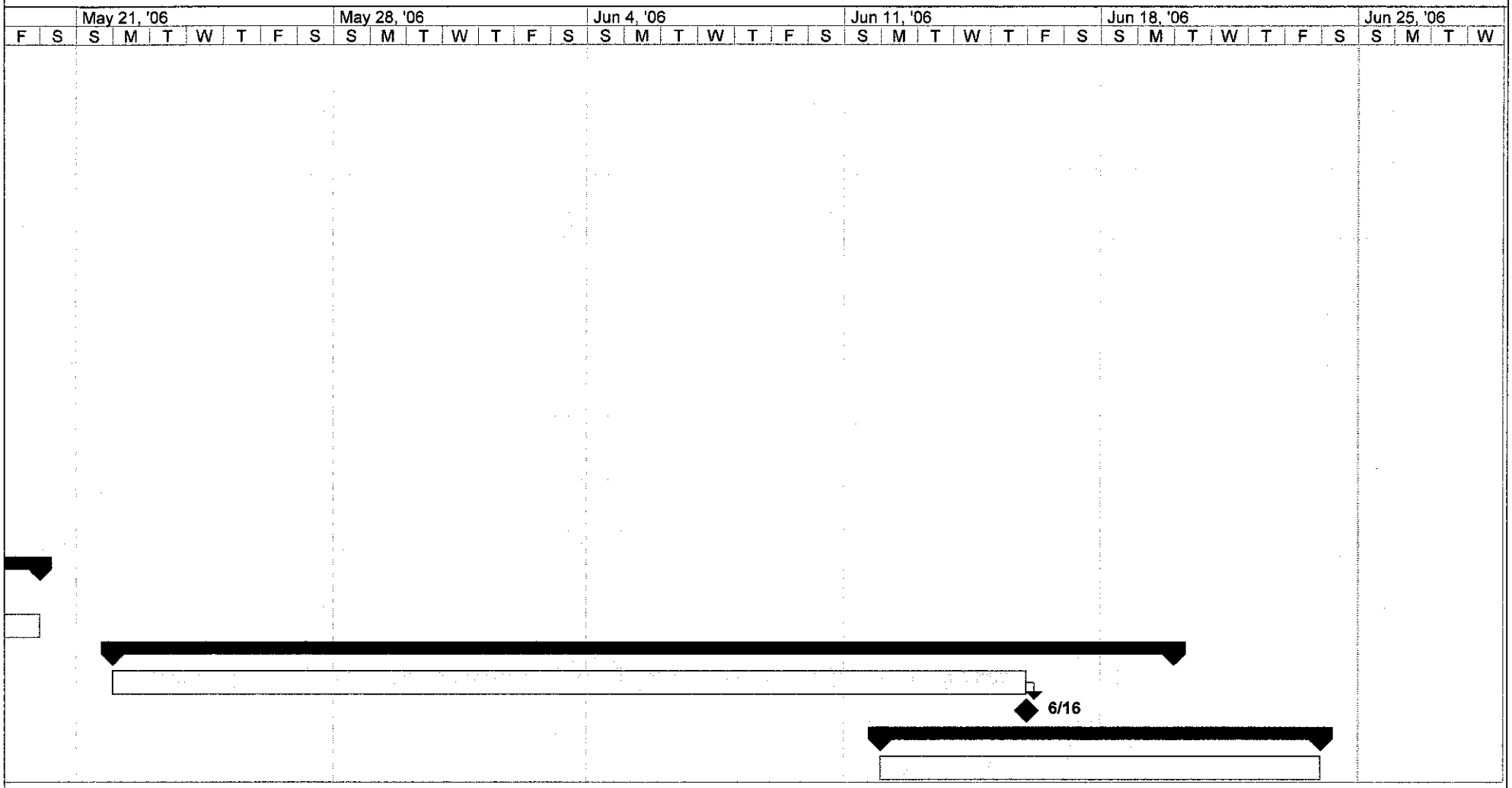
APPENDIX II - Electronic Document Management System (EDMS) Gantt Chart for FYP Part II



Project: FYP Part II - EDMS
Date: Sun 6/25/06

Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

APPENDIX II - Electronic Document Management System (EDMS) Gantt Chart for FYP Part II

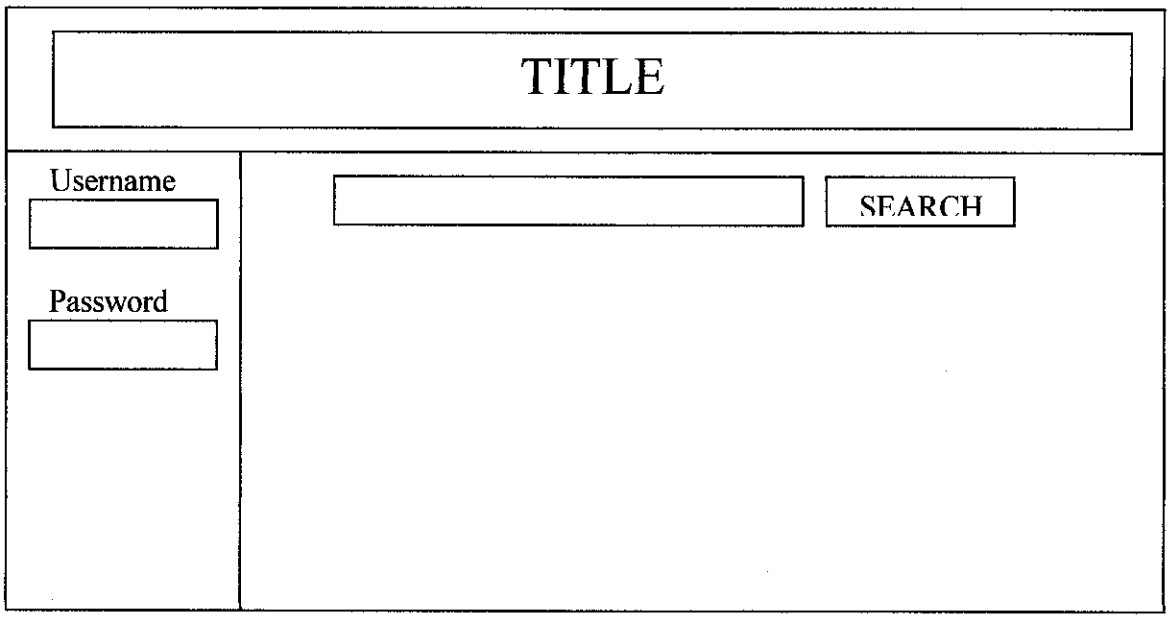


Project: FYP Part II - EDMS
Date: Sun 6/25/06

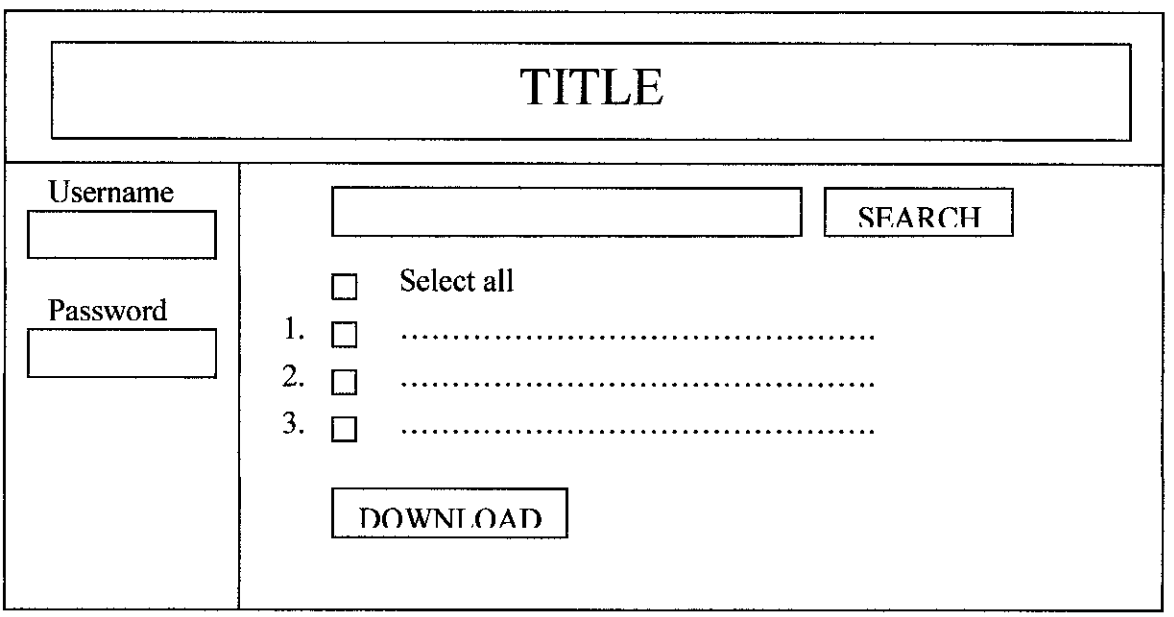
Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

EDMS Story Board

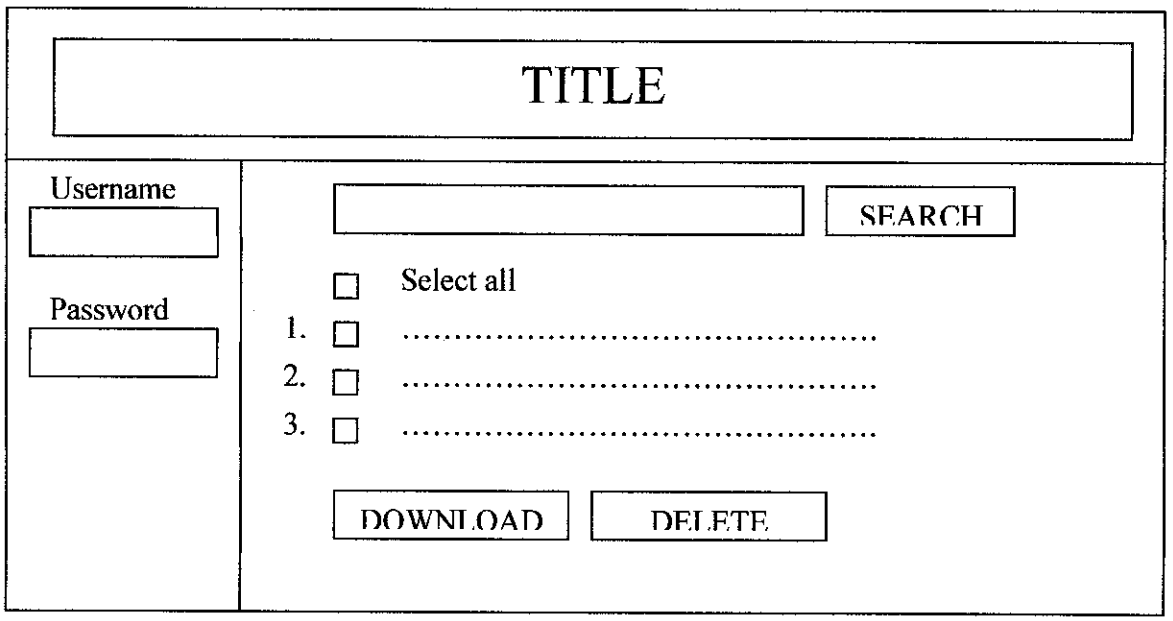
1. EDMS Main Page



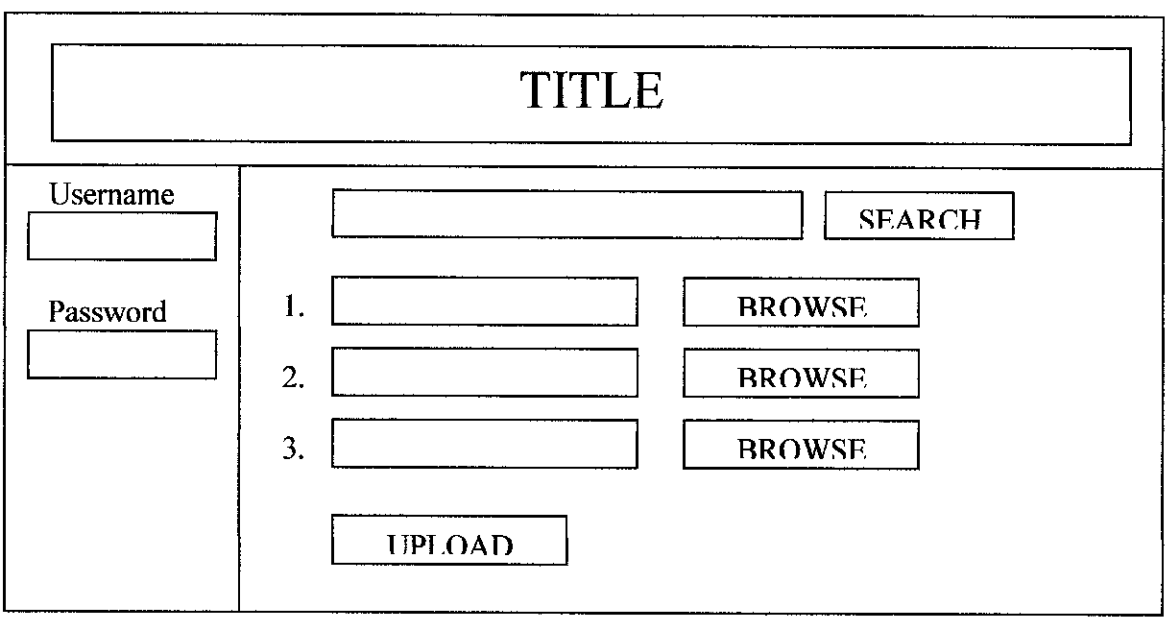
2. Download Page



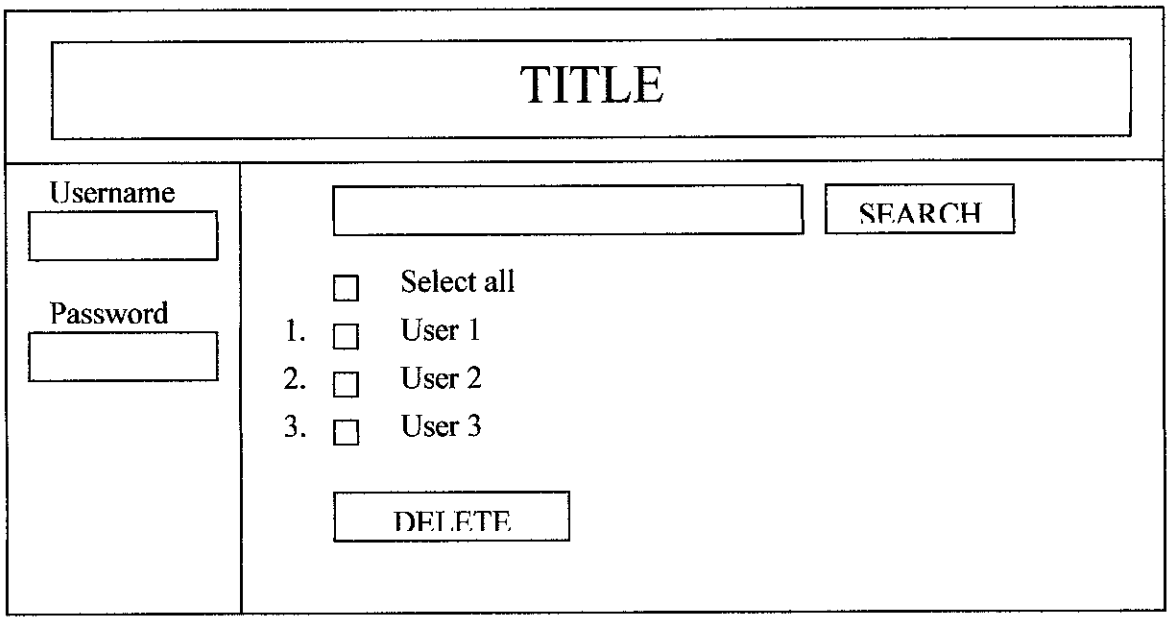
3. Download and Delete Page



4. Upload Page



1. System Administrator User Management Page



EDMS PROJECT SURVEY

Please access the system using the information below:

URL:	http://165.0.1.110/intranet/index.php
Username & Password:	guest
Date:	May 1, 2006 – May 7 31, 2006
Duration:	9.00 a.m. to 12 midnight

Users are encouraged to try out all the functions in the system to the fullest extent and then answer the questions below.

1. During the time specified, how would rate the availability of the system in terms of the ability of accessing the system during the hour specified.

   ☐ ☐ ☐ ☐ ☐
   1 - Worst **2** **3 - Average** **4** **5 - Best**

   Suggestion/Recommendation_____

   _____

   _____

2. How would you rate the functionalities of the system? Does the intended function works?

   ☐ ☐ ☐ ☐ ☐
   1 - Worst **2** **3 - Average** **4** **5 - Best**

   Suggestion/Recommendation_____

   _____

   _____

3. From your point of view after using the system, does the usage of the system saves time and effort in terms of sharing and searching of documents?

☐	☐	☐	☐	☐
1 - Worst	**2**	**3 - Average**	**4**	**5 - Best**

Suggestion/Recommendation_____

_____

_____

4. Does the interfaces in the system easy to understand and use. How would the system in terms of the ease of use of its GUI?

☐	☐	☐	☐	☐
1 - Worst	**2**	**3 - Average**	**4**	**5 - Best**

Suggestion/Recommendation_____

_____

_____

5. How would you rate the consistency of data/ documents in the system? Are the data/ documents uploaded on your previous login/ session available on your next login and other logins after that?

☐	☐	☐	☐	☐
1 - Worst	**2**	**3 - Average**	**4**	**5 - Best**

Suggestion/Recommendation_____

_____

_____

6. How would you rate the security of the system in terms of the login and the permission that can be set to the folders by the folder's owners?

☐	☐	☐	☐	☐
1 - Worst	**2**	**3 - Average**	**4**	**5 - Best**

Suggestion/Recommendation_____

_____

_____

APPENDIX V

EDMS USER REGISTRATION

Please fill in all the required information below:

Full Name	
Student ID.	
Programme	
E-mail	

Please use the username and password below to login to the system. Users can change their username and password once they have login.

Username	
Password	