Contents

A WEB-BASED DOCUMENT MANAGEMENT SYSTEM FOR INFORMATION TECHNOLOGY EDUCATION (ITE) ACCREDITATION BASED ON AACCUP STANDARDS

A Capstone Project
Presented to the Faculty of the
College of Information Technology
Mindanao State University

In Partial Fulfillment of the Requirements
For the degree Bachelor of Science in Information Technology

By

Nurjadein Abdulmorid

Prof. Janice F. Wade
Adviser

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Chapter 1

Introduction

In education, accreditation is the recognition given by an association or agency to institutions that satisfy specific standards of educational quality [1]. It assures the public that an institution of higher education is legitimate and has a high standards in its operations. It is also an opportunity for a university to take a look at its self and see how it is going.

Mindanao State University (MSU) is a university that undergoes accreditation by Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCUP). The assessment of programs of this accrediting agency uses ten criteria or areas such as the following: mission, goals and objectives, faculty, curriculum and instruction, students, research, extension and community involvement, library, physical facilities, laboratories and administration. In every area, there are also sub areas [2].

In order for MSU to comply the requirements demanded by AACCUP, every college in MSU prepares the documents needed in areas and sub areas required by AACCUP.

MSU, uses manual document management in the areas of accreditation. With that being said, one of the colleges of MSU is the College of Information Technology and this college also uses manual process in managing the accreditation documents. This manual management of the documents has many disadvantages and problems. Some of these are redundancy, prone to damage, time consuming, inefficient document transportation, supply cost, limited collaboration and editing problems [3]. Knowing these kinds of problems, this has a great impact to document process in accreditation. It can be slow and the employees can have hard time managing such documents.

One of the solutions for this problem is to have a system that will handle the documents in order for it to be managed easily. It will be a document management system (DMS).

DMS is an information system that allows storing, transmitting, saving and retrieving of any computerized documents [4]. In this way, it can help the accreditation documents to be managed easily. We can also include tagging of documents in this system.

The project aims to provide a web-based application software, a DMS for college accreditation that will aid the users in managing their accreditation documents efficiently.

1.1 Project Context

This capstone project entitled "A WEB-BASED DOCUMENT MANAGEMENT SYSTEM FOR INFORMATION TECHNOLOGY EDUCATION (ITE) ACCREDITATION BASED ON AACCUP STANDARDS" is a web-based system software focuses in the design and development of the database that caters to the college accreditation document management per se. This project will be conducted in Mindanao State University, specifically, The College of Information Technology. Conceptualization of this project started Second Semester of Academic Year 2017-2018 and, hopefully, will be finished at the end of the Second Semester of Academic Year 2018-2019.

The researcher proposes this project in a way that he saw the document filling is hard to handle. It will be a web-based document management system. Each college of MSU will have a stand-alone system, letting them to upload their own accreditation documents in their college or online.

This capstone project aspires to make and implement a computerized system that can handle the documents used in accreditation to aid the stakeholders in their work in handling the documents like storing, retrieving and other process associated in handling the accreditation documents.

Specifically, this project targets are as follows:

- To use a system that will handle the accreditation documents
- To make the accreditation document organization an efficient one
- To put up a web-based design that interact with the users
- To design a database structure
- To test the final product

1.2 Purpose and Description

This project is intended to help the different colleges in their accreditation processes, specifically, in managing accreditation documents to be fast, efficient and less redundant. It also can help every colleges to fasten their work regarding documents in order for them to have more time in their other tasks.

As we saw in our accreditation documents, there are many redundancy and it is prone to damage that if someone pours water to that document, it will be destroyed already. Or if something happened like fires in a particular college, the documents is in high risk.

Colleges in MSU encounters many problems in managing their accreditation documents. Some colleges has a problem in data banking, a well-organized and maintained collection of data for easy consultation and use, with regards in accreditation documents. Some have, sometime, obsolete documents because of lack of regular update of the documents in the areas. Some have problem in filing the documents and supplies of materials like bond papers. Some have problems because of shuffled documents that leads to difficulties. If some documents are lost, there is a difficulty in gathering such documents a second time around. There are also documents that are last copies. So if that document is misplaced, it is a big problem. Some documents are not in-order. Some are lost because of a transfer of office from one place to another. Some data are not itemized.

Some colleges have problem in a way that when someone files the documents, it is not properly logged. Some borrows a document but fails to return it.

This project can be a big help to those who handle accreditation documents in ITE such as the following:

- **The Dean**. This project will aid the dean of the colleges to minimize the problems in the accreditation documents.
- **Accreditation Committee members**. This project can help the accreditation committee to easily organize the documents.
- **The accreditors**. This project will show the accreditors the document they need in their assessment. They can view documents and photos conveniently.
- **Other user**. They are the faculty members. It may serve as their guide with regards to accreditation documents.

1.3 Objectives

The main objective of this capstone project is to design and develop a Web-Based Accreditation Document Management System for ITE in MSU main campus following AACCUP standards.

Specifically, this project aims to:

- Study the accreditation process with AACCUP standards, how documents are being collected and managed by different colleges;
- Investigate different database frameworks, tools and various programing languages that are useful in the development of the project;

- Design the database based on the data gathered and requirements necessary in the development of the system;
- Design and develop the Accreditation Management System based on the requirement involved in the previous specific objective;
- Test and evaluate the performance of DMS based on its functionality and usability.

1.4 Scope and Limitations

This study considers only the accreditation documents that are in digital format such as PDF, JPG and PNG. This means that this study does not consider the printed documents. Since this is a document management system, it will only consider the management of documents such as uploading, changing, deleting, tagging and other functions involving management of documents. Thus, this does not consider how the documents is gathered in a way that, if some office fails to provide a needed document in the accreditation, this system cannot force them to do so. And since there many accreditation agencies in the Philippines, this project is limited only to the AACCUP standards based on the instruments given by AACCUP to ITE. Also, this project focuses only on the accreditation documents that are in Information Technology Education (i.e. CIT in MSU). Hence, other colleges in MSU is not a part of this system and other accrediting agencies are also excluded.

1.5 Significance of the Project

In this project, faculty members will have access to the documents based on accreditation. In this way, just sitting in the desk with the computer, they can upload the necessary documents or photos in the accreditation. They do not need to file it manually, that will consume their respective work time. If some documents are needed in sub areas, the accounts that needs such documents can be tagged, so, it may save some time.

This study is limited in a way that the dean and the accreditation committee members are the only users who can access the documents needed to be managed. This, only, focuses on the documents used in accreditation.

Students and other faculties is not included in accessing these documents and documents that are not used in accreditation are also excluded.

Accreditors are just going to view the web pages to see the documents but cannot edit or change it. But at the same time, they can make their assessment.

Chapter 2

Review of Related Literature and Systems

2.1 Review of Related Concept

2.1.1 Data Processing

Data Processing, in computer science, is the analysis and organization of data by the repeated use of one or more computer programs. Data processing is used extensively in business, engineering, and science and to an increasing extent in nearly all areas in which computers are used.

Data processing is divided into two kinds of processing: database processing and transaction processing. In database processing, a computerized database is used as the central source of reference data for the computations. Transaction processing refers to interaction between two computers in which one computer initiates a transaction and another computer provides the first with the data or computation required for that function [5].

2.1.2 Record Management

This Record Management aim to manage and control records including their creation, distribution, filing, uses and their final disposition. By this Record Management, we can realize that it is space saving, reduces expenditure in filling the document through proper placement of records that reduces the need of filling cabinets and folders. It can also reduce misfiles and lost records. Retrieval of information will be efficient enough. Also,

the creation of a new record is controllable. In this way, the increase and proliferation of unnecessary records, reports, other copies can be reduced and at the same time, improves the effectiveness of the reports or documents that are need to be created. And last but not the least, it is easy to identify the historical records that are needed for future uses [6].

2.1.3 Electronic Document Management Systems (EDMS)

A process called paper based document management is a process, typically, used as an old fashioned manner of keeping documents used in many areas like policy documents. This documents are in a 3 ring binders. This binders need to be reviewed annually and it consumes much time. Circulating documents in a company in a manual manner is a complicated process. It is daunting to make such documents up to date and it is arduous for the staff to review documents every year whether a documents is not needed or it is already updated or does not make sense at all. It is very hard to access these 3 ring binders that gives you difficulties to find some document [7]. But in EDMS, it gives you encouragement against discouragement in a way that it offers a means of managing documents to a repository online and associating properties and attribute to a document that make it easier to search. It also allows the documents to have a secure storage environment, immediate access of a document by an authorized personnel, documents can be accessed by a multiple users, increasing the speed of storing, removing and updating the documents and reduces the papers, spaces and staffing requirements that are associated in document filing manually [8].

2.1.4 ACCREDITING AGENCY OF CHARTERED COLLEGES AND UNIVERSITIES IN THE PHILIPPINES

Accreditation, in education, is the recognition given by an association or agency to institutions that satisfy specific standards of educational quality [9]. In current time, accreditation in universities and state colleges is by program like elementary teacher education, civil engineering, agriculture and others [10]. One of the accreditation agencies here in the Philippines is Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCUP). Its main function is the accreditation of curricular programs in the Philippines, particularly for state universities and colleges. It is registered officially and recognized under the Securities and Exchange Commission on the fourth day of September in the year 1989. Under its charter, one of its main purpose and, actually, its vision is to develop a mechanism of, and conduct the evaluation of programs and institutions. Its mission is to make the attainment of quality in education an integral part of the higher education systems more particularly among chartered state colleges and universities in the Philippines, through a sustained program of internal and external assessment [11].

Stages of Accreditation

The accreditation process passes through different stages/activities:

1. **Application** - an educational institution files its application to undergo accreditation with AACCUP
2. **Institutional Self-survey** - upon approval of the application, the applicant institution will be required to make an internal assessment by its internal accreditors to determine the program's readiness for external review.

3. **Preliminary Survey Visit**- the evaluation of the program for the first time by external accreditors. Passing the assessment entitles the program to be awarded a Candidate status valid for two (2) years.
4. **1st (Formal) Survey Visit**- the evaluation of the program which has attained Candidate status, and if it has attained a higher level of quality, is awarded a Level I Accredited status, good for three (3) years.
5. **2nd Survey Visit**- involves the evaluation of an accredited program, and if it has passed the standards set at a higher level of quality than the immediately preceding survey visit, may qualify the program tan award of Level II Re-accredited status, good for five (5) years.
6. **3rd Survey Visit**- the accreditation stage conducted after a program has enjoyed a Level II Re-accredited status for five (5) years. Passing a higher level standard of quality entitles the program to apply for Level III. The program is then evaluated and must excel in four (4) areas, namely: 1) instruction and 2) extension, which are mandatory; and two (2) more areas to be chosen from among research, performance in licensure examination, faculty development, and linkages.
7. **4th Survey Visit**- is a higher level which if hurdled, may entitle the institution to an institutional accreditation status.

Criteria Used

There are ten (10) criteria (areas) that are used in the assessment of programs:

1. Mission, goals and objectives
2. Faculty
3. Curriculum and Instruction
4. Students

5. Research

6. Extension and Community Involvement

7. Library

8. Physical Facilities

9. Laboratories

10. Administration [12]

2.2 Review of Related Systems

2.2.1 FileHold

The figure below shows the user interface of the software called FileHold. It is a document management software system manages document and record from creation to disposition [13].

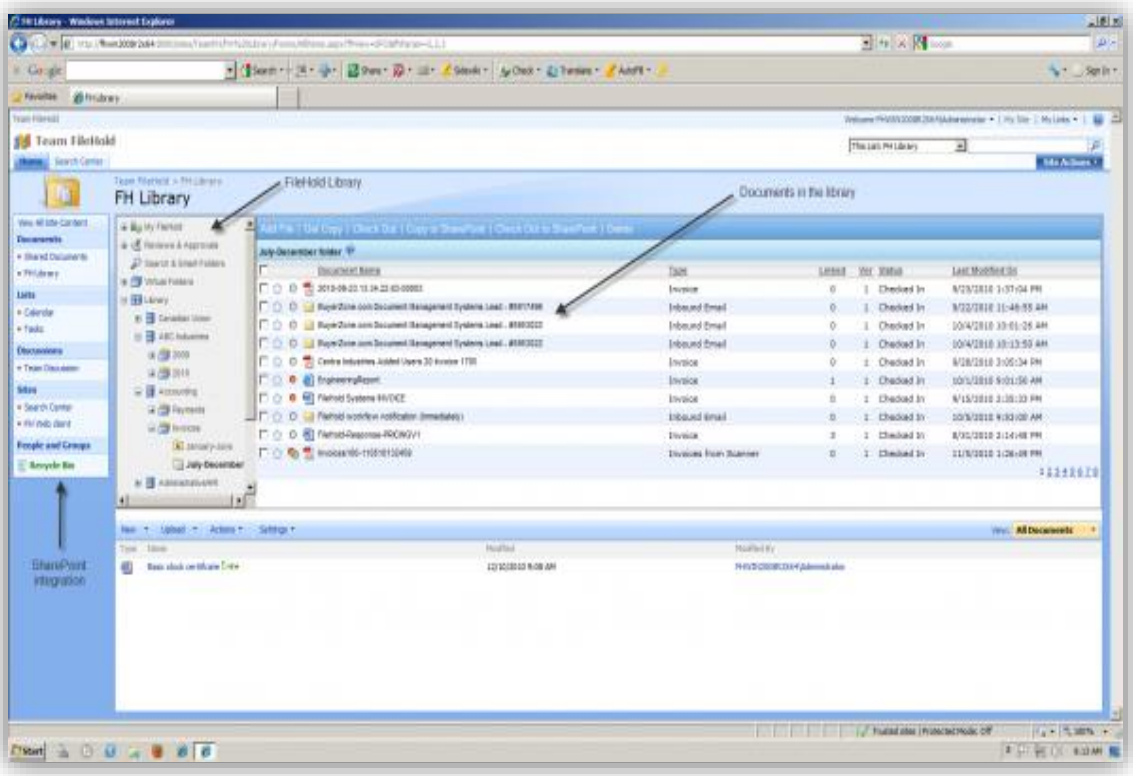


Figure 2.2.1 FileHold Interface

It is easy to install and easy to use and is not expensive that a small or large organization will be able to afford its cost. It has many features like web access, search, version control, tagging, workflow, secure user rights, mark up and annotation, redaction, scanning and OCR and indexing. Its record management features allow records to be converted to archives or be scheduled for final disposition [14].

2.2.2 eFileCabinet

The figure below shows the user interface of eFileCabinet, a software that offers a secure cloud management and protection for their files and documents.

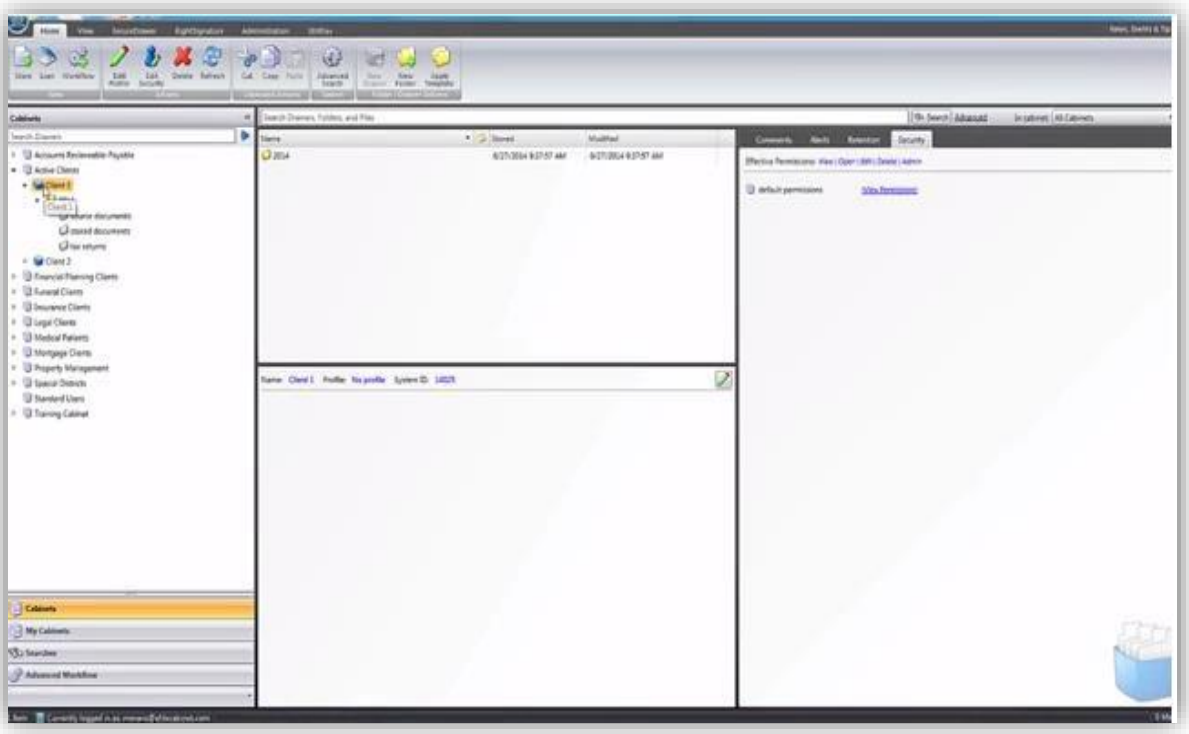


Figure2.2.2 eCabinet Interface

In eFileCabinet, not only files are available, but they are secured and protected. It has a role-based permission that limits the access of a user to a document in order to protect

such document from users that has no concern in that document. Only the one who has the concern in that document get the access to it. This protects the system from outside figures. It has a full text searching that allows the user to search for documents and words inside documents when you need a particular file and it is very helpful especially when a file or a document is accidentally misnamed [15].

2.2.3 M-Files

The figure below shows the user interface of M-Files, an easy-to-implement document management software application. It helps people to create, organize, revise, share and control electronic documents and is a powerful document management application [16].

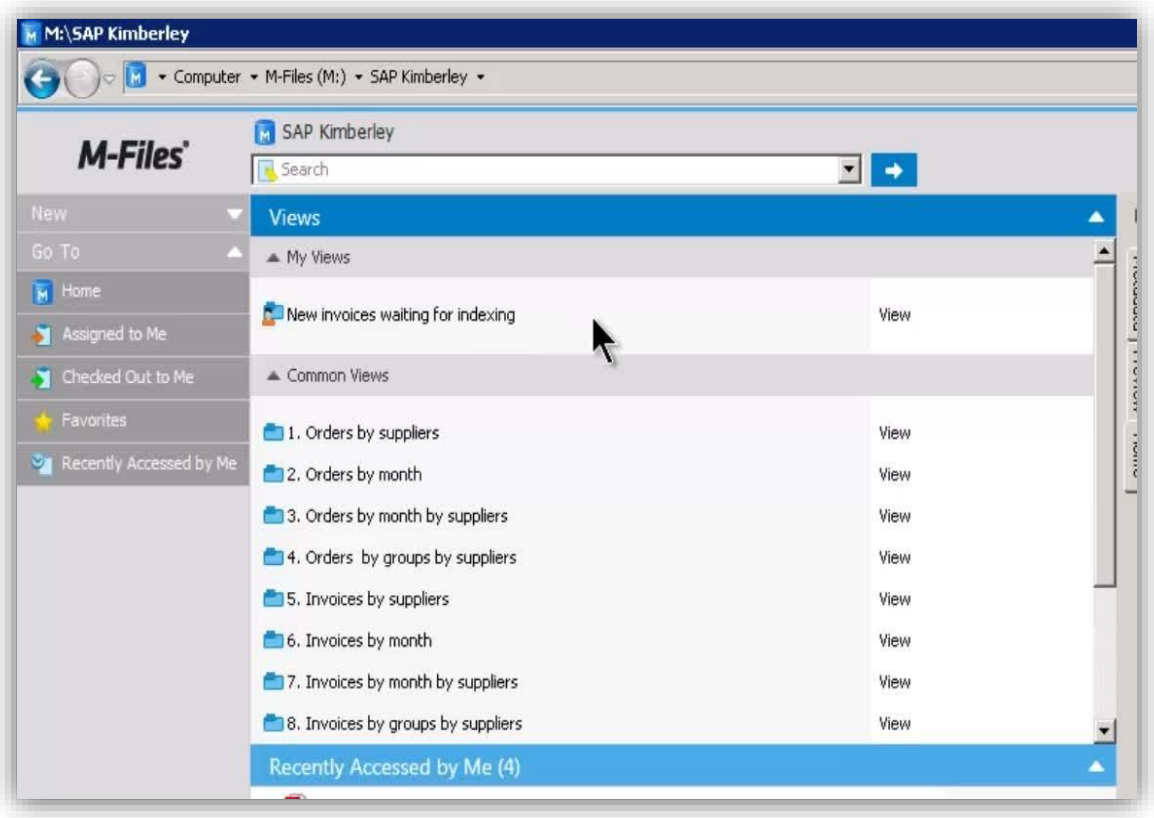


Figure 2.2.3 M-Files Interface from m-files.com

M-Files also have full-text searching, has secure user access permissions, and has a version management, fast offline use and remote or mobile access. It has a support for scanned paper documents and e-mail. It also has a robust interface for connecting to external databases. It integrates seamlessly into windows explorer, and supports all windows application that makes people, who uses windows, to be already familiar with it. With M-Files, we do not need extensive training to learn it [17].

2.3 Summary of Related Literature

The related concepts, Data Processing, Record Management and Electronic Document Management System have a common denominator and that is make the management of a data or a document easier than manual management. These concepts are ideas on how documents work easily for the people who are users in a particular system. These concepts are useful for making a huge file of folders and cabinets a centralized database to make it simple to find and manage.

The related systems, FileHold, eFileCabinet and M-Files are implementations on how to make a document easier to find and manage. These possess features that make the management of documents uncomplicated, unproblematic, painless and trouble-free like the searching features that are fast in finding a particular document.

These literatures must be useful in this project for the proponent to have ideas on how he will implement this study.

Chapter 3

Technical Background

Mindanao State University main campus is the biggest university in Marawi City. It is composed of 15 colleges. This is why MSU has many faculties in every college. And, also, this is why many colleges has to prepare their documents in accreditation in order for them to comply the requirements demanded by the accreditors and one of the colleges in MSU is CIT and it has to comply the documents demanded by AACCUP.

State universities and colleges need to be accredited by accrediting agency for institutional growth in a way that accreditation is one of several considerations used to determine which institutions or programs are eligible to receive private or federal funds [1]. And also by accreditation, institutions and programs can be awarded of different level for example, if AACCUP makes it first survey visit in an institution, if such institution attains a higher level of quality, then it will be awarded a Level I Accredited status.

As for this project, the proponent conducted an interview in some colleges in MSU and he finds out that the current process of managing of the accreditation documents, in general, is actually manual. The dean of college assigns a head t each area. Then the task will be divided to each member on what documents will be collected. The collected documents will be placed in a portfolio and the collected portfolios will be placed in an organizer. Every area is labeled as what area it is. If there are the same document that will be collected in different area, there is a photocopy machine ready to photocopy documents. And these collection of documents are filled in an accreditation room.

In processing the documents required in accreditation, there are some difficulties in the manual management of such documents. First, they need to buy a bunch bond papers, folders and organizers to have this documents filed properly. So, they need to pay the cost. And also, we all know that paper-based documents are prone to damage. When it is being damaged, and if, for some reason, the file was deleted in the personal computer, they have to start all over again to make those documents and this is time consuming. This is because of lack of protection to those documents. Another problem is that, manual method of managing documents is prone to redundancy in the sense that, there are the same documents that are present in different areas. In some situation, manual filling of documents can cause lack of data banking in the sense that the documents might be shuffled in some extent.

The proponent wish to solve this problems and difficulties by making a stand-alone web-based application to manage these documents, a framework that gives the opportunity for the colleges to upload the documents needed in accreditation. In this way, the time consumed in managing this documents is less than the time consumed in managing them manually. Also in this way, the document is far from damage like burning, crumpling, and pouring water to it because we have backed it up in the database. Documents that have multiple used will just be tagged in the area that needs it. This saves some time. And also, only the authorized person is the one who can access those documents. This protects the documents from outside figures.

3.1 Workflow of Manual Filling of Accreditation Documents

The figure below shows the workflow of the manual management of the accreditation documents that the proponent gathered during his data gathering. He conducted interviews in some of the colleges of MSU to have an idea on what to do with his project.

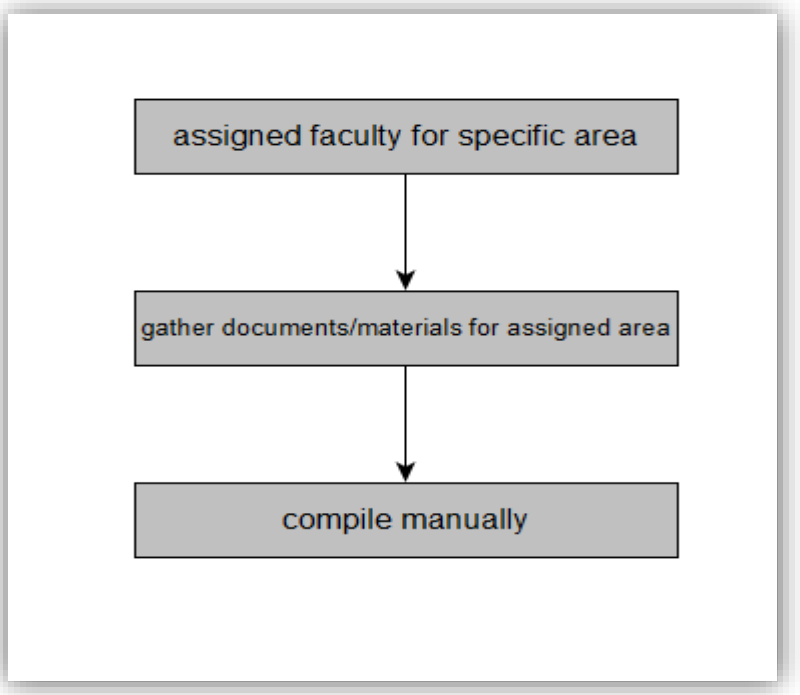


Figure 3.1 Workflow Diagram

Diagram 3.1 shows the manual workflow of the manual filling of documents.

The diagram above is the summary of the workflow of the current process of how the accreditation documents are being managed. As the proponent conducted his interview, he summarized the current process into one workflow and that is because the interviewees explained their current process of managing the accreditation documents. The proponent came up with a general workflow diagram to show this summarized process. As it is shown in the diagram, the first step is to assign faculties for a specific area. It means that the dean assigns a head to each area. The head divides the responsibilities to each member on what document is to be collected. Each

member will gather the documents for their assigned area. And they will put it on the folder and into portfolio then into organizers in the accreditation room. Every area is labelled in the accreditation room.

Below is the images that the proponent took during his data gathering. This show the picture of how the different colleges of MSU file the documents needed in accreditation

Figure 3.2 Accreditation Rooms

The proponent went to some of the different colleges in MSU and took the pictures of some of their accreditation rooms. As shown in figure above, they file their documents in portfolio manually. They have place for every area in the accreditation. It is sure tiring and have some redundant documents.

3.2 Desired Flow By The Proponent

The figure below shows the flow that the proponent wants to have in this project. This flow illustrates the main flow of the system.

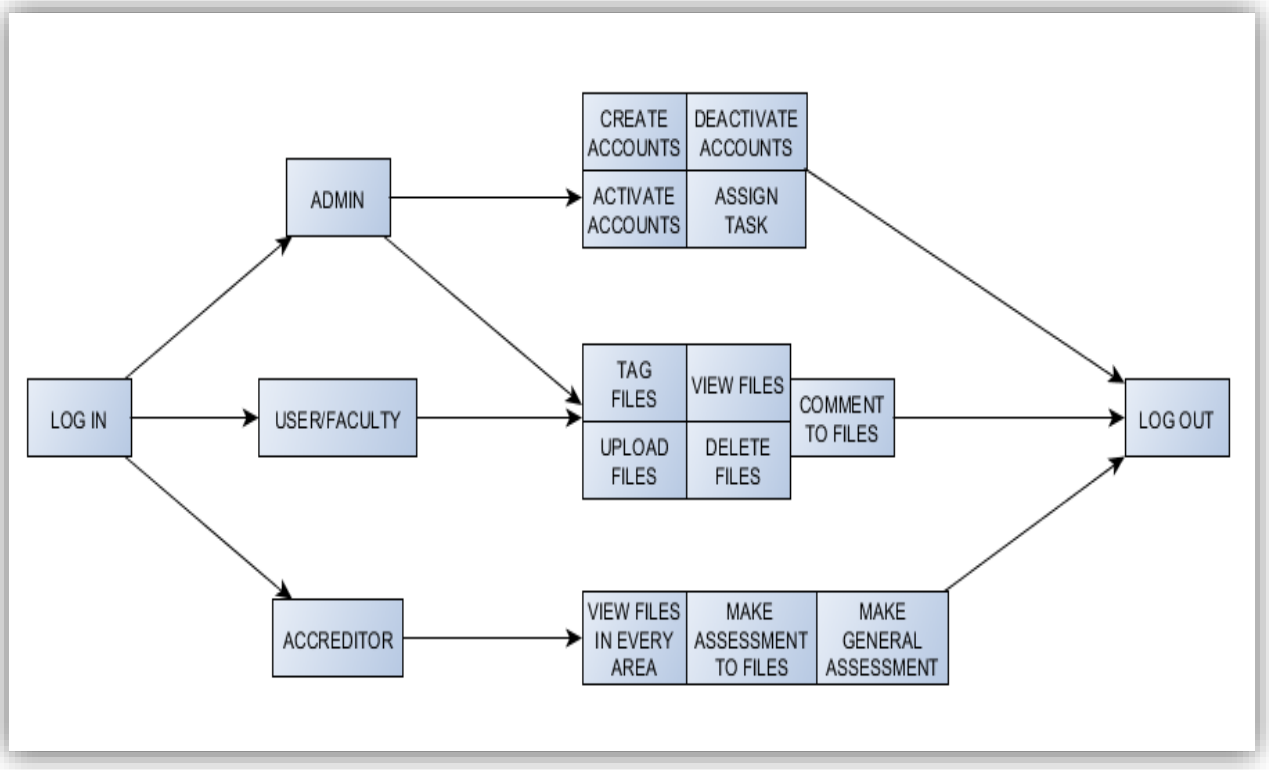


Figure 3.3 Desired Flow By The Proponent

In this flow, the user must log in for him to use the system. Depending on what user type is, he can use the system according to his specific functionalities. The Admin can create, activate, deactivate accounts and he is the one who can assign tasks to the faculties. He can also upload, delete, and view files and comments on the files. As for the regular users which are the faculties, they can only upload, delete, view, tag and comment on files. As for the accreditor, he can only view the files which are tagged in every area and make an assessment to each file. He can also make a general assessment to all the documents as a whole. And this is where the database

management in the related concepts goes. That is a computerized database will be used as a central source of reference data for computation. As for the record management, the system will have record of when and who uploaded a particular file. The system can save some spaces in a way that the users can tag the files where they want to tag it in the area where they are assigned. In this way, redundancy of files will be reduced. And lastly, the proponent will automate the management of the accreditation files by the concept of EDMS, which will help immediate access to a document by multiple users and download it whenever needed.

Chapter 4

Methodology

This chapter tackles about the methodology of the project. It includes project analysis, development phase of the project and the diagrams processes.

4.1 Requirement Analysis

As the proponent conduct his research, there is no system existed ever in managing the accreditation documents. And this is why the proposed system is made.

4.1.1 PIECES Evaluation Framework

This is an evaluation using the PIECES Evaluation Framework based on the absence of any system that manages the accreditation documents.

The table below shows the result of evaluation using the PIECES Evaluation Checklist.

Table 4.1 PIECES Evaluation of the Manual System

Performance	• Time Consuming Because of this absence, workloads rise up in a way that there are too many documents that will be printed or photocopied. • Sometimes Confusing Redundancy results to confusion on where to put the proper document in its proper area and proper location.

Information	Redundancy of Documents -The absence of a system that can manage accreditation documents leads to a manual processing of such documents. In that case, many of the documents are copied or printed from one piece to another in every area in the guidelines given by AACCUP.
Economy	Supply Cost – printing large number of documents can consume large number of bond papers, especially if there are mistakes in the documents, the faculties need to reprint such documents.
Control/Security	Document Risk - Printed documents are prone to damage.
Efficiency	Data is redundantly photocopied from one area to another. Repetitive tasks is required.
Service	The manual system consumes more time and effort.

4.1.2 Cause and Effect Analysis

In the PIECES Evaluation Framework, an evaluation of the causes and effects of the problems in the current manual system was performed. The following table summarizes the cause and effect of each problem identified using the PIECES Framework with the proposed solutions to be provided with the system and its corresponding constraints.

Table 4.2 Cause and Effect Analysis of the Manual System

	Problems / Opportunities	Cause and Effect	System Objectives	System Constraints
Performance	**Throughput and Response Time**	**Cause** – Processes take much time to complete. **Effect** – Document may already be redundant when produced.	Automate the management of documents.	The system is limited to the documents used in accreditation.
Information	**Data is captured redundantly**	**Cause** – filing the same document in different area or sub-area. **Effect** – Take much time in filing the same document.	Lessen the time and effort in managing the documents.	
Economy	**Costly bond papers**	**Cause –** redundant copies of documents is made.		Could have limited source of bond papers.

		Effect – more bond papers are needed.		
Control/Security	**Document risk**	**Cause –** manual filing of accreditation documents. **Effect –** document could be damaged easily.	Lessen the vulnerability of the documents.	The file uploaded could be corrupted.
Efficiency	**Much effort is required for the task.**	**Cause** Manual system of filing documents has difficulty in management. **Effect** – Much effort is needed to perform simple tasks.	Lessen difficulties in document management.	The system only manages documents used in accreditation.

Service	**Manual system consume much time and effort.**	**Cause** – Committee members manually look in the folders in each area to look for some documents he needs. **Effect** – Consume time and effort	Allow the users to upload documents and tag it where he is assigned, to lessen document upload redundancy and to lessen time and effort.	Uploading of documents only allows PDF, JPG, PNG and MP4 files.

4.1.3 Gantt Chart

The figure below is a Gantt Chart of the development phase illustrating the timeline of making the Accreditation Document Management System For ITE based on AACCUP Standards.

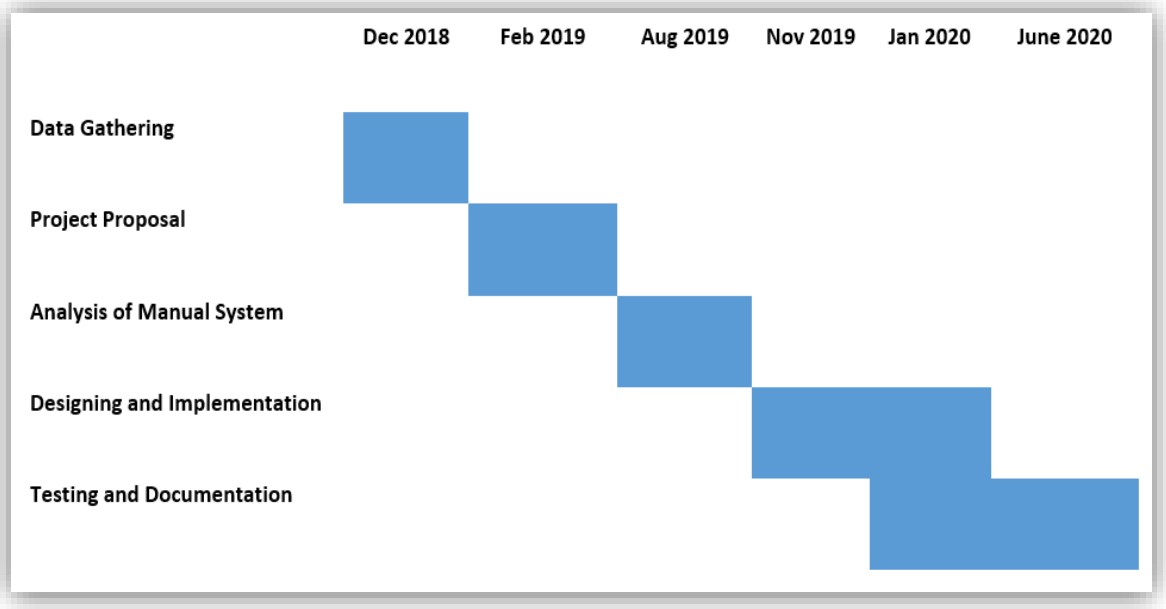


Figure 4.1 Gantt Chart of the Development Phase

4.2 Design

This section provides modelling tools that describe the system and its processes including developer and user specification and software testing plans.\

4.2.2 Hierarchical Input-Process-Output Process

The figure below shows the hierarchical input-process-output of the system. This process consists of Admin, User/Faculty, and Accreditor who will be involve for the system's functionality. Username and Password is required for all users.

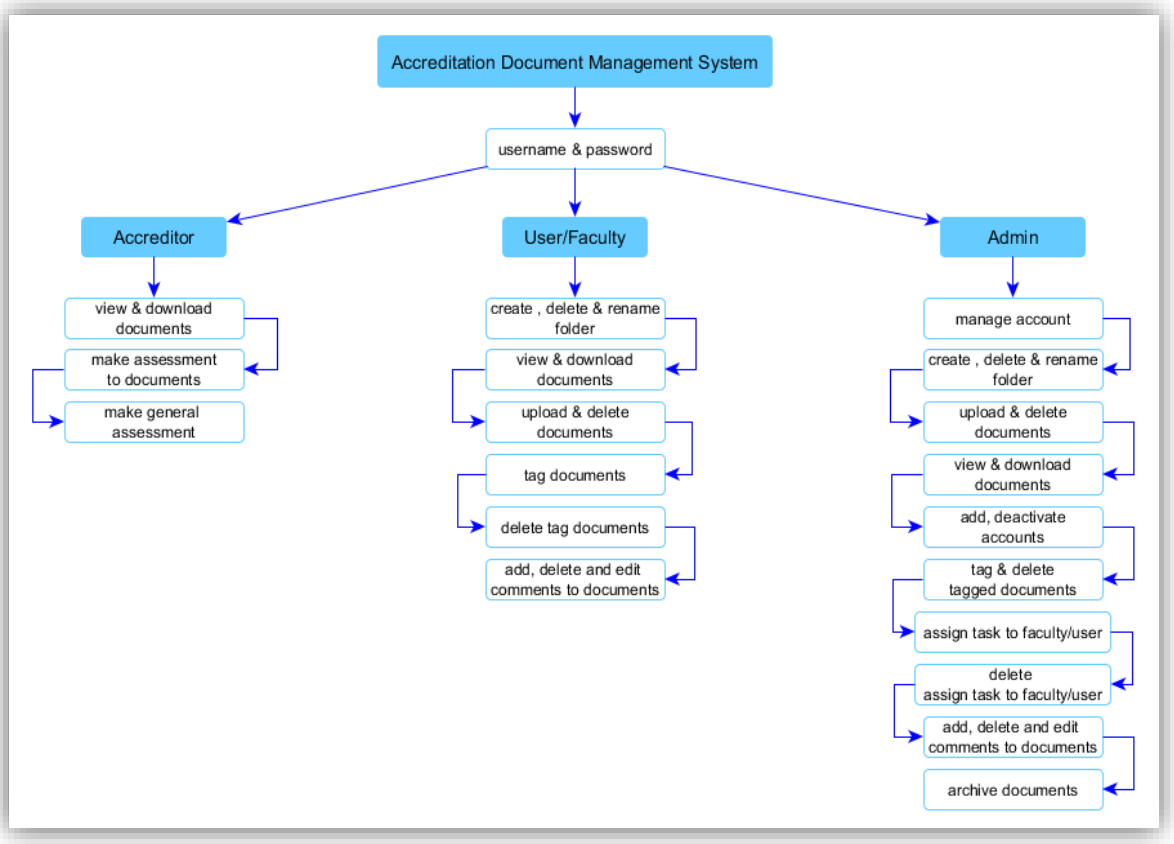


Figure 4.2 Hierarchical Input-Process-Output

If the account is the admin, he can manage accounts, adding and deactivating accounts, create, rename and delete folder, upload, view, delete and download documents, tag documents and delete tagged documents, assign users to a specific areas and delete their tasks and add, edit and delete comments. If the account is User/Faculty, his privileges are different from the Admin. He is only privilege to create, rename and delete folders, upload, download, view, and delete documents, tag document, delete tagged documents and add, edit and delete comments. And for the accreditor, he is only privileged to view the documents in every area and make assessment to each one of them and to make a general assessment to all documents in the areas.

4.2.3 Input-Process-Output

This section describes the input-output process of the system by functionalities.

4.2.3.1 Login

The figure below shows the input-process-output of all user login.

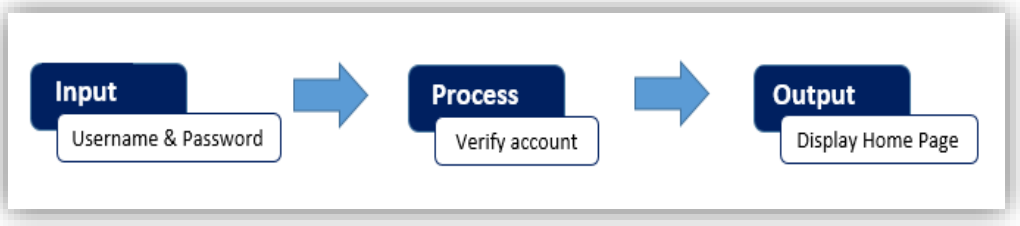


Figure 4.2.3 Login

We can see in the figure above that every user is required to input his username and password in order to login. Then, the system will verify his account leading it to display the home page a user's account.

4.2.3.2 Admin Manage Account

The figure below shows the input-process-output of the admin managing the accounts of the users.

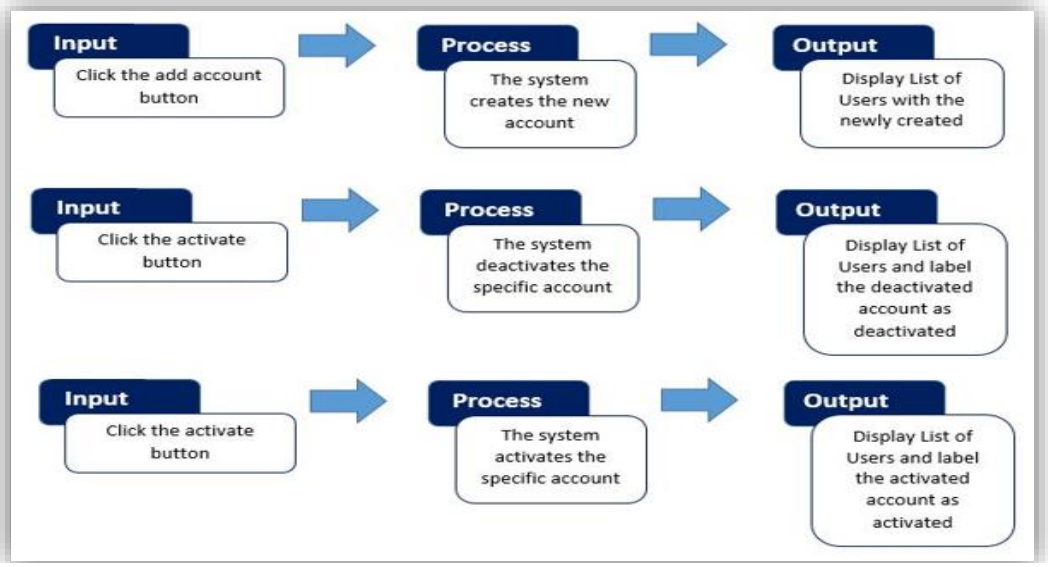


Figure 4.2.4 Admin Manage Account

The figure above illustrates that the admin is required to click a button to perform a task. He has to click the add button in order for him to create an account, click the deactivate button to deactivate some activated account and click the activate button to activated some deactivated account.

4.2.3.3 Admin and Area Faculty uploading a document

The figure below shows the input-process-output of the admin and area faculty uploading a document.

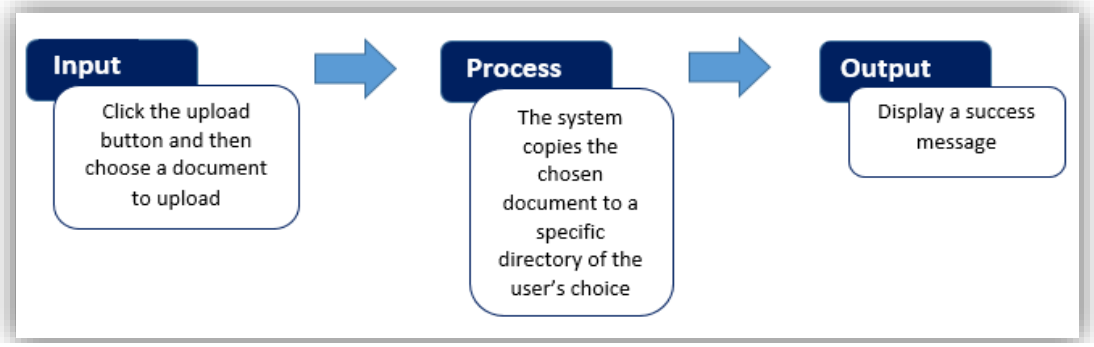


Figure 4.2.5 Admin and Area Faculty uploading File

The figure above indicates that the user should click the upload button and a pop-up dialog box will appear and then the user must select some document and then click ok. The system now copies that same document to a specific directory or folder of the user's choice following a success message to pop-up.

4.2.3.4 Admin assign Task

The figure below shows the input-process-output of the admin assigning a user to a specific task into a specific area.

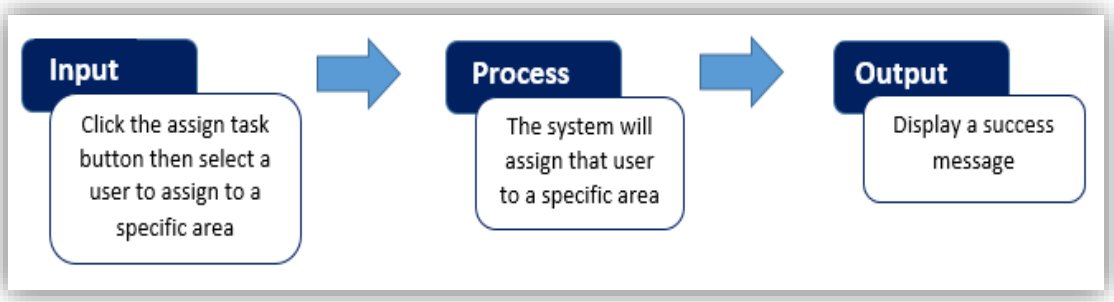


Figure 4.2.6 Admin assigning a user to a task into a specific area

The figure above show that the admin must click the assign task button and then a pop-up modal will appear letting the admin to select a user to assign him to a specific area following by a success pop-up message.

4.2.3.5 Admin and Area Faculty tagging a document

The figure below shows the input-process-output of the admin and user/faculty tagging a specific document to their respective assigned area.

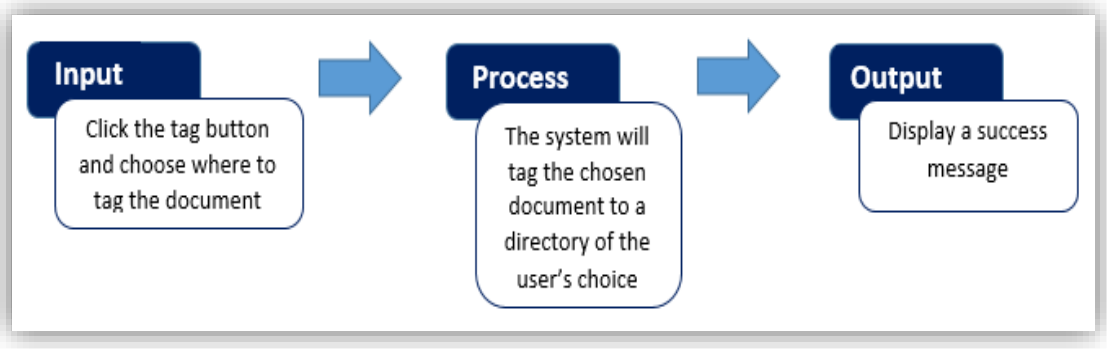


Figure 4.2.7 Admin and Area Faculty tagging a document

The figure above shows that the user must click the tag button and a pop-up will appear letting the user to select a specific directory where he wants to tag that selected document and the system will tag such document to his choice of directory following a success message.

4.2.3.6 Admin and Area Faculty make comment

The figure below shows the input-process-output of the admin and user/faculty making a comment to a specific document.

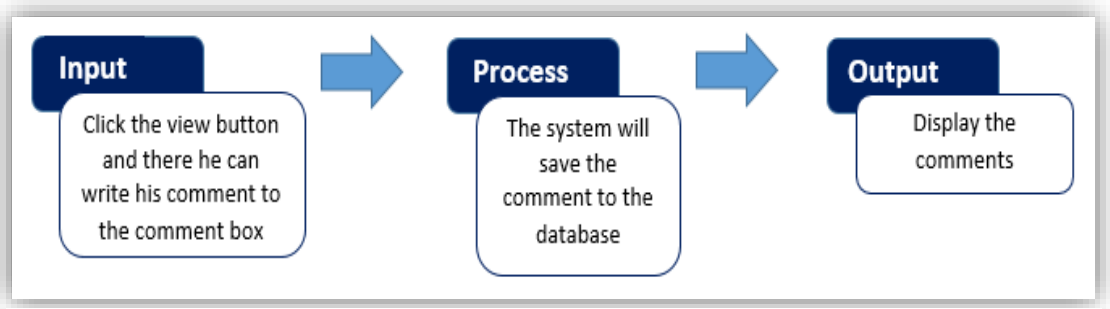


Figure 4.2.8 Admin and Area Faculty making a comment

The figure above shows that a user must view the document first in the sense that the comment box is inside the view page and he can write his comment in the comment box then, click post comment and the system displays the comment.

4.2.3.7 Accreditor Making an Assessment

The figure below shows the input-process-output of the admin and area faculty making a comment to a specific document.

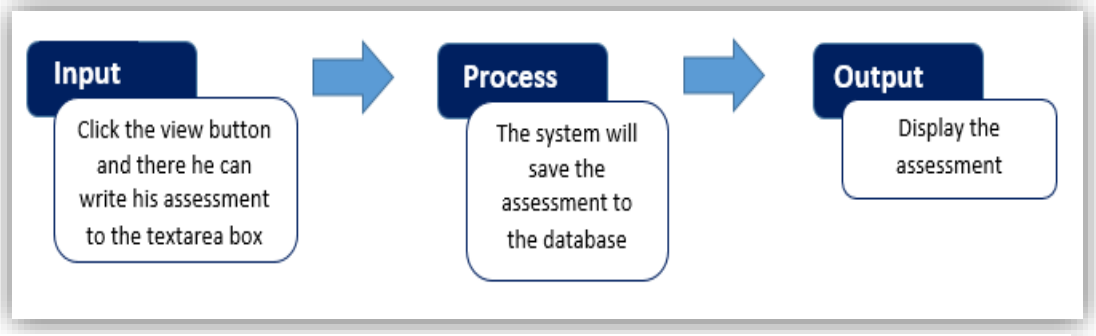


Figure 4.2.9 Accreditor making an assessment

The figure above indicates that the accreditor must view the document first before he can make an assessment. He can write his assessment to the textarea and then the system will save the assessment to the database then displays to the view page of accreditor. Furthermore, the accreditor can make a general assessment to all documents in all areas.

4.2.4 Use Case Diagram

This section show the use case diagram of the system which shows the interaction of the users with the system that illustrates the relationship between users and the different use cases in which the user involved.

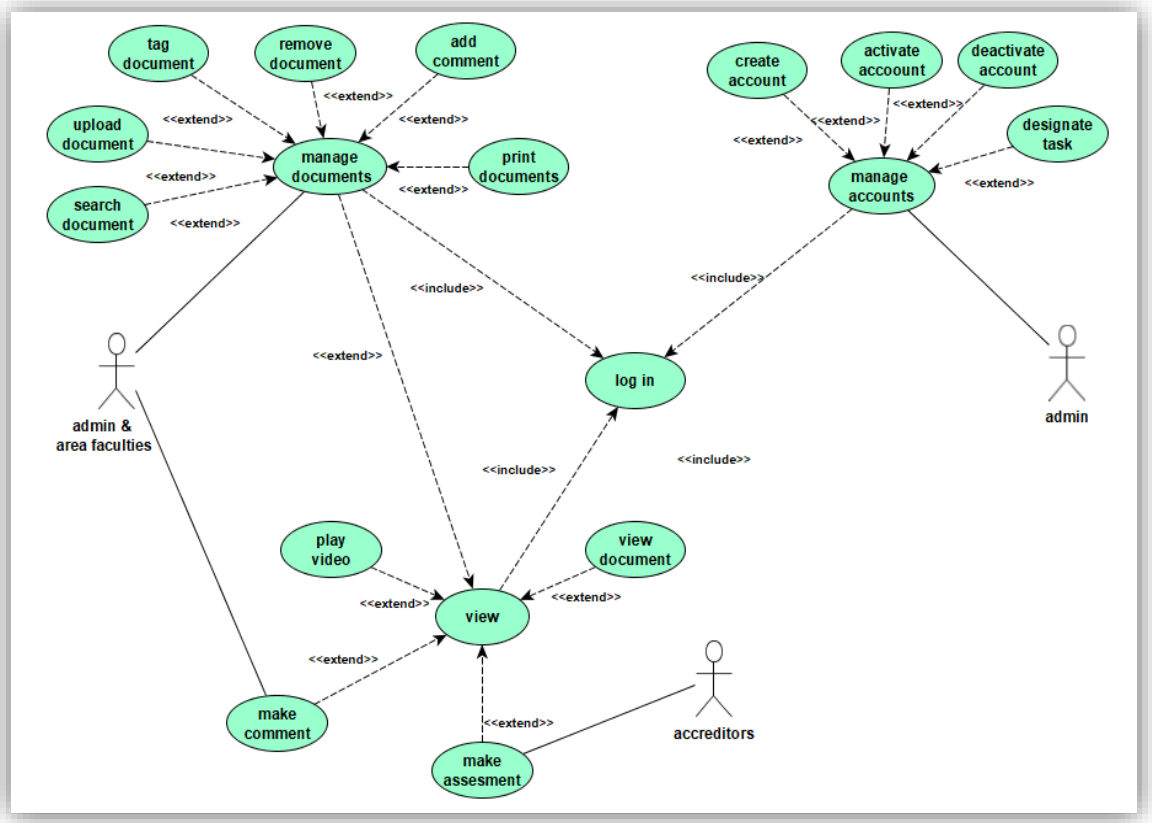


Figure 4.3 Use case Diagram

4.2.5 Entity-Relationship Diagram

This section and the figure 4.4 below shows the entity-relationship diagram of the project that illustrates a visual representation fo deifferent entities within a system and how they relate to each other.

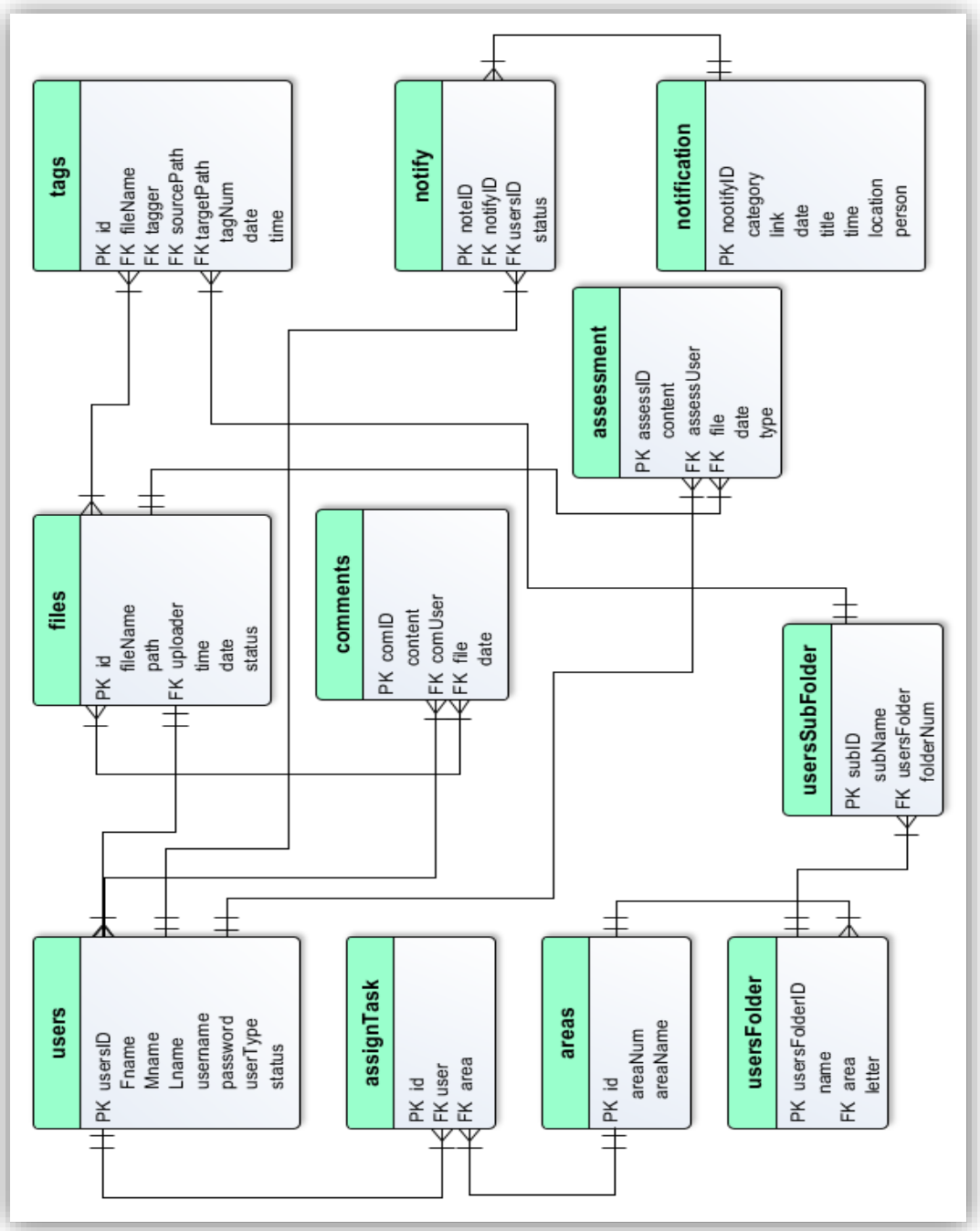


Figure 4.4 Entity Relationship Diagram

4.2.6 Architectural Design

This section shows the architectural design which illustrates the functionalities of every user type and the interaction of the user with the web server.

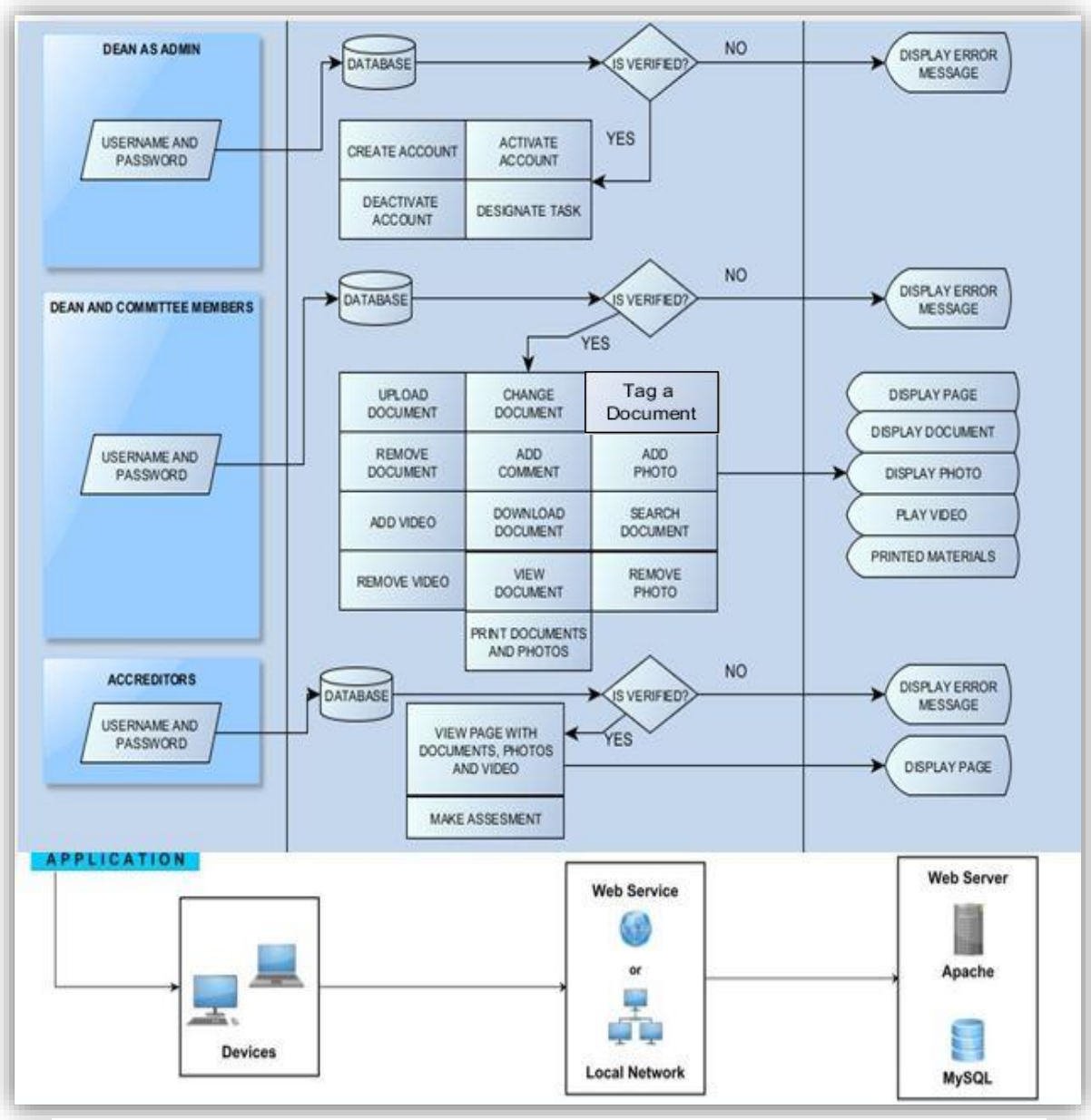


Figure 4.5 Architectural Design

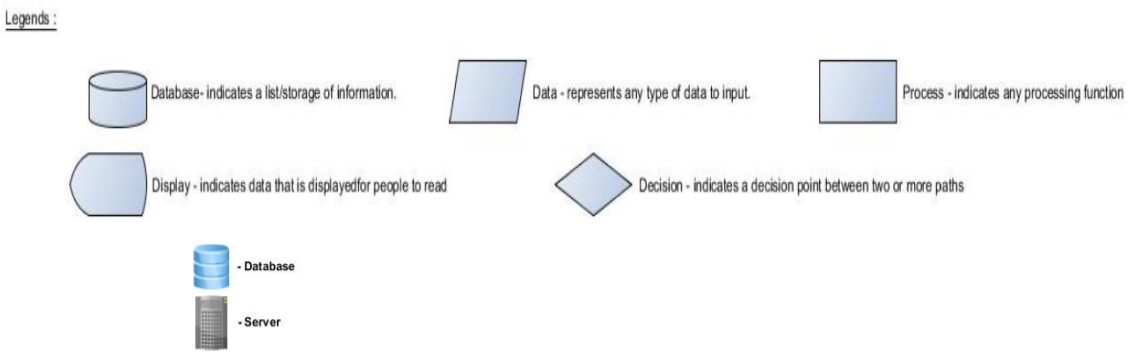


Figure 5.2 shows the interaction between the user and the web server. We can tell that every type of user have different functionalities in the process of the system accordingly. The user can access the project's URL to log in and access information stored in the server. A request will be sent into the server and then, the server will return the information to the user to display the desired result.

4.3 Development and Testing

4.3.1 Software Specification

The tables below shows the software specification of both the developer's side and the end user's side. It also shows the minimum software requirement for the end user's side.

Table 4.3 Software Specification for Developer

Operating System	Windows 10 Home 64-bit
Database Management System	MySQL
Web Server	XAMPP (Apache)
Application Server	XAMPP (Apache)
Frameworks	Bootstrap, Codeigniter
Text editor/ IDE	Visual Studio Code
Web browser	Firefox version 71.0 (64-bit)

Table 4.4 Software Specification for End User

Operating System	Windows 7 and better
Web browser	Any web browsers with HTML 5 support

Table 4.4 show the minimum requirement for the user to user the system. A windows seven operating system is the minimum requirement. Also, the user needs browser that support HTML5 but the proponent recommended to use Firefox to use the system.

4.3.2 Hardware Specification

The tables below shows the hardware specification of both the developer‘s side and the end user’s side. It also shows the minimum hardware requirement for the end user’s side.

Table 4.4 Software Specification for Developer

Processor	Windows : Intel PENTIUM inside
RAM	4GB
Free Space	20.6 GB (HDD)
Monitor	14’’ Screen
Keyboard	Standard
Display	720p
Network	Local Area Network connection

Table 4.5 Software Specification for End User

Processor	Windows : 1 GHz or better
RAM	At least 512 MB
Free Space	At least 200 MB
Monitor	14’’ standard colored monitor or better
Keyboard	Standard
Mouse	Standard
Display	At least with pixel height of 600
Network	Local Area Network connection
Devices	Laptops, Desktop Computer

The table above shows the minimum hardware requirement for the user in order for him to use the system.

4.3.3 Deployment Diagram

Deployment diagram is a Universal Modeling Language (UML) that shows the execution architecture of a system, including nodes such as hardware or software execution environments, and the middleware that connects them.

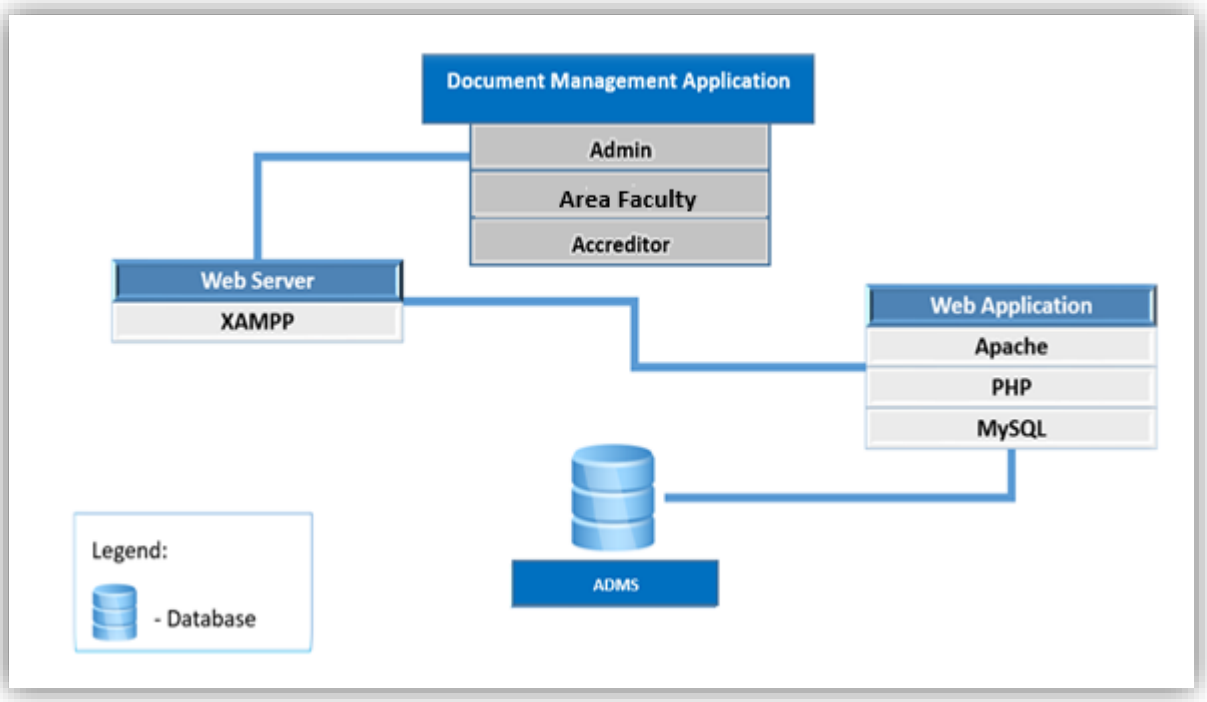


Figure 4.6 Deployment Diagram

Figure 4.6 shows the deployment diagram of the project. The proponent used tools and software to attain the functionalities desired by the proponent. The system retrieves information from the database from the web server with PHP programming language.

4.3.4 Test Plan

Originally, the proponent, with the help of his adviser, plans to present the system to the Office of the Vice Chancellor as they act as they an accreditor to MSU main campus. But unfortunately, the pandemic Covid-19 arises in Lanao Del Sur so, we could not reach that plan. However, the proponent made four persons that are members of the faculty of College of Information Technology (CIT) test his system for the user type faculty and it will be presented in the next chapter as well as the testing made by the proponent.

Chapter 5

Results and Discussion

This chapter contains the testing made by four of the members of the faculty of CIT and the testing made by the proponent for the user type faculty that serves as a substitute for the unfortunate test plan.

5.1 Usability Test Diagrams

Below are the usability test diagrams that the proponent conducted to only four members of the faculty.

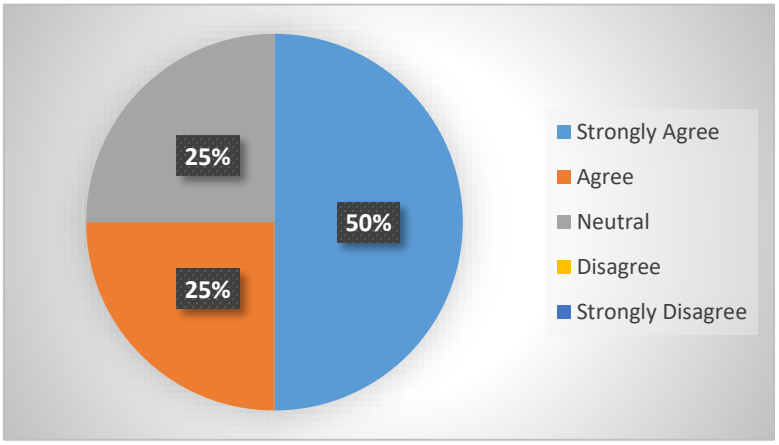


Figure 5.1 Usability Test Question No. 1

Question no. 1: The login system is efficient and helpful in this project.

Figure 5.1 above contains the result from question no. 1. 50 percent of participants were extremely agreed, 25 percent were neutral and 25 percent of them agree with the application.

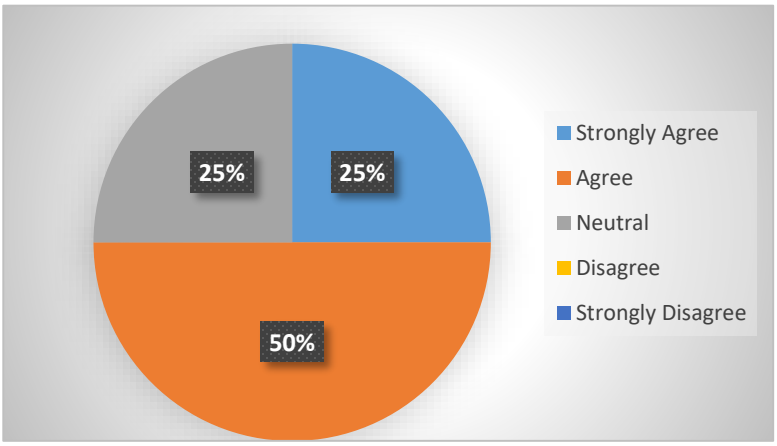


Figure 5.2 Usability Test Question No. 2

Question no. 2: Comments in the documents is helpful in this project.

Figure 5.2 above contains the result from question no. 2. 50 percent of participants agreed, 25 percent were neutral and 25 percent of them strongly agreed with the application.

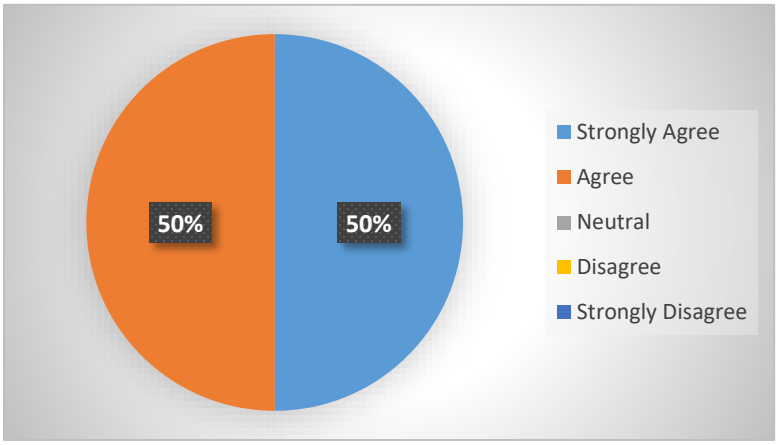
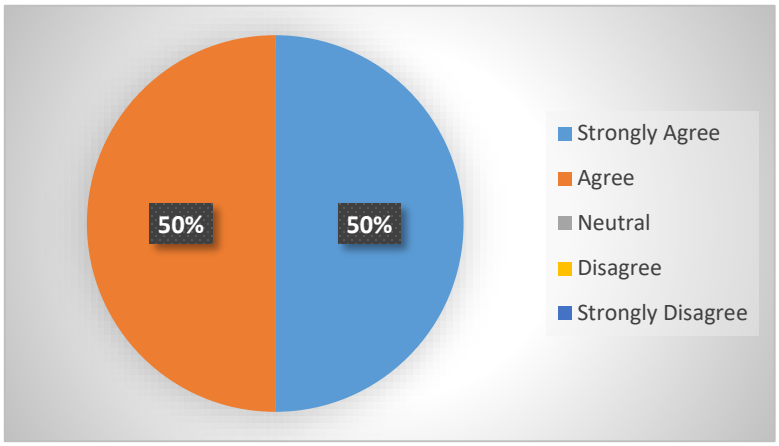


Figure 5.3 Usability Test Question No. 3

Question no. 3: Comments in the documents is helpful in this project.

Figure 5.3 above contains the result from question no. 3. 50 percent of participants agreed 50 percent of them strongly agreed with the application.



Fiaure 5.4 Usabilitv Test Ouestion No. 4

Question no. 4: Making folders in my assigned area can help me in organizing the files in my assigned area.

Figure 5.4 above contains the result from question no. 4. 50 percent of participants agreed 50 percent of them strongly agreed with the application.

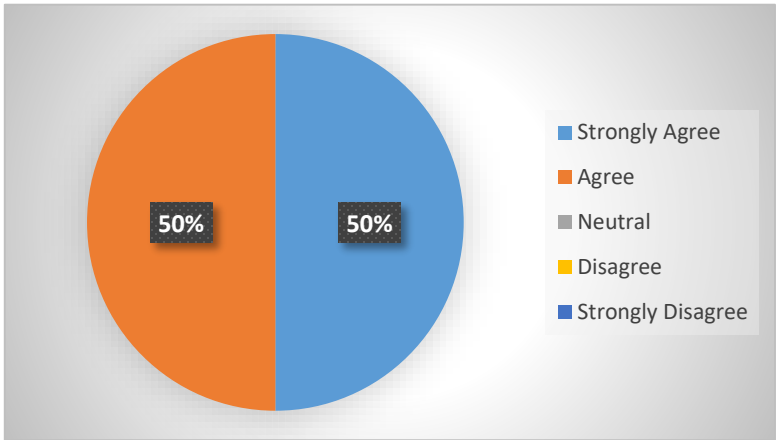


Figure 5.5 Usability Test Question No. 5

Question no. 5: Setting the arrangement in the folders and files in my assigned area is helpful in organizing the files.

Figure 5.5 above contains the result from question no. 5. 50 percent of participants agreed 50 percent of them strongly agreed with the application.

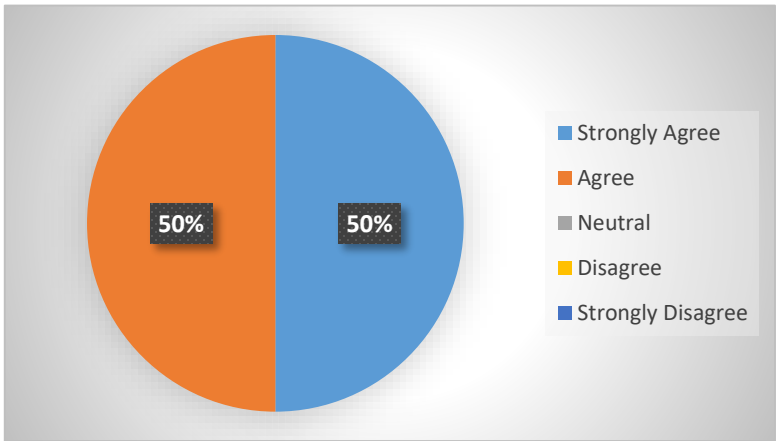


Figure 5.6 Usability Test Question No. 6

Question no. 6: The concept of tagging files can solve and reduce the redundancy problem of the files being uploaded.

Figure 5.6 above contains the result from question no. 6. 50 percent of participants agreed 50 percent of them strongly agreed with the application.

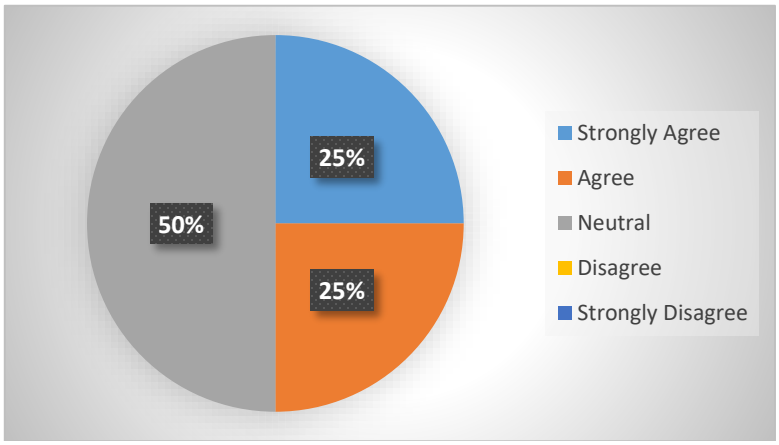


Figure 5.7 Usability Test Question No. 7

Question no. 7: Most users would learn to use this system very quickly.

Figure 5.7 above contains the result from question no. 7. 50 percent of participants were neutral, 25 percent of them strongly agreed and 25 percent agreed with the application.

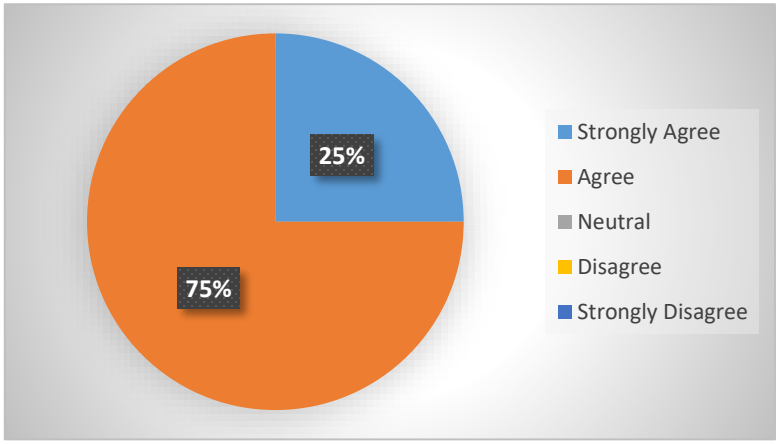


Figure5.8 Usability Test Question No. 8

Question no. 8: I feel very comfortable using the system.

Figure 5.8 above contains the result from question no. 8. 75 percent of participants agreed and 25 percent of them strongly agreed and 25 percent agreed with the application.

5.2 Test Results Summary Table

Table 5.2 Usability Test Results

	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
The login system is efficient and helpful in this project.	50%	25%	25%		
Comments in the documents is helpful in this project.	50%	25%	*25%*		
I like the functionality that I can see the area where I am being assigned and it is helpful to me.	50%	50%			
Making folders in my assigned area can help me in organizing the files in my assigned area.	50%	*50%*			
Setting the arrangement in the folders and files in my assigned area is helpful in organizing the files.	50%	50%			

The concept of tagging files can solve and reduce the redundancy problem of the files being uploaded.	50%	50%			
Most users would learn to use this system very quickly.	25%	25%	*50%*		
I feel very comfortable using the system.	25%	75%			
Suggestions and comments	1) Polish UI. 2) Its good product. 3) It would be better if I can upload a word file for future usage.				

Table 5.2 shows the summary of the results of the testing conducted by the proponent on four of the members of the faculty of CIT. The result shows that the participants were equally divided. Half of the participants seem to agree that they are satisfied with the system while the other half seem to strongly agree that they are satisfied with the system.

5.3 Proponent's testing of the main functions of the System

Since the proponent and his adviser cannot do their plan on making his system tested by the Office of the Vice Chancellor, the proponent make his own testing. Below is the screenshots of the testing made by the proponent.

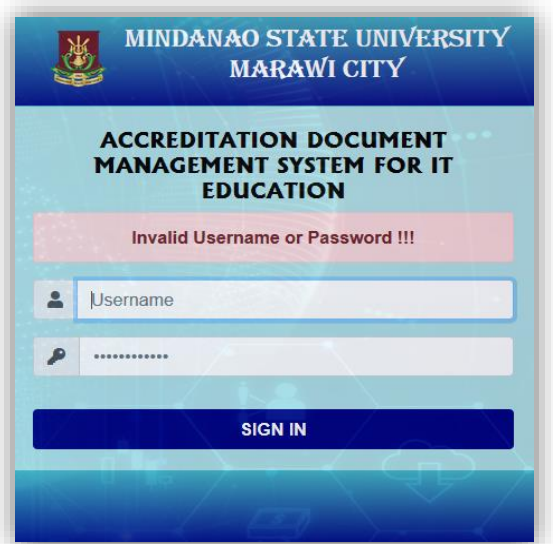


Figure 5.3.1 Log In Error

Figure 5.3.1 shows log in error if the users somehow entered some incorrect input to the log in fields. If the user enters a correct input, it will go to the home page which will be shown in the next figure.

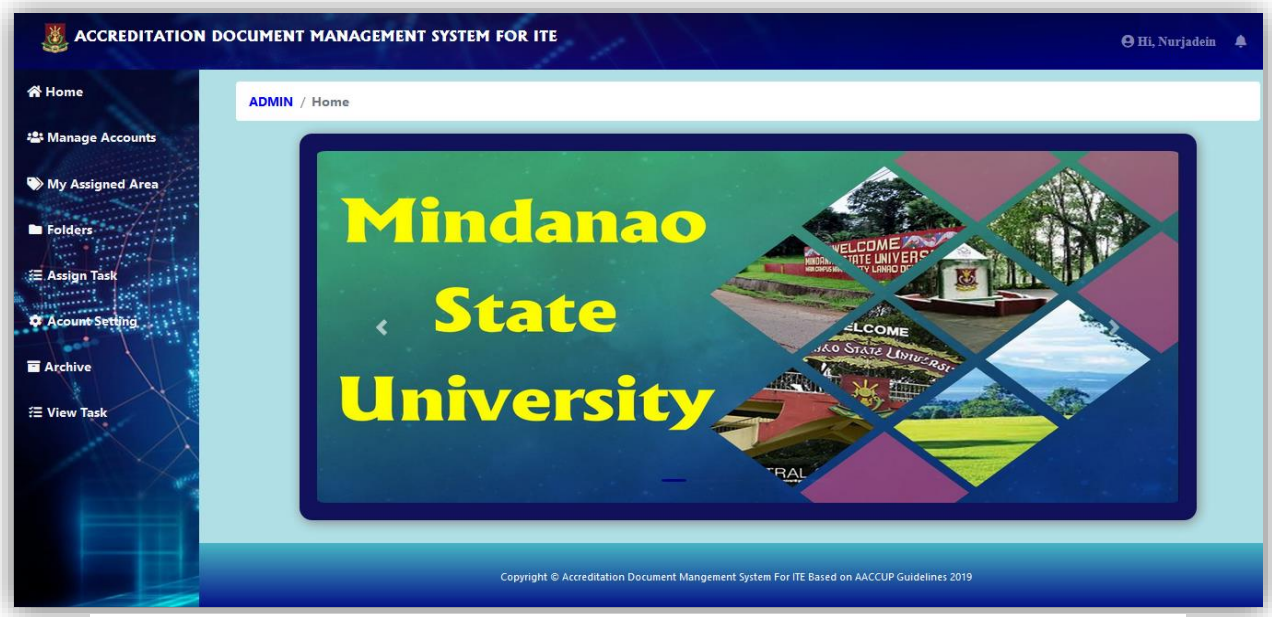


Figure 5.3.2 Home Page

Every user type has a home page. In every user type, there are corresponding functionalities that is why every user type has its different sidebar depending on their functionalities. Figure 5.3.2 show the home page of the user type Admin which has the most number of functionalities. The Admin user type is the same with the user/faculty user type except that the Admin has more functions than the user/faculty. Particularly, the functionalities which are made specifically for the Admin are Manage Accounts that allows it to the existing accounts in the system, Assign Task which allows it to assign users to a specific area in the accreditation and Archive that allows it to archive files.

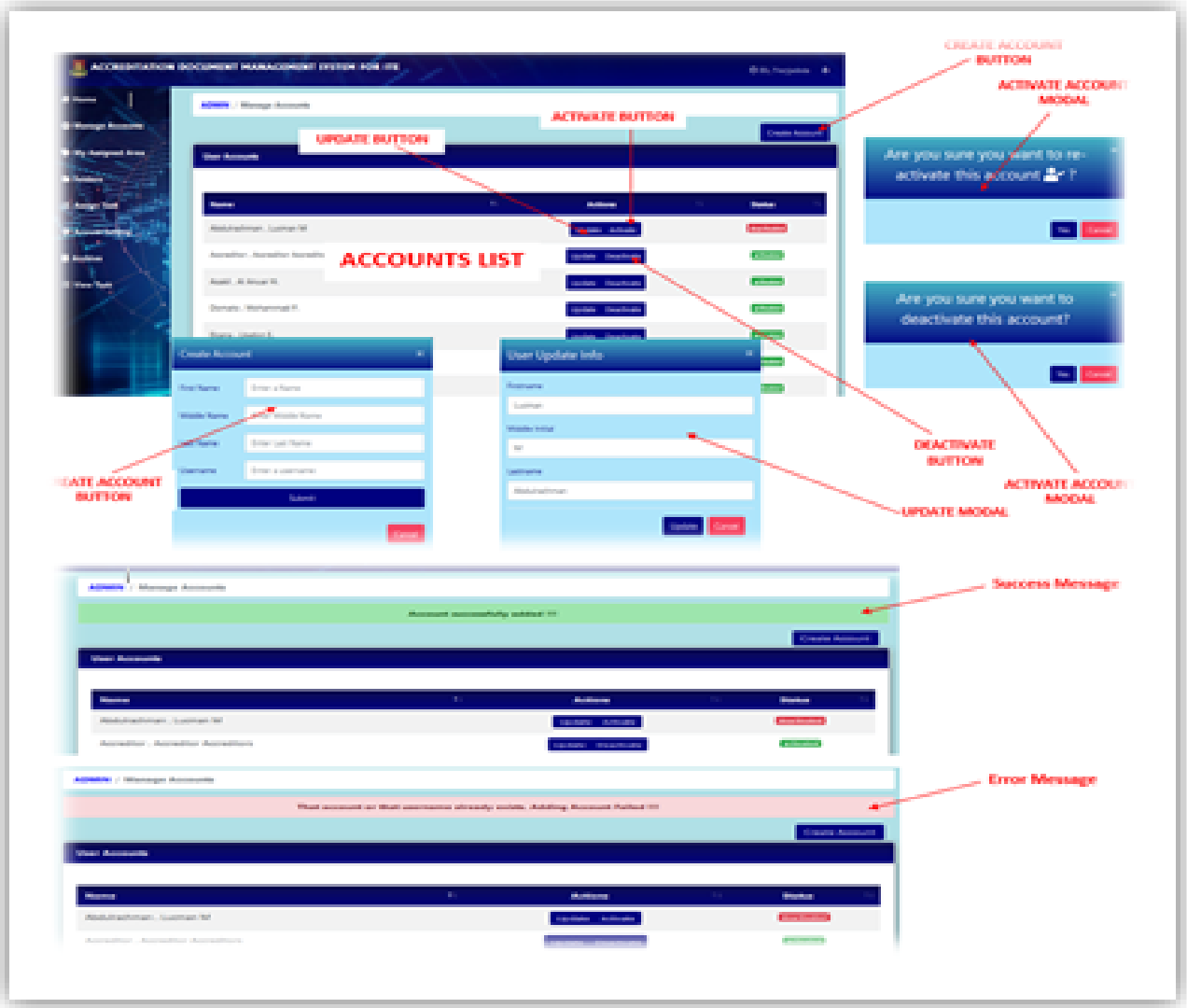


Figure 5.3.3 Manage Account Page

Figure 5.3.3 shows the functionalities of managing accounts which are possessed by the Admin. It allows to create a new account, activate and deactivate accounts. Clicking a button have a corresponding popup modal. If creating, updating, activating and deactivating account is successful, a success message will appear. Otherwise, an error message will appear.

Figure 5.3.4 Assign Task Page

Figure 5.3.4 shows another specific functionality for the Admin. We can see that the list of areas are listed in such page. If the user clicks the assign task button, a pop up modal will appear letting the Admin choose from the list of users to assign it in a specific area in the areas of accreditation. After choosing, a success message will appear. If the user clicks an folder area name, a pop up modal will show the users that are assigned to that specific area. As we can see in the figure, the has the names of assigned to a specific area and the Admin can delete that user if he desired to.

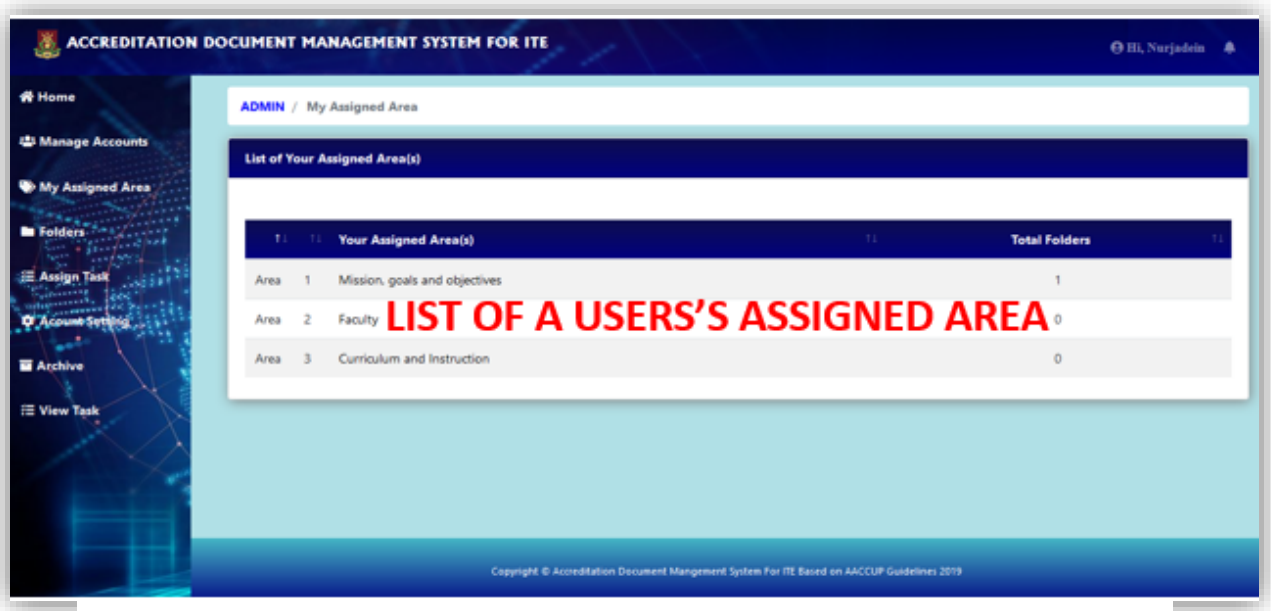


Figure 5.3.5 My Assigned Area Page

Figure 5.3.5 Shows My Assigned Area Page that shows the assigned area of a user. A user can be assigned in more than one area as we see in the figure. If the area name will be clicked, the page will be redirected to the Folders in the assigned area.

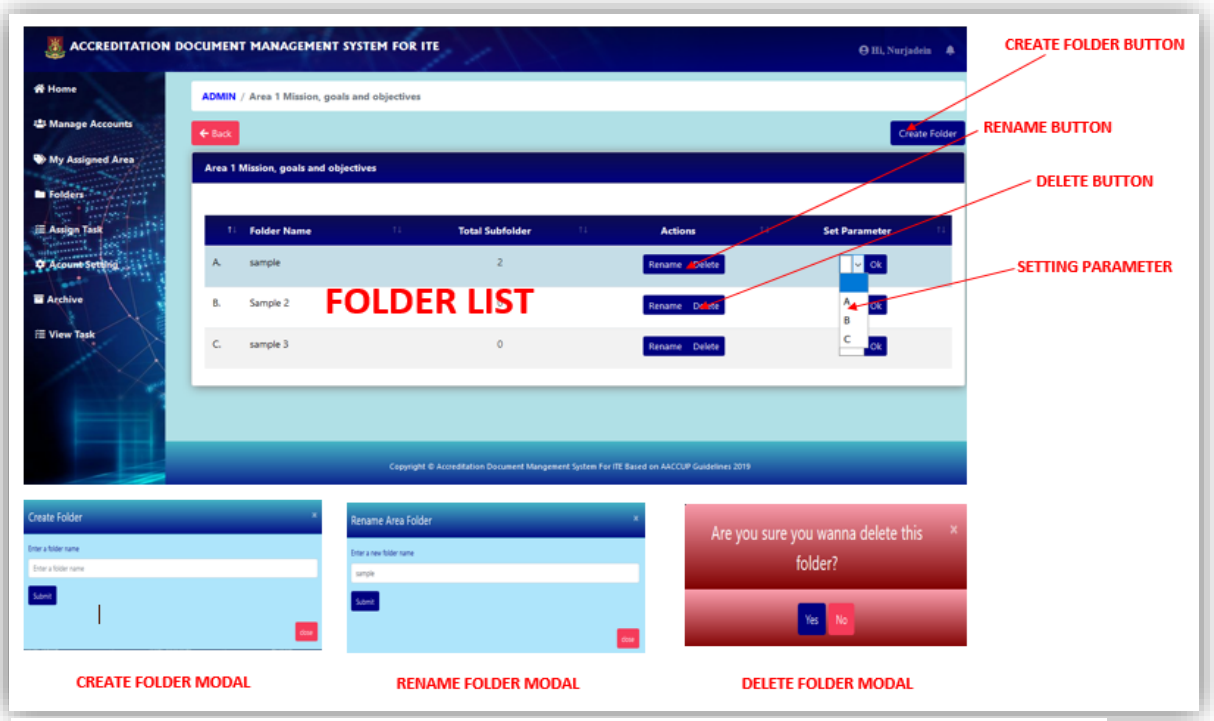


Figure 5.3.6 Area Folders Page

Figure 5.3.6 a web page containing the areas assigned to a user. A as we can see in the image, a user can create a folder as many as he desired. Also he can set the parameter for the arrangement of such folders. Also, a success message will appear after a successful creation of a folder, renaming of a folder and deleting a folder. Otherwise, an error message will appear. If the user clicks the folder name, it will be redirected to the sub folder page which will be shown in the next figure.

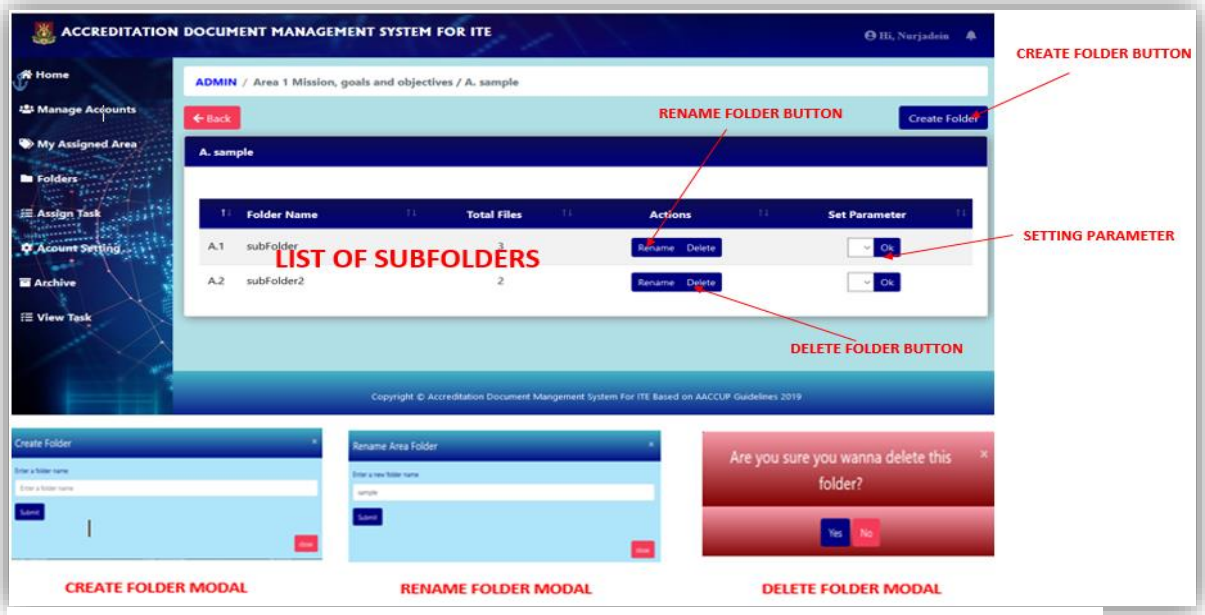


Figure 5.3.7Area Sub Folders Page

Figure 5.3.7 shows the page that contains the subfolders of an area folder. Functionalities are the same with the area folder page except that if the user clicks the subfolder name, it will be redirected to the page containing the files which are being tagged in that particular subfolder which will be shown in the next figure.

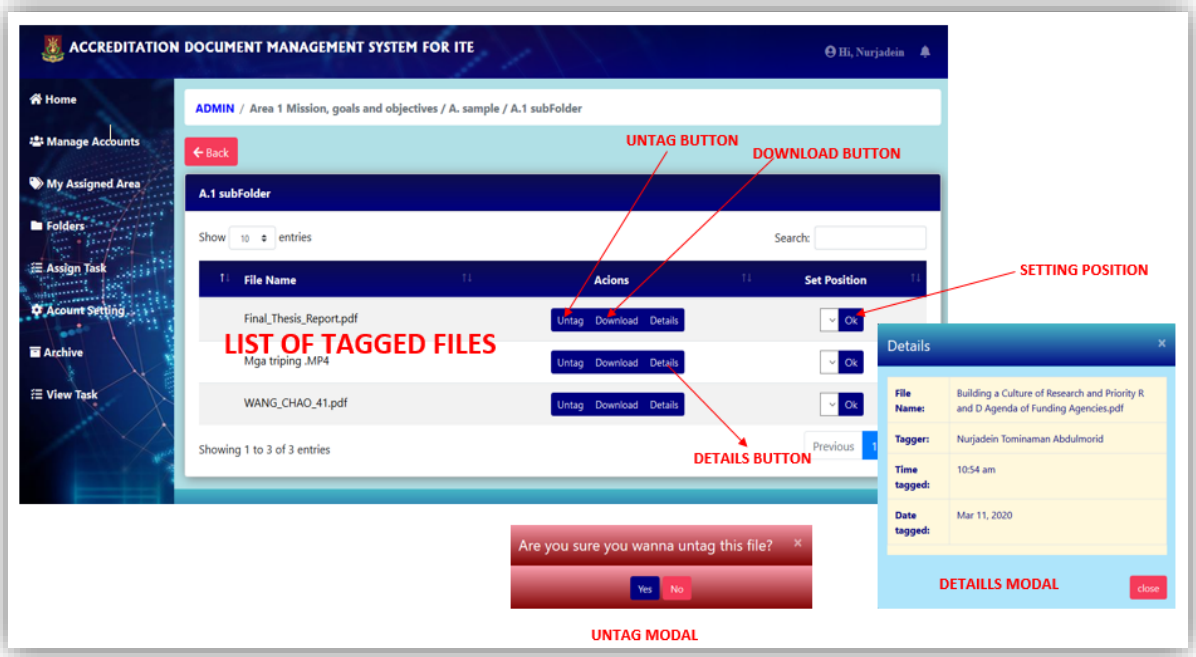


Figure 5.3.8 Inside Subfolder Page

Figure 5.3.8 contains the page containing what is inside a subfolder. We can find that all tagged files in a particular subfolder is inside this page. The user can untag the files, download them and he can also click the details button so that he can see some information about those tagged documents. He can also set the position of the documents for arrangement organization purposes. If untagging process is done, a success message will appear, otherwise an error message will appear. If the user clicks the file name, he can view the document as shown in the figure below.

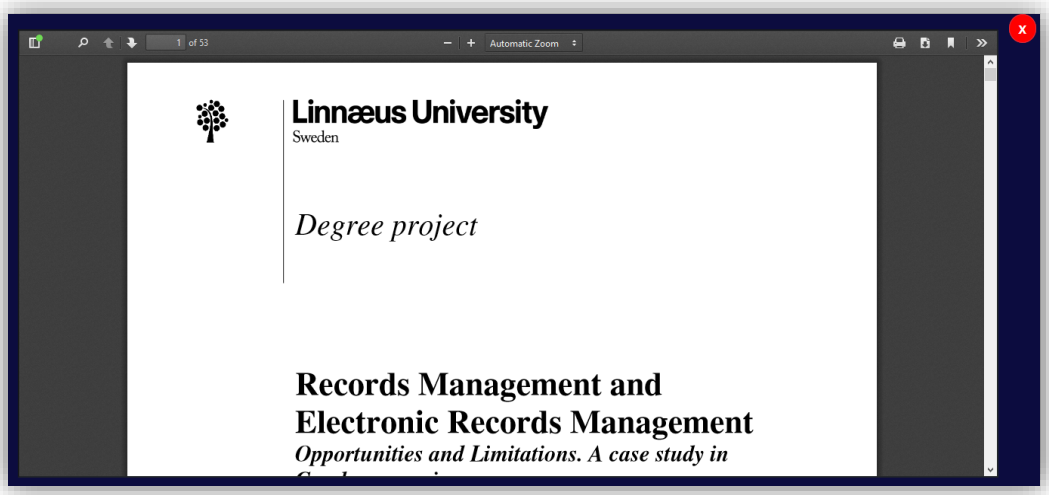


Figure 5.3.9 View Document

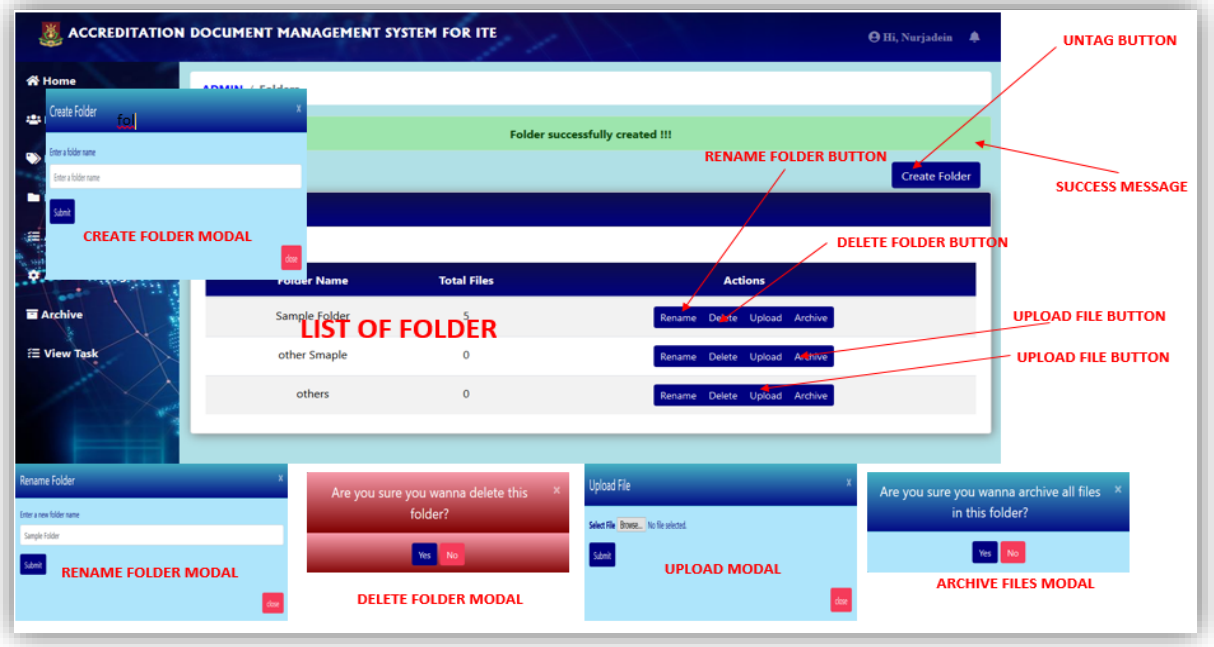


Figure 5.4 Folders Page

Figure 5.4 shows the Folders page. This is where the common files or the files that some areas share with. This where the users that were assigned to a specific areas will look for the files they need to tag for them to view it in their assigned area. The user can create a folder, rename it, delete it and for the Admin, he can put all files in a folder to the archive. Most of all, the user can upload documents in a folder of his selection. If the process will be successful, a success message will appear, otherwise, an error message will appear. The user must take note of the folder name in the sense that this will serve as the category for the users whenever they want to upload and look for a specific file. The next figure will show the content of a folder in the folders page.

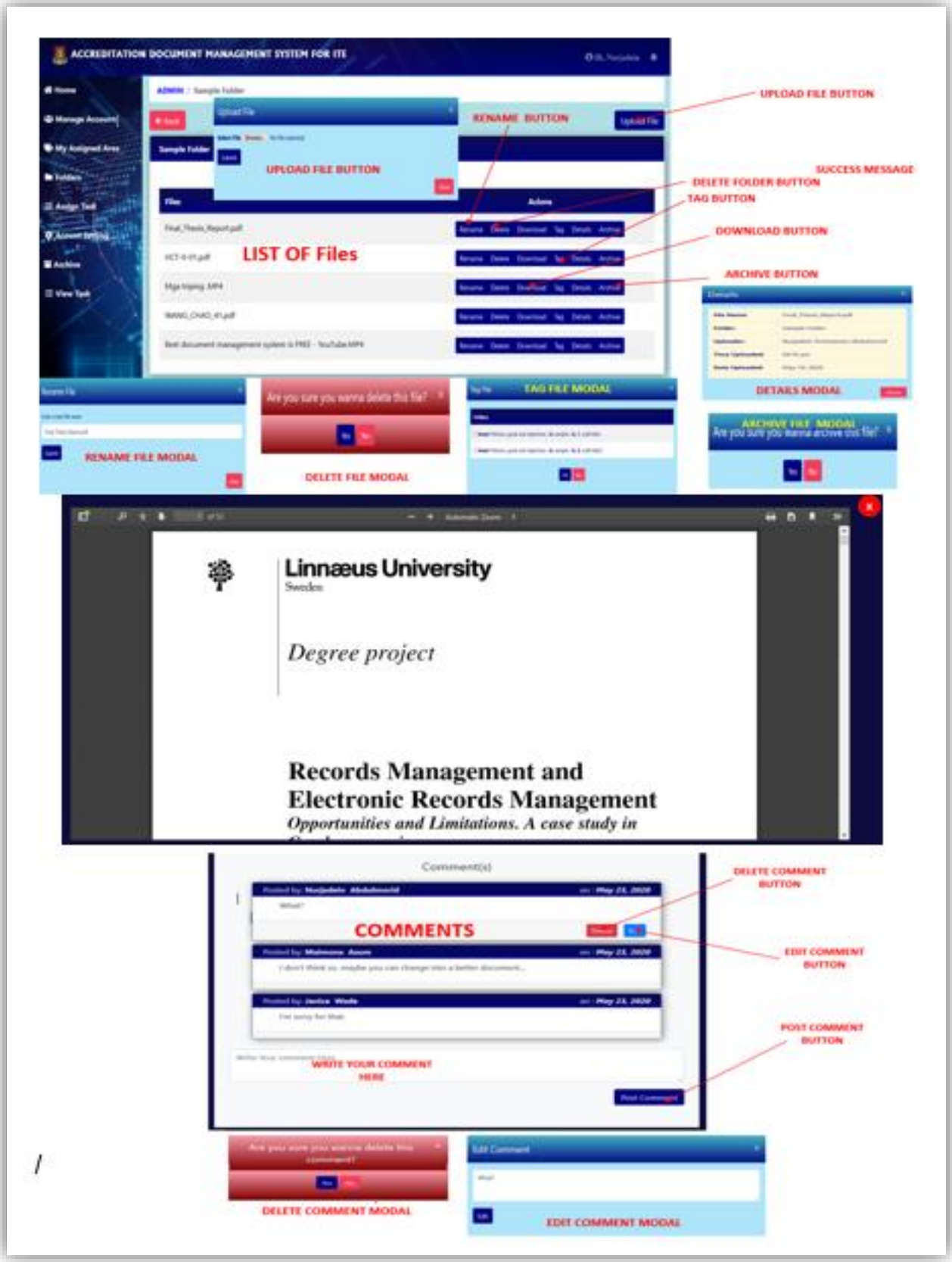


Figure 5.4.1 Inside Folder Page and View File page

Figure 5.4.1 shows what is inside of a folder as well as the viewing of files. The user can upload a file. The user can rename, delete, download, tag the files he desired to his assigned area. He can also view the details that contains some information about the file, and the Admin can archive the file. If the user clicks the file name of the file, he will view the file document as shown in the figure. This folders and file can be viewed by all activated users. And all user that can view this file can have his comment on the file as shown above. He can delete and edit his comment if he desired to. If the process will be successful, a success message will appear, otherwise, error message will appear.

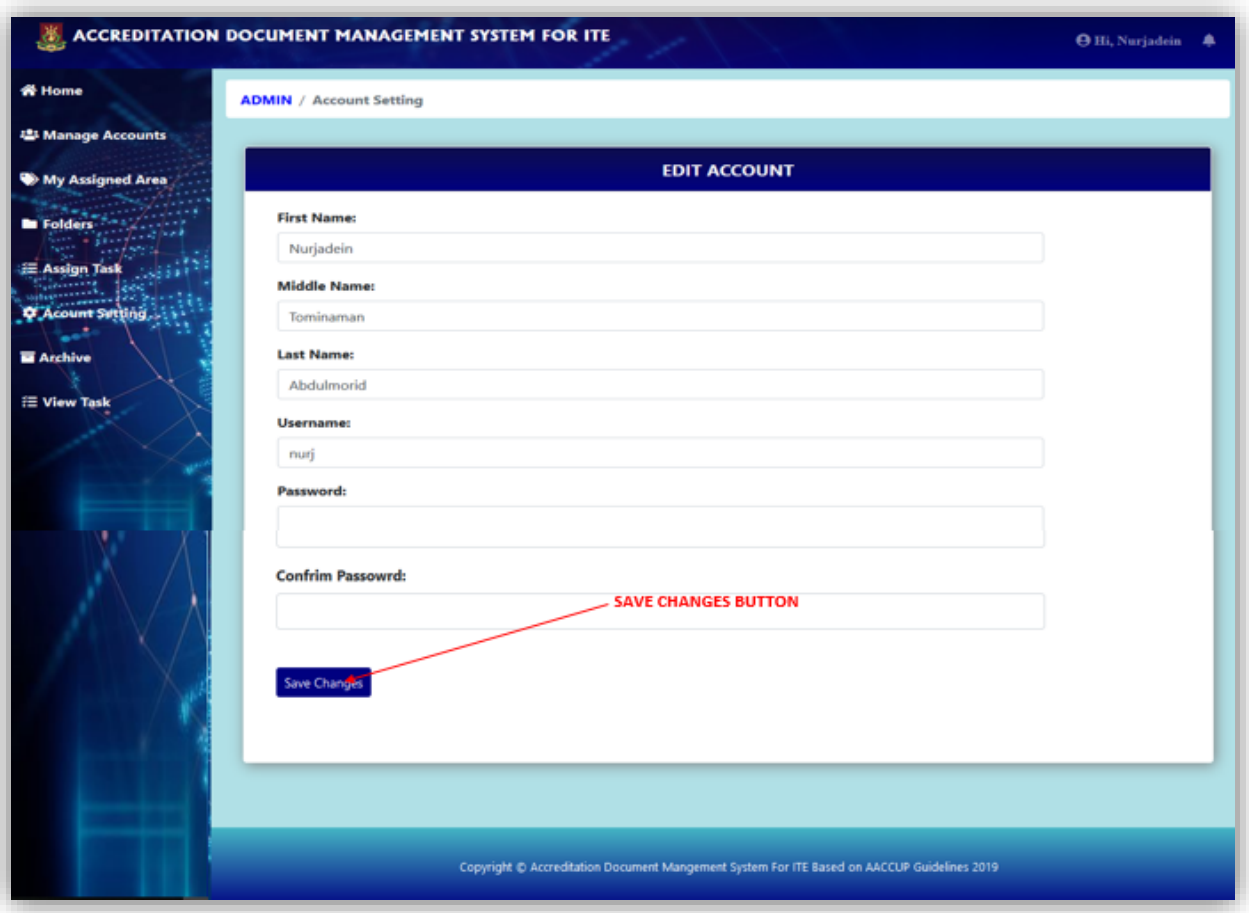


Figure 5.4.2 Account Setting Page

Figure 5.4.2 shows the account setting page of the users. He can edit his personal information here and then save it. He will be asked to enter his password twice for confirmation purpose. If the changes saved successfully, a success message will appear, otherwise, an error message will appear.

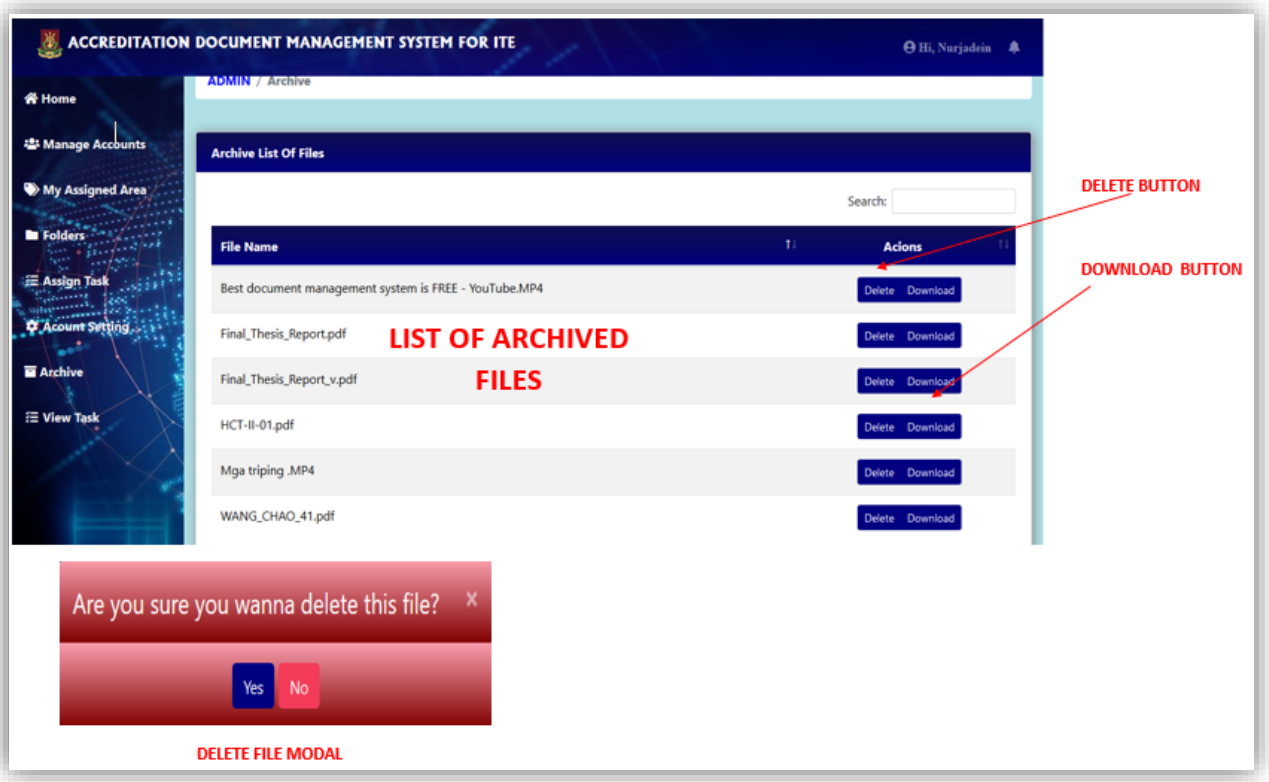


Figure 5.4.3 Archive Page

The figure above shows the archive page. This is where the archived documents go when the Admin chose to archive them. In the figure, we can see that the user can also delete the file, he can even download it. A successful deletion make a success message to appear. Otherwise, an error message appear. The user can even view the file by clicking the file name just like in other pages.

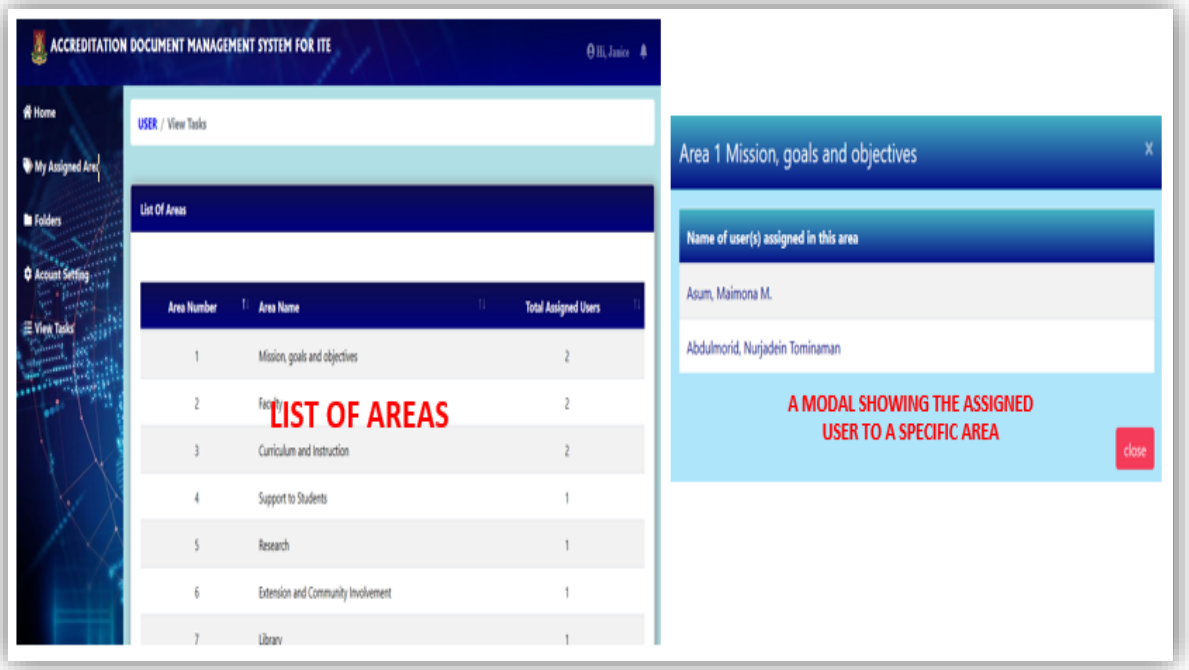


Figure 5.4.4 View Tasks Page

As shown in *Figure 5.3.4 Assign Task Page*, the Admin is the only user type that can assigned a user to a specific area. *Figure 5.4.4* is the same as *Figure 6.5* except for the sidebar and the user cannot delete the users assigned to a specific area. The user can only view the assigned users to a specific area and cannot delete or assign a user to a specific area. This page is specifically for the regular user type in other words, the faculty user type.

The following figures show the pages specifically for the Accreditors.

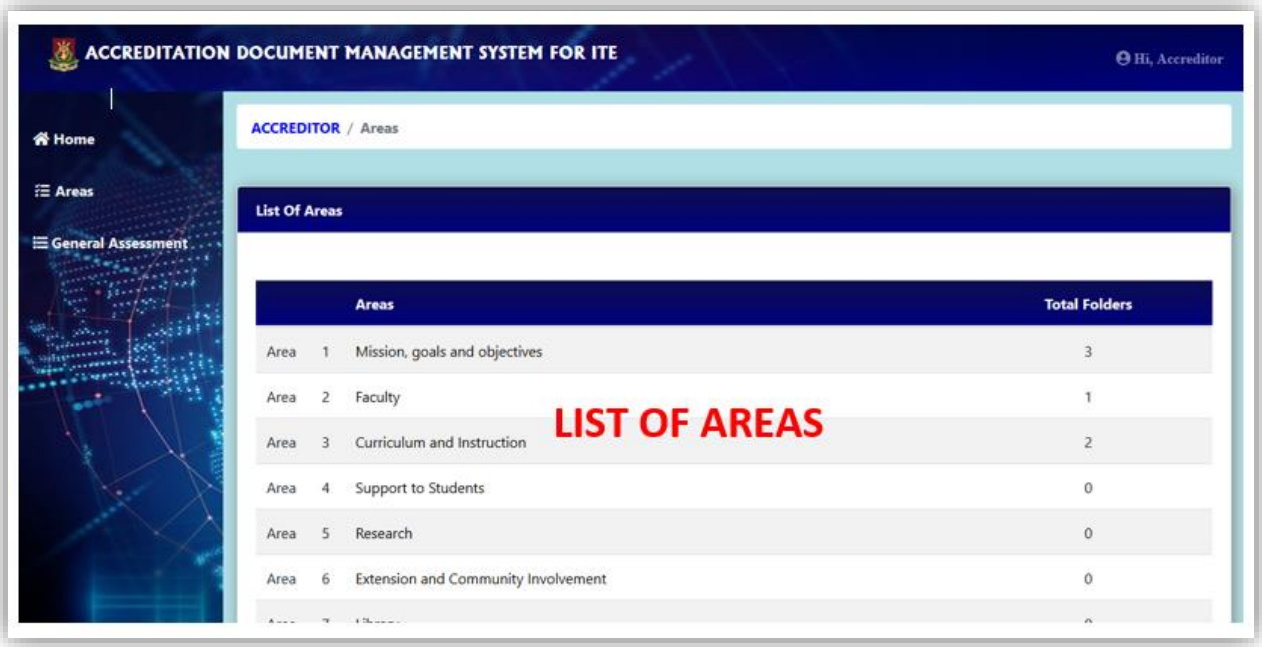


Figure 5.4.5 Areas Page

Figure 5.4.5 shows the area page. If the user clicks an area name, it will be redirected to what is inside that area.

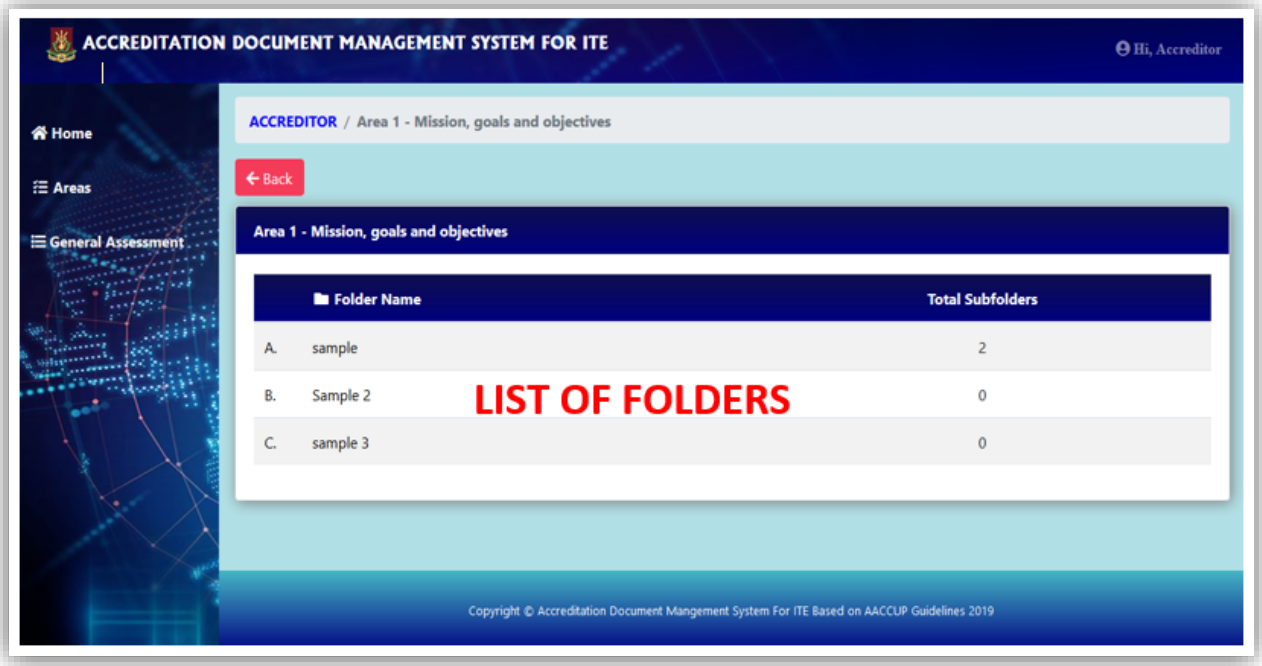


Figure 5.4.6 Folders In An Area Page

Figure 5.4.6 shows what is inside an area. It shows the folders inside an area and it is arrange according to what the user or users positioned the folders in their respective assigned areas. If the user clicks the folder name, it will be redirected to what is inside of it, that shows the subfolders of the folder selected.

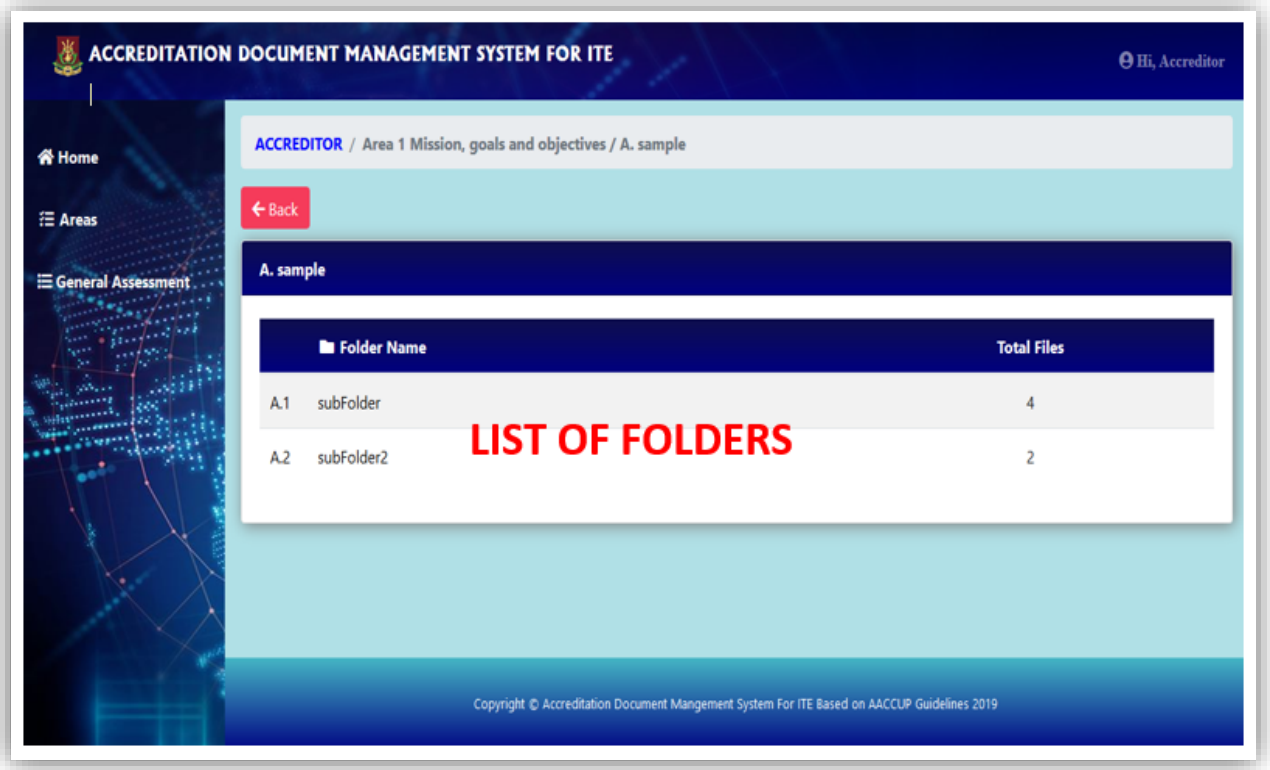


Figure 5.4.7 Subfolders In An Area Page

The figure above show what is inside a folder in an area. It is arranged according to how the user or users positioned these subfolders in their respective assigned area. If the user clicks the subfolder name it will be redirected to the page that shows the files tagged in that particular subfolder.

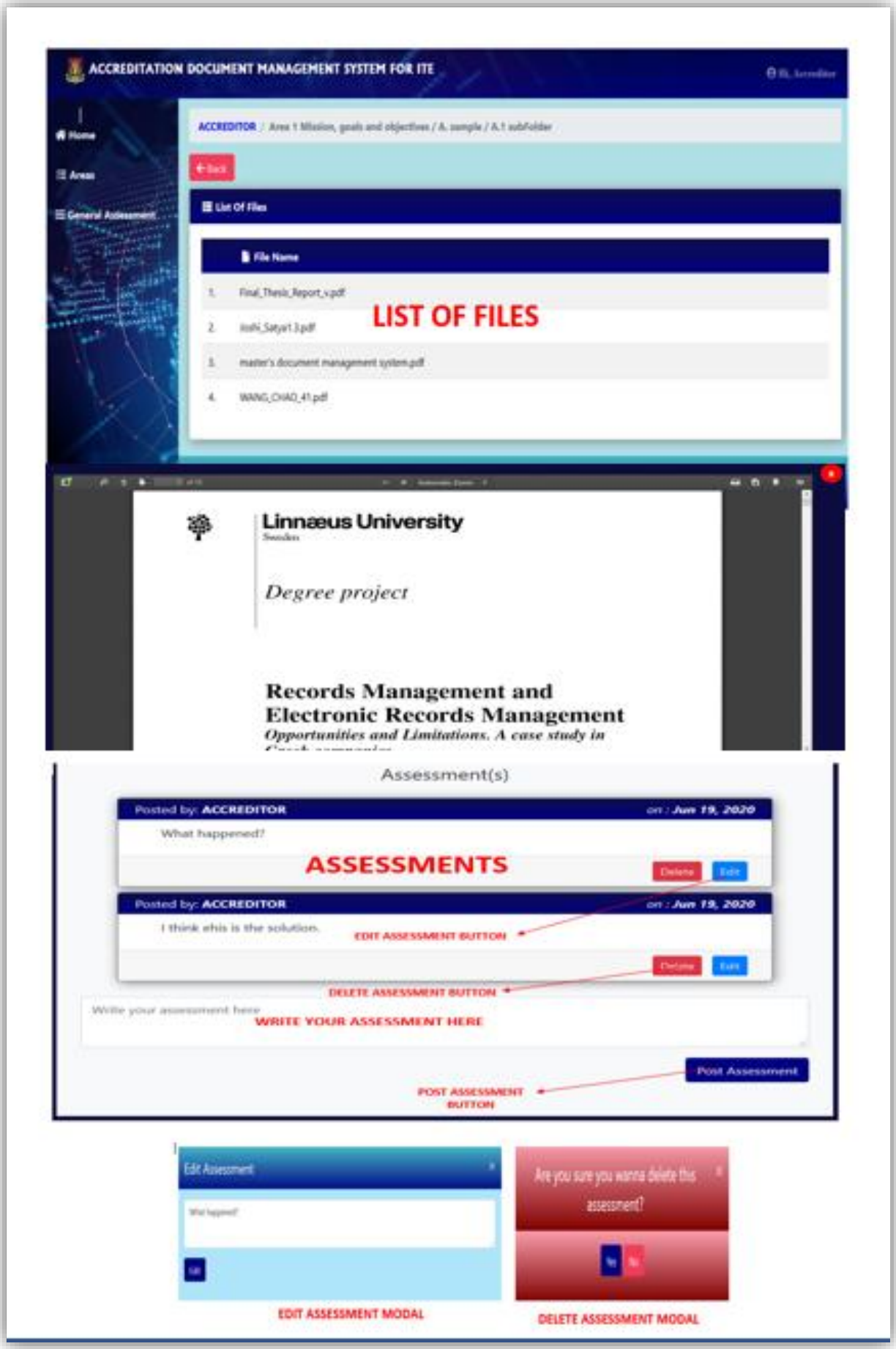


Figure 5.4.8 Inside Of a Subfolder In An Area Page

Figure 5.4.8 shows what is inside of a subfolder. It contains the list of files that area tagged in that specific subfolders. If the user, which is the Accreditor, clicks the file name, he can view the file and make an assessment to that specific file. He can delete and edit his assessment. Here, the Accreditor can write all his comment in that particular file.

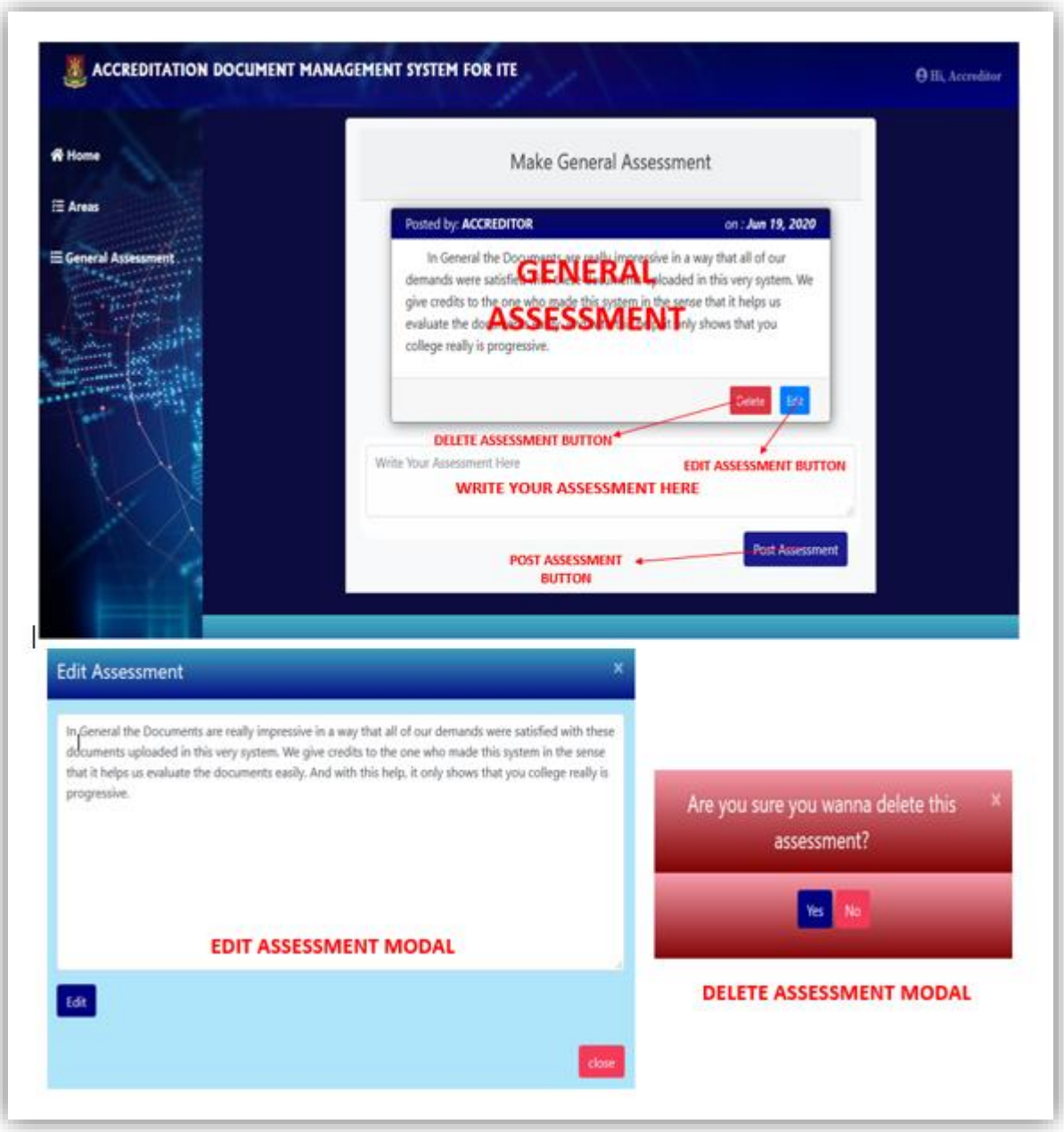


Figure 5.4.9 General Assessment Page

The last figure shows the General Assessment Page which allows the accreditor to make his overall assessment to all of the documents presented to him as well as his assessment of this system. He can edit and delete every assessment he made. And that ends the proponent's testing.

Chapter 6

Summary, Conclusion and Recommendation

6.1 Summary

The capstone project entitled "A WEB-BASED DOCUMENT MANAGEMENT SYSTEM FOR INFORMATION TECHNOLOGY EDUCATION (ITE) ACCREDITATION BASED ON AACCUP STANDARDS" aims to design and develop a Web-Based Accreditation Document Management System for ITE in MSU main campus following AACCUP standards. It is a web-based system software focuses in the design and development of the database that caters to the college accreditation document management. This is to decrease some redundancy of the documents needed in the accreditation and to decrease the time that will consume the printing of paper and filling them into a portfolio.

An interview was conducted in some of the colleges in MSU, gather their data about how they manage the accreditation documents and most, if not all, of those gathered data was used in creating this system. This project was implemented using Hypertext Preprocessor (PHP) programming language with its one of its framework, the so-called Codeigniter in its server side. As for the database side, the proponent used MySQL and he used Bootstrap framework for the client side.

6.2 Conclusion

Based on the testing made by the proponent, he can conclude that the purpose and objective of this project is fulfilled in a way that this system can be a repository of the accreditation documents and reduced the redundancy of the documents. The result of the usability testing of the four members of the CIT faculty manifests a success implementation of this capstone project.

Hence, the proponent can conclude that this system can be a help in managing accreditation documents.

6.3 Recommendation

The proponent recommends the following if, in some ways, another researcher will improve this system:

- Make the system accepts files other than pdf, mp4, png and jpg like word files and excel files.
- Make a searching of the contents of the documents in order for the users to find what they need immediately.
- Use a front end framework other than Bootstrap.
- Increase its responsiveness for convenient use

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