DOCUMENT MANAGEMENT SYSTEM WITH TRACKING AND MONITORING IN MANUEL S. ENVERGA UNIVERSITY FOUNDATION-CANDELARIA INC.

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Abstract: The document processing in the Dean's Office has been using multiple platforms to create and complete the task which affect work efficiency, convenience, and flexibility. Losing track of documents is also a crucial problem when it comes to documents sharing and processing. That's why the researchers decided to create a centralized digital workstation where the Dean's Office of Manuel S. Enverga University Foundation Candelaria Inc. can manage all the documents coming from the various departments of the school. Other departments and offices can also use the website to communicate with other offices using collaboration tools and document sharing. Sent documents will be monitored by the sender using the document tracking code generated by the system. Once the transaction or document cycle is completed, it can be archived and saved in the database for backup and future use.

All in all the system's goal is to organize and simplify the workflow inorder to maximize work efficiency. The system also aims to help departments and offices to keep in track of documents, to prevent document loss and confusion between departments. This will greatly improve the document cycle across departments and offices in Enverga Candelaria.

The research methodology that the researchers used is Agile software development approach due to the flexibility and freedom it gives not only to the researchers but also to their research locale. It improves communication and collaboration between the researchers and the target research locale during the development process. This ensures that the researchers and the target locale are on the same page when it comes to the specifications and outcome of the system. The methodology also allows the researchers to adjust and apply early and late changes with ease.

The researchers expect the system will work and function according to what is being proposed and cope with the problems and issues that the research locale has experienced.

Keywords: Document, management, system

1. Introduction

During the past years organizations and companies' Document Management System (DMS) has been evolving and they still continue to look for ways to improve their operation. In today's workplace setup, organizations have been using a combination of traditional paper and digital systems. It is an improved approach to managing and organizing documents rather than using a pure paper document system. The addition of a digital approach to the traditional paper management of organizations not only improves their way of managing documents but also improves the communication and collaboration of different departments inside the organization. But this kind of setup still has noticeable flaws and still has a lot of room for improvement especially if the organization has not been using the right digital setup to do the job.

The dean's office being the last destination for documents such as budget requests and travel forms has been receiving lots of documents coming from different departments inside the university. The office has been using a combination of digital and traditional setups to process the said documents. The problem is that the current setup is quite a mess digitally and physically. For document processing, they would keep a hard copy of the documents, then attach a barcode sticker to it and process it digitally using a variety of software applications. It requires jumping through multiple applications and skimming through papers to get the job done. Not to mention that the barcode wasn't really used to scan the file, but it was only used as a reference for the file number. The setup can be confusing and too complicated with different web pages and applications involved. This could be a major problem in the future with the growing volume of documents coming into the office. With that being said, this current setup is not the most convenient and efficient way of managing and processing documents. That is why the researchers are eager to help create an all-in-one system that would cater to all of the needs of the offices in the university when it comes to document management, in addition to that improves the communication and collaboration of different departments when it comes to document file sharing.

1.1. Background of the problem

The Dean's office as well as the other offices and departments of Enverga Candelaria are currently using a combination of traditional and digital systems to process and manage documents. Offices and departments are using traditional paper documents and they use email to send and communicate these documents to their colleagues. The

Dean's office has been using a combination of multiple software and platforms in its digital workspace.

For the Dean's office's document processing, the paper documents sent out to the office that needs the approval of the Main campus will be scanned using a scanner and will be converted digitally as a PDF. Once it is converted, the digital signature will be attached to the document together with a picture of the pre-generated barcode number. This barcode number will be used as a unique reference number for searching and checking. Right after that, the document will now be processed in the Google Form. In the Google Form, several fields are needed to be filled up including the summary of the documents, emails, office name to send the documents, and the signature documents itself. The admin will look for the emails of the author and people involved in the documents in a spreadsheet using Microsoft Excel. After filling up all the necessary fields it is now ready to be submitted. Once the submit button is clicked Google Form will automatically generate the filled-up information in the Google Sheet. Right after that, Autocrat will look out for a matching email and name in the sheet then it will send all the information and documents that have been put in through an email using Microsoft Outlook. The admin will now have to wait for the response from the main campus. Once the reply is received either it is declined or approved, the admin will have to give out copies of the documents or email to the author or sender of the document. This will be done again using Google Forms. The copies of the documents will be downloaded and renamed for saving and storing in the computer's hard drive using Windows File Explorer. The documents are sorted per folder based on the Year it is created and based on whether it is approved or declined. The saved documents will be backed up automatically to the school's NAS server.

1.2. Statement of the problem

The current system in MSEUF-CI consists of various digital and traditional systems in managing documents of the whole school. The office uses Microsoft Outlook, Google forms, Gmail, Microsoft Excel, and PDF Scanner. These applications are used to process documents that are passed to the Dean's Office and need to be submitted to the main campus for approval. Therefore having DMS-TM will help the whole process and improve the current system.

Problem Statement:
The current system in the Dean's Office has issues on tracking and monitoring the documents that are for approval in the main campus. Due to using multiple platforms to process the documents and not having a proper system that will care all the needs of the admin will affect its efficiency, performance, and service in the process. These issues include:

Multiple Applications: The method that the Dean's Office uses is traditional and the digital system causes some problems on receiving and processing documents to the main campus.
Communication Gap: Using different applications in the current systems that the admin uses don't have good communication to each application due to its difference to each other.
Document Status and Location: The admin and the creator of the document do not know the status and the location of the

document for approval due to using an incompatible system that lacks features that are needed for document processing.
Missing documents: There are several cases of missing documents while it is being approved to offices, some of them got lost or misplaced and some are being covered by other documents that also need to be approved.

Objectives of the Document Management System with Tracking and Monitoring:
The proposed DMS-TM will aid the addressed problems that the current system has. These will be solved by:

Centralized System: Centralized system will cater all the admin needed features for document processing.
All in One System: creating an all in one system that will have the needed features that are used in the currently used applications will be present, improved and more easy to use rather than using multiple applications.
Monitoring Documents: Having a Monitoring feature on the system will show the documents status if it is approved or declined by the head of the office where the documents are in.
Tracking Documents: Tracking feature will show the whole transaction of documents from the originator, passed to offices that the document must go to, until it is received by the originator of the sent document.

Benefits:
The implementation of the DMS-TM will cater to all the said problems and flaws that the current system has. The admin will use a centralized system that fits for the processing of documents across the school and to the main campus. All of the features that are being used in the current system will be improved and added some new features that will benefit the office and departments in the school.

1.3. Main Goal
The main goal of this study is to create a centralized digital workstation for the dean's office where the documents can be managed and organized with ease and convenience. The proposed system will be a one-stop website for managing and sharing documents. The system aims to make the whole process faster and efficient. In addition to that the other departments can use this website to communicate, send, track, and monitor their requests from within their department to the other office.

Specific Objectives
Improves convenience and efficiency- the goal of the study is to make the documents easier to access and manage. That way document processing will be much faster and more efficient therefore increasing the productivity of the office.
Organize and simplify the workflow- the current system is using a bunch of websites and applications making the whole process complicated and time-consuming. That is why another objective of the study is to create an organized and simplified workflow along with an interface that is easy to understand.
Safety and security of the documents- another objective of this study is to create a backup and archive of all of the documents being processed. Not only that the documents would be safe and secured from outside attacks but it would also be easier to access, backtrack and retrieve the files in case it would be needed in the future.

Improves communication and collaboration of different offices- using the system offices would be able to collaborate with the documents before sending them out to the Dean's office for checking and approval. With the help of the tracking and monitoring feature offices and departments will have a mutual understanding of the status of the documents. That way misunderstanding, missing documents and confusion will be avoided, keeping the flow of the documents smooth and at ease.

More storage space- finally, in the future the volume of documents being processed in the dean's office will continue to increase. That is why it is important to have database storage that would be able to hold a large number of files for safekeeping.

1.4. Significance

The goal of this study is to help the offices and departments in the university to improve their operation by creating a Document Management System (DMS). The following offices and departments in Enverga Candelaria are the specific beneficiary of the proposed system:

Dean's Office - The Dean's office has been the center of transactions coming from different offices and departments in Enverga Candelaria. The office is the last destination for documents coming from other departments since they are the ones responsible for the checking and verification of those said documents before they send them out to the main campus for approval. Because of that, a lot of paperwork is coming in and out of the office. Organizing and managing those documents can be hard and require a lot of effort. The system would benefit them greatly because it would become an easier and more efficient operation for them once the proposed system is implemented.

Elementary, High School, and College Department- Faculty members will benefit from the system as well. Not only will they be able to send out their requests and documents through paper and digitally to the dean's office but also they can collaborate and communicate within their own department or even with other departments. They will also be able to track and monitor the status and location of the documents.

Other offices and organizations- Offices like accounting, auditing, OSAS, laboratory, library, and student governments

will also benefit from the system. Because just like the faculty members, they also have access and share the same privileges on the system.

1.5. Scope and Limitations

The proposed system is a web-based Document Management System with Tracking and Monitoring (DMS-TM). Therefore, the system would run on any internet browser. It would be compatible and responsive in any device dimension such as computers, laptops, tablets, and smartphones. It would be accessible by the members of faculty and staff in the university. The website has an integrated database that would hold the information and document files being put on the website.

These are the major functionalities of the system:
- **Auto-generated barcode number -** the PDF document includes an auto-generated barcode for file referencing and scanning.
- **Multi-network communication and collaboration -** on the website, users from different departments and offices will be able to communicate, exchange, and send out documents to each other for whatever purpose they need it.
- **Tracking and monitoring -** the different offices and departments will be able to track and monitor the status and progress of the documents they sent out to the dean's office or within their department.
- **Document management tools such as sorting, searching, storing, and archiving -** documents will be sorted out according to their status, from pending to revisions to approved. Approved documents will be archived and saved for future use. Specific documents can also be searched quickly and easily via the barcode number.

List of Exclusion
These are some of the limitations of this project:
- It will be a website therefore it can only be accessible on the browser and not as a software application.
- Since it has multi-network communication, it would require an internet connection to operate.

2. Theoretical Framework
2.1. Concept Map
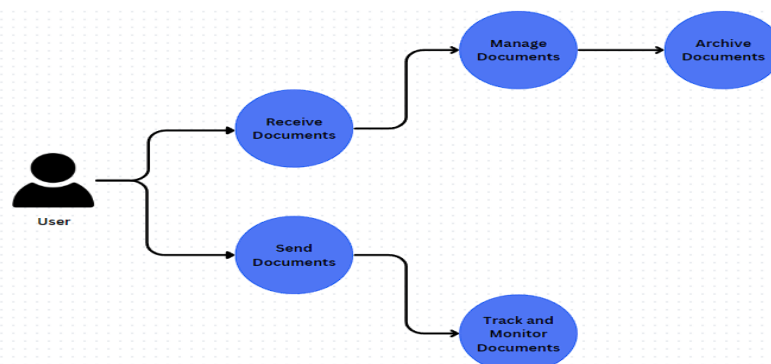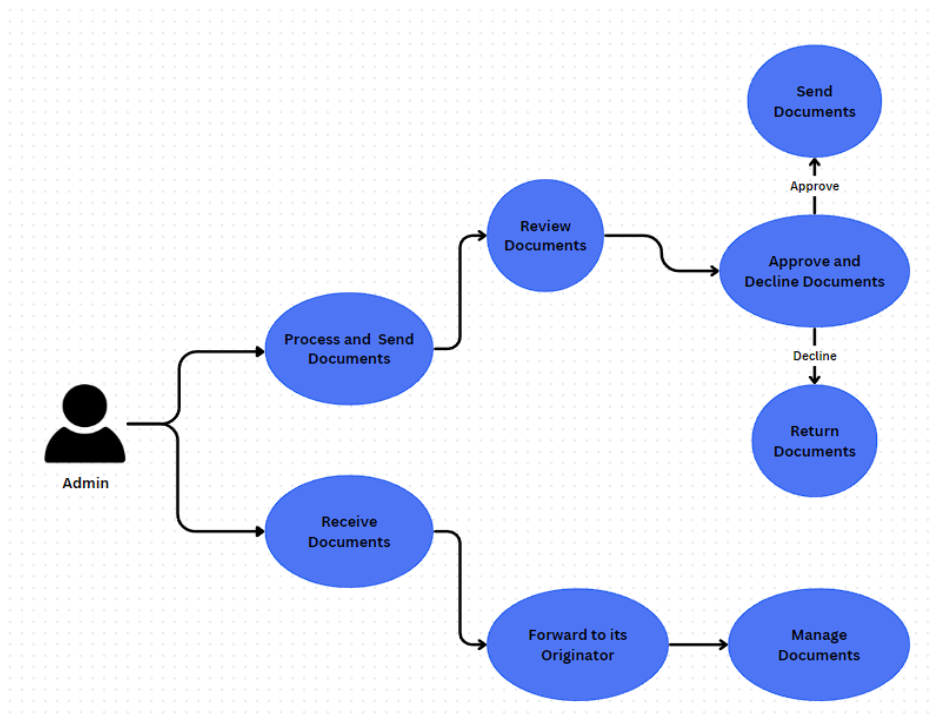**Use Case Diagram**

Figure 1.0 (User System Process)

Figure 1.0 shows the feature and functionality of the system at a user account level. User privileges include the following subsystem: receiving documents from the Dean's Office, accepting documents, track and monitor documents, and sending documents to the Dean's Office as well as to other departments.

(Figure 1.1 Admin System Process)

Figure 1,1 shows the feature and functionality of the system at a user account level. Figure 1.0 is also the continuation of figure 1.0, documents that are sent by the other offices and departments that need the approval of the main campus will be processed in the admin's interface.

Activity Diagram
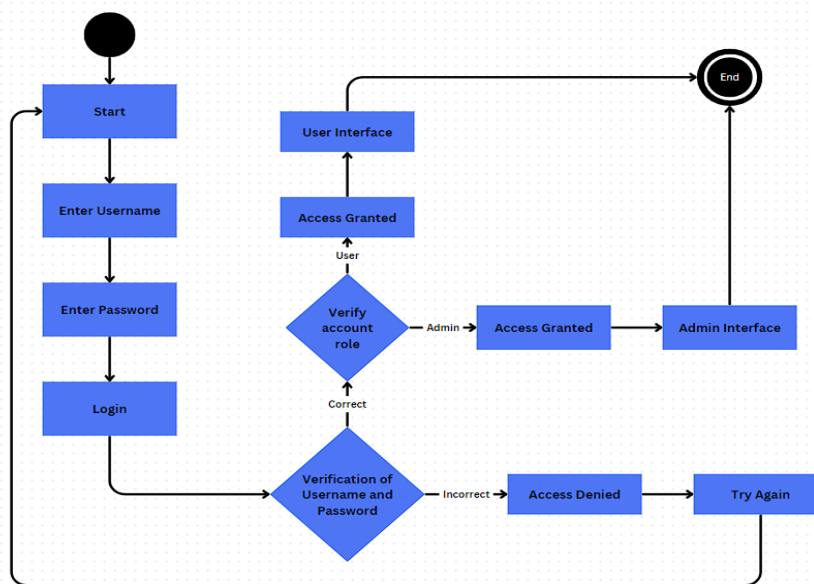
(Figure 2.0 Login for User and Admin)

Figure 2.0 shows the login flow of the system. There will be two types of accounts, Admin and User accounts. Each account type has different privileges and purposes, that's why there will be two different landing pages and interfaces depending on the account type.

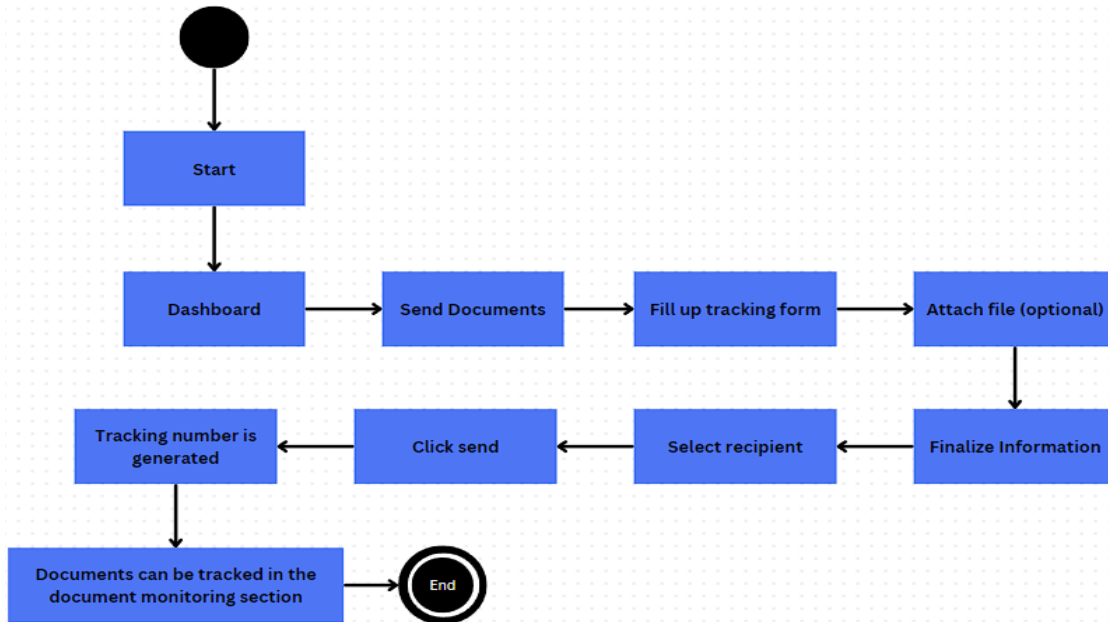**Employees Side- Departments, Offices, and Organizations**

Figure 2.1 (Sending documents to other office/department)

Figure 2.1 shows the flow of the program when documents are being sent to its recipient. This will be the point of view of the employees of the school during the process of sending.

All documents being sent to the Dean's office and other departments. During this process, documents are subject for approval to the Main Campus.
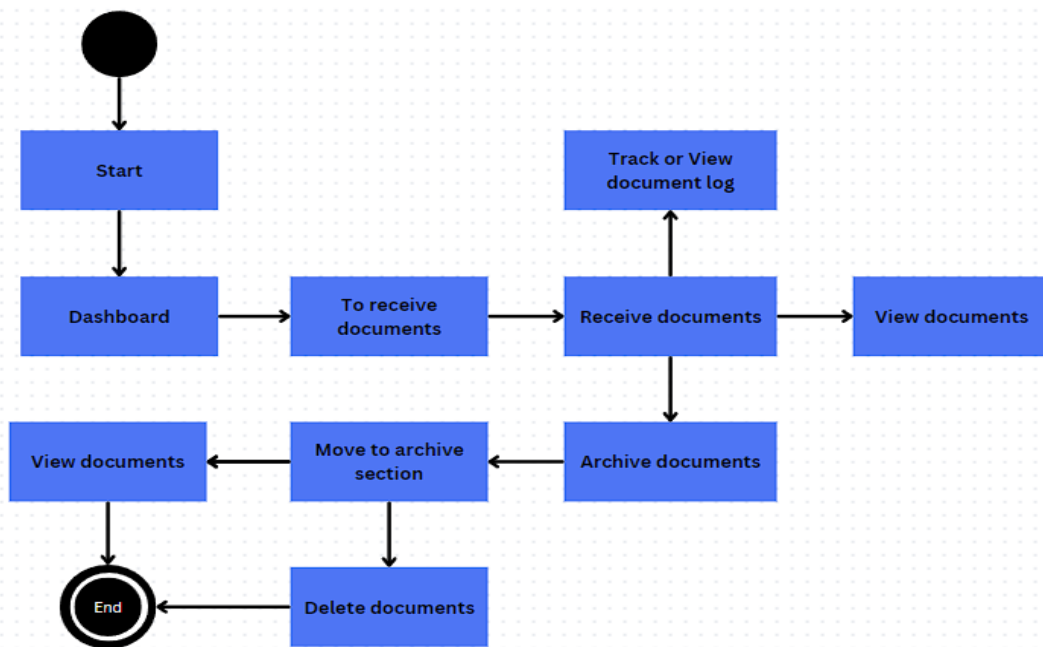

Figure 2.2 (Receive documents)

Figure 2.2 shows the flow of the program where the documents are being received by the employees. The document that the employee will receive in this process is a

response to the document they sent in Figure 2.1 The receiving document is either subject to revision, approved, or declined.
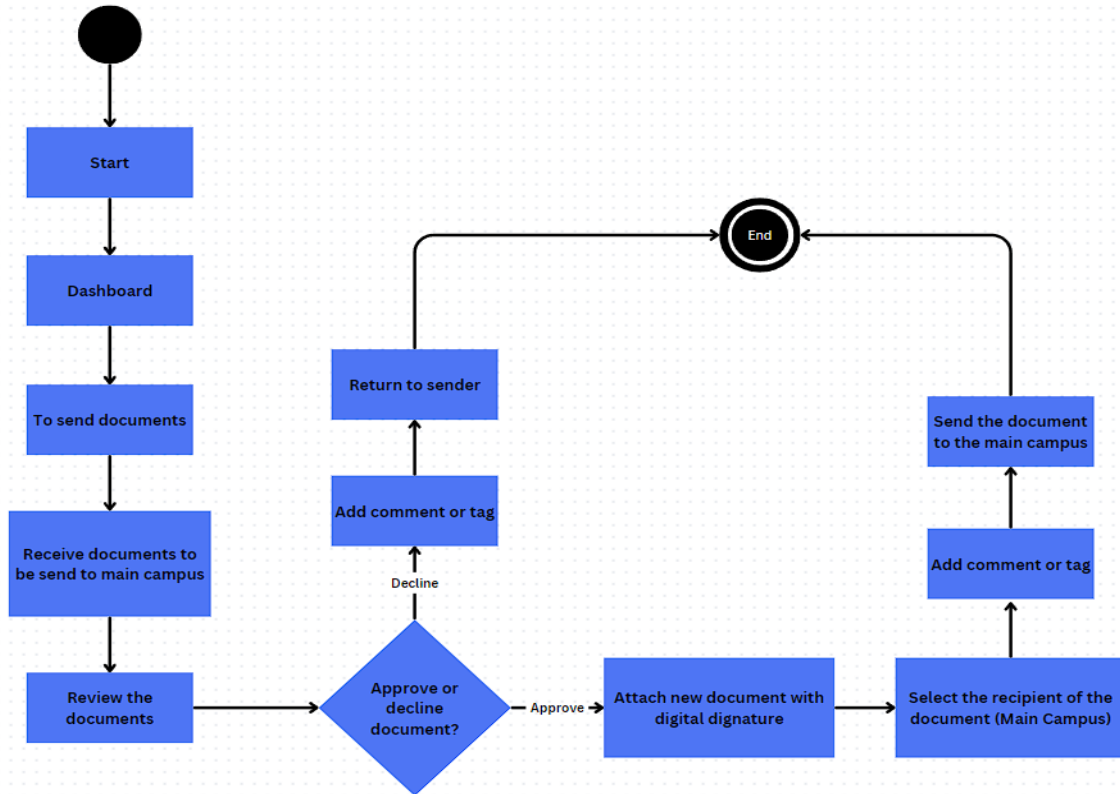
Admin Side-Dean's Office

Figure 2.3 (Processing and sending of documents subject to approval on the main campus)

Figure 2.3 shows the flow of the program where the admin from the Dean's office processes and sends out documents to the main campus. The documents being processed here are the documents sent out by the employees in Figure 2.1
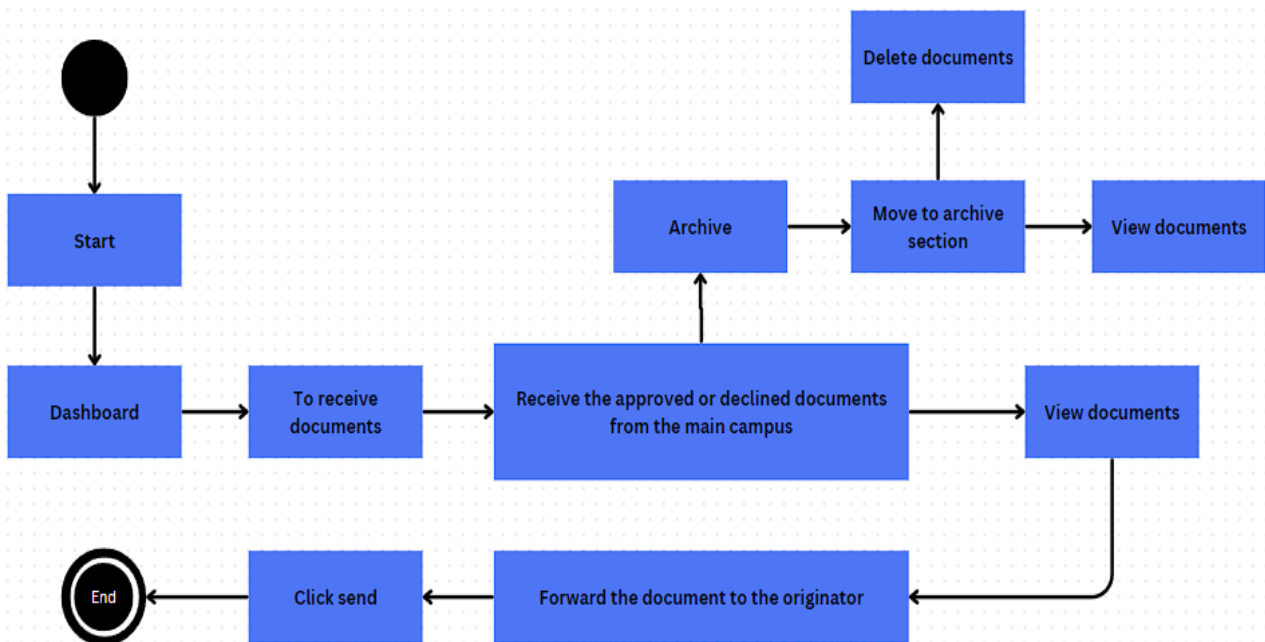

Figure 2.4 (Receiving documents from the main campus)

Figure 2.4 shows the flow of the program where the admin from the Dean's office receives documents from the main campus. The documents here are forwarded to the originator of the document which is the sender of the document in Figure 2.1 The document will be received by the originator in Figure *2.2*
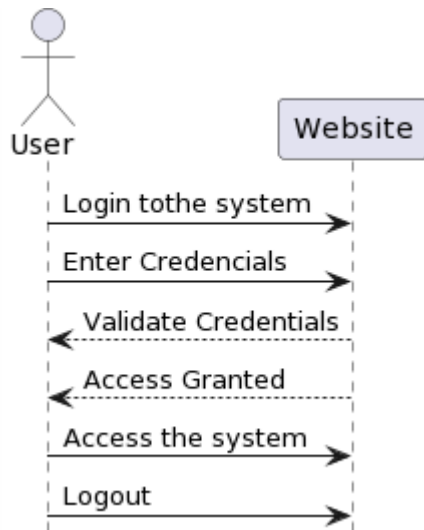
System Sequence Diagram

Figure 3.0 (Login)

Figure 3.0 shows how the user (Admin and Employee accounts) will interact with the login interface of the system. This figure shows the process of the login form. Users will log in to the system and enter their account credentials. The system will validate the credentials in the database. If the username and password are correct, the system will then proceed to check the account level of the system. Admin level accounts will proceed to the Admin's interface and the Employee level account will proceed to the Employee's interface.

Employees Side- Departments, Offices, and Organizations

Figure 3.1 (Sending documents to the Dean's Office)

Figure 3.1 shows the flow of the subsystem in the Employee's interface where employees send documents to the Dean's Office. The subsystem consists of steps of sending documents. First, when the employee selects the send document button the system will display the different forms. After the employee chooses the documents the system will show the tracking form to be filled up by the employee. The next step is to attach the file and then the system will display the document to check if there is any misspelled or missing information. The employee will then attach the signature after verifying the document. After the employee prepares the file, the employee can now proceed to finalize the document and send it to the recipient. Finally, after sending the document successfully, it can be tracked using the generated tracking number.
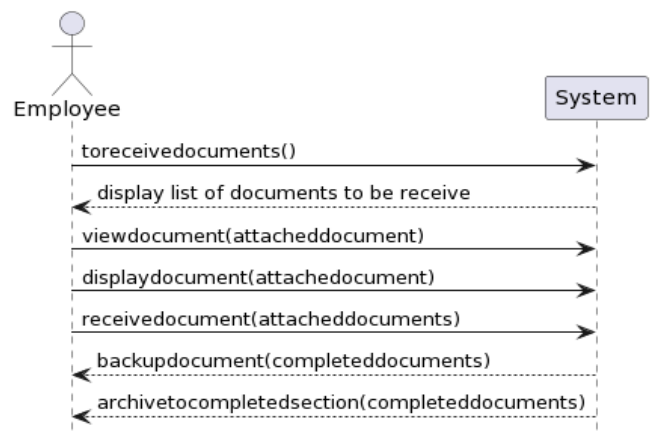

Figure 3.2(Receive documents)

Figure 3.2 shows the process of receiving documents and storing documents in the archive of the system. The receiving documents interface will display all of the documents that are ready to be received by the employee. Once the documents are received by the employee, the documents will be automatically archived and backed up.
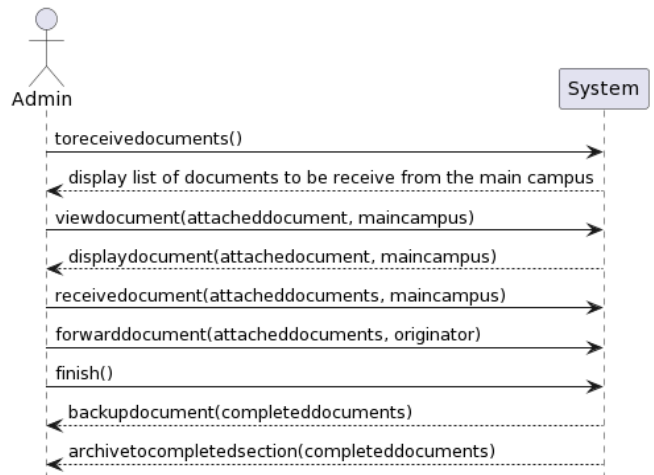
Admin Side-Dean's Office

Figure 3.3 (Receiving documents from the main campus)

Figure 3.3 shows the process of receiving documents coming from the main campus. The subsystem consists of receiving documents, showing the list of received documents from the main campus, forwarding the documents to their originator,

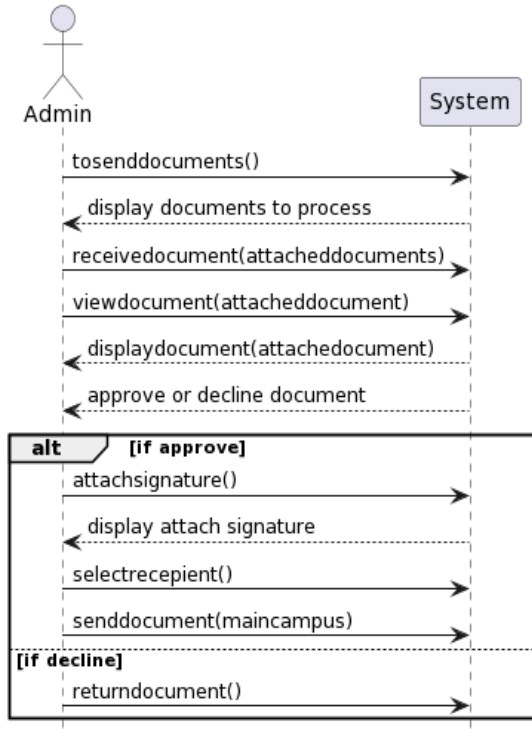and storing the documents in the archive of the system or backup.

Figure 3.4 (Processing and sending of documents subject to approval in the main campus)

Figure 3.4 shows the process of sending documents that are subject to approval to the main campus. The subsystem consists of processing the documents that came from Departments of the school, reviewing the documents in the Dean's Office and if the document is approved by the Admin and the Dean of Studies, the Admin will attach the signature of the Dean of Studies to the document and will be sent to the main campus. If the document is declined by the Dean of Studies, the document will return to its originator.

2.2. Review of Related Literature
Introduction

Document Management Systems (DMS) are designed to be used by organizations and companies to make it easier to manage and process documents in their business operations. It can be paper documents or digital documents but most of the time it refers to the use of digital documents. To better understand the concept of DMS we should know the definition, purpose, origin, trends, and other concepts surrounding DMS.

Title: *Main Concepts of the Document Management System required for its Implementation in Enterprises [1]*

This article defines and refers to electronic Document Management Systems (DMS) as a technology and discipline that expands the capability of a computer's file system. It defines document management as a process of locating, updating, sorting, and sharing data whose purpose is to accomplish a business process. It also states the importance of having a centralized data-sharing platform that allows organizations to have access to information securely.

Title: Document Management System – A Way to Digital Transformation [2]

According to the article digitizing the business operation or process of a company is a must to remain competitive. This will allow their process to be faster and more efficient. The article also presented data showing how high the growing rate of DMS implementation all over the world is, specifically in the Asia-Pacific region which has the highest growth rate. This data alone proves how important and useful the implementation of DMS is in business operations/processes.

Title: *Towards a Bespoke Document Tracking System for Philippine Higher Educational Institutions [3]*

The concept of document tracking has been described and explained in this article. It says that the document tracking system is used to pinpoint where the document is and to know its status. It is used to monitor the movement of the document through the concept of the document lifecycle. The various stages of the document life cycle are creation, active use, inactive use, and then either it will be destroyed or it will be used again coming from the archive.

Titl*e: Paperless Office: A New Proposal for Organizations [4]*

This article simply shows the benefit of using a paperless system in the office. According to the study, a paperless system has a lot of advantages not just for the organization but also for the user/client. The paperless system increases productivity, efficiency, service time, and convenience. A paperless system is also easier to access and organize compared to a physical file system. This kind of system also decreases the waste produced by having a paper file system. These said benefits are very similar to the goal of the researchers when they come up with the concept of creating a document management system. The proposed system may not be a pure paperless system but it aims to use less paper by also allowing documents to be processed purely in a digital format.

2.3 Review of Related Researches and Studies
Titl*e: Electronic Document Management System for St. Mary's University [5]*
Abstract

According to the study, since most organizations manually manage their documents it has been the root of a lot of organizational problems. Problems such as document loss, insufficient storage, inconvenience, and time-consuming. The study stated that the implementation of a Document Management System (DMS) is essential to solve these problems. The goal of the project is to create an electronic DMS system for St. Mary's University. It should be secure, structured properly, and should meet the requirements of the school and its needs. Technologies used in this project are the following: A PHP framework called Laravel is utilized to create the web application. This framework combines HTML, CSS, JavaScript, and PHP and employs the MVC design paradigm. In addition, MySQL is employed for database management.

Findings

The study found that the transition from manual document management to an Electronic Document Management System (EDMS) helped reduce the cost of the school as well as increased its document security and lessened errors. The study also stated that the project benefits the University and its employees in terms of efficiency and productivity.

Recommendation

The study recommends the following feature to be added to the project in future works:
1. Mobile-based document management system integrated with Mobile Cloud Computing
2. Multi-lingual support
3. Integrate thesis and project portal system
4. Integrate Office 365

Title*: Influence of Automation of Document Management System at the Kenya Institute of Education [6]*
Abstract

Information and data in this study about the automation of document management systems apply to organizational setup as well as archival institutions. The study also applies to office admins who manage the process of transferring documents from office to office. The purpose of the study is to explore the advantages that the automation of administrative records, accession documentation, and finding aids brings to the process of document management. The study also tackles how numerous tasks, such as business systems analysis, planning, cost-benefit analysis, and examination of automation choices before selection, implementation, and evaluation of computer technology, are essential to effective automation. Instead of just automating current processes, the study focuses on finding the optimum technological solution to achieve documents, records, and archives management objectives.

Findings

The study found that the majority of the respondents recognize the significant effect of the implementation of the Document Management System (DMS) currently in use in terms of performance. Additionally, they believed that the current DMS helped them effectively perform their duties and obligations. Based on the response of the respondents, the majority of them chose technological advances over efficiency and cost as the primary criteria for choosing a DMS. The majority of them also agreed that the DMS should be implemented systematically and not immediately. They also stated that the DMS reduced the cost of operation of their organization.

Conclusion

The study's findings make it abundantly evident that the Kenya Institute's existing DMS, selection criteria, deployment of the system, and cost-benefit all contribute significantly to its automation.

Recommendation

The study recommends that to stay relevant in the business, the institute needs to upgrade its DMS. A document management system's automation improves productivity and work output inside the organization. Also in today's world,

technological advancement should be welcomed by the institute.

Title*: Electronic Document Management System for Higher Education Institution [7]*
Abstract

Based on the QMS of ISO 9001, the study examined the existing document management issues in higher education institutions. There have been problems in terms of tracking inconsistency, storing, and transferring documents. The purpose of the study is to introduce an Electronic Management System to solve the problems encountered. The Spiral Model and the In-House Development Program were two of the methodologies used in the study. The three colleges of Capitol University—Computer Studies, Business Administration, and Criminology—completed and tested the EDMS. This was evaluated by the deans and secretaries as well. The study found that the quality, time, and cost of the EDMS are all acceptable.

Conclusion

The study found that the Electronic Management System is beneficial, practical, and useful for the offices of Capitol University. The researcher has discovered that further research and testing on the use of EDMS should be done in a year to improve it further. But despite the problems still needing to be addressed, the EDMS has demonstrated a spectacular shift in any categories or test variables during the experimentation.

Recommendation

In the case of Capitol University, the study recommends that the Electronic Management System should be implemented in all colleges. An online EDMS upgrade is advised for a centralized and effective method of tracking and monitoring the papers. The study also recommends expanding and including more document materials to be processed by the system and not just limited to academic documents.

Title*: Design and Implementation of an Improved Electronic Document Management System(ENCODOC) [8]*
Abstract

The purpose of the study is to design and implement an improved Electronic Management System for Oyo State Housing Corporation. Security and storage management is the focus of this study to solve problems that Nigerian organizations face. Problems involving embezzlement, fraud, misappropriation, and mishandling of documents. The system used Waterfall software design as their software engineering methodology and threeAtier for the design's architecture. Other technologies used during development are PHP, HTML, CSS, Javascript, and Jquery. MySql is used for database management. For the encryption and decryption of the documents, the PHP AES encryption algorithm is used. The system is evaluated within 2 weeks after the implementation. The evaluation shows the benefits of the system on the works of the organization in terms of convenience, security, and efficiency.

Conclusion

The study focuses on the practices of creating a usable, maintainable, and secure document management

system. The study shows that a well-designed usability evaluation is important to pinpoint usability problems and improve the software's usability. The improved Electronic Management System showed a lot of advantages such as fast retrieval, space management, and longtime storage assurance. With these benefits, it is safe to say that the improved Electronic Management System gives an advantage to the work of the users and organizations.

Recommendation

The study highly recommends the use of Encodoc in organizations to embrace technological advancement and to properly manage large volumes of documents. This system benefits the users and organizations greatly.

2.4 Review of Related System/Software Products
Software name*: DocPro - Document Management Solution*
[9]

A solution that facilitates the digital management of documents, developed by Chrome Infosoft Solutions Pvt. Ltd. It is a framework that facilitates the management of sophisticated reports used to monitor, track, and store archives. Using DocPro DMS on the company intranet or the cloud, it can monitor and keep track of all documents in one place. The software is available on Windows and SaaS platforms.

Features:
- **Collaboration Tools**
- **Compliance Tracking**
- **Document Archiving**
- **Document Assembly**
- **Document Indexing**
- **Document Retention**
- **Electronic Signature**
- **File Recovery**
- **File Type Conversion**
- **Offline Access**
- **Optical Character Recognition**
- **Version Control**

Functionality:
- Document Scanning
- Document Hierarchy
- Versioning
- Meta-data Management
- Security
- Search and Retrieval
- Document Viewer
- Audit Logs
- Document Reviews and Approval
- Collaboration

Software name*: DocPro - Document Management Solution*
[10]

OpenDocMan is a PHP-based open-source Document Management System (DMS) that runs on any popular web server. The databases used are MySQL 5.7+ and MariaDB 10.0+. Runs on all modern operating systems such as Linux, Unix, Mac Os, and Windows.

Features:
- Unlimited File Type

- Metadata fields for each file
- Revision history
- The automated document review process
- The automated file expiration process
- Advance Searching
- Secure URL feature to obfuscate URL parameters
- Fine-grained user access control for each file
- Multiple Language Support

Functionality:
- Upload files using the web browser
- Control access to files based on department or individual user permissions
- Assign a department/category to each file
- Track revisions of documents
- Option to send new and updated files through a review process
- Set up a reviewal process for all new files
- The reviewer can approve or reject a new document or a changed document

2.5. Research Paradigm/Conceptual Framework

The conceptual framework illustrates the process to map out the objectives of the proposed study. The framework below is divided into 4 sections, namely the problems, root cause, solution, and impacts. The problems section is composed of the major problems that the current system has. The root cause section is the reasons why the problem exists. The solution section, on the other hand, consists of the solutions to the problem. Lastly, the impact section consists of the effects or results if the solutions presented in the solution section are executed.
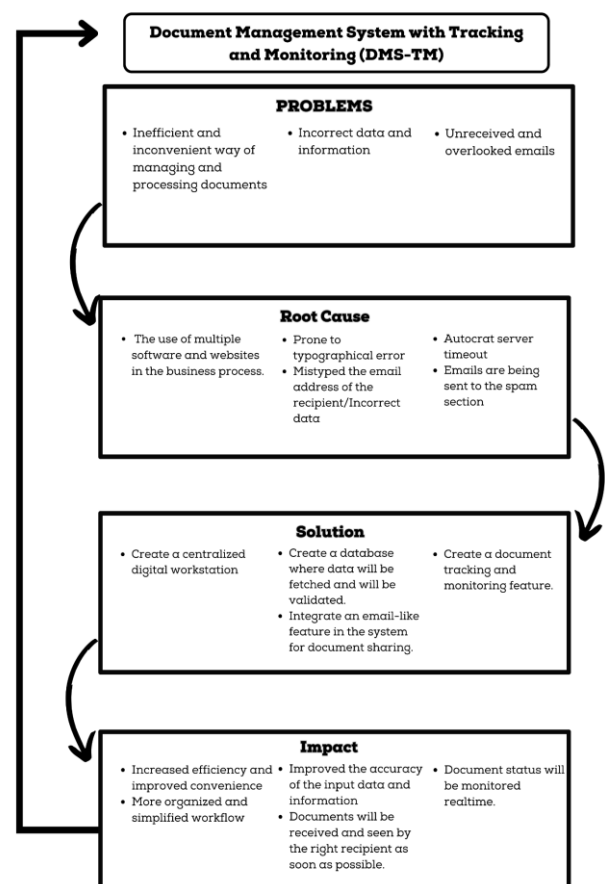
2.6. Definition of terms

- **DMS -** is the use of a computer system and software to store, manage and track electronic documents and electronic images of paper-based information captured through the use of a document scanner.
- **Centralization -** It means having control on multiple activities in a single authority.
- **Interface -** The layer of elements that allows the user to interact, such as buttons, textboxes, images, navigation menus, other interactable elements in a system.
- **Backtrack -** it means, the documents can be used and searched again that are stored to the archive in a very long time.
- **Framework -** is a platform that provides a foundation for developing software applications.
- **Methodology -** is the specific procedures or techniques used to identify, select, process, and analyze information about a topic.
- **PHP -** php is a programming language that is used in developing the DMS-TM, it is used as the backend programming language that functions all the features of the website.

- **HTML -** is the set of markup symbols or codes inserted into a file intended for display on the Internet
- **CSS -** css is used in the interface of the website, it is used on the whole design of the website.
- **JavaScript -** is a scripting language that enables you to create dynamically updating content, control multimedia, animate images, and pretty much everything else.
- **IDE -** a software application that helps programmers develop software code efficiently.

2.7. Acronyms

MSEUF - CI: Manuel S. Enverga University Foundation Candelaria Inc
DMS - TM: Document Management System with Tracking and Monitoring.
DMS: Document Management System
OSAS: Office of Student Affairs and Services
IDE: Integrated Development Environment
HTML: HyperText Markup Language
CSS: Cascading Style Sheet
PHP: Hypertext Preprocessor
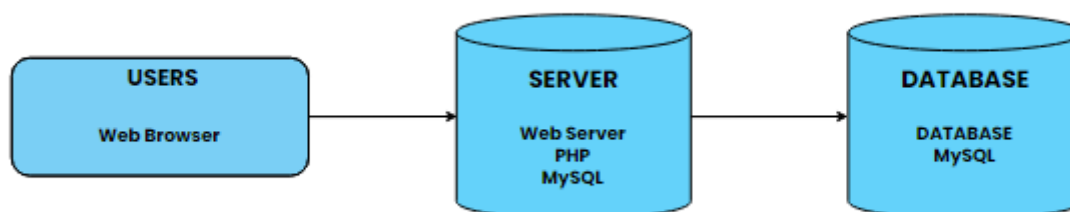
3. Operational Framework

Figure 4.0 (DMS-TM Deployment Plant)

The Document Management System with Tracking and Monitoring (DMS-TM) will be implemented mainly in the Dean's Office of Enverga Candelaria as well as in other departments, offices, and organizations. The DMS-TM is a web-based system that will run in most internet browsers available. Information and data will be stored in the MySQL database. Phpmyadmin will handle SQL queries to fetch data from the database.

3.1. Materials

3.1.1. Software Requirements

To create the proposed system, the researchers will use Visual Studio Code as their IDE. This programming application has all the capabilities that the researcher needs in web design. PHP, JavaScript, CSS, frameworks, and HTML are compatible with this IDE. Visual Studio Code is capable of both front-end and back-end web programming.

One major functionality that Visual Studio Code has are extensions. This extension will help the researchers develop the system easier and faster. Some extensions will allow you to edit your codes live, it will be useful for the researchers when it comes to front-end development because this allows them to see the changes in the system in real time. Other useful extensions allow shortcuts and code suggestions,

it automatically completes and corrects a line of code which makes it easier to program using this IDE. There are way more useful extensions that the researchers will use during the development of the website.

3.1.2. Hardware Requirements

- **Workstation:** The workstation will be the computer of each office and department that will be part of the process of documents of the school.
- **Barcode Scanner:** The purpose of barcode scanner is for scanning of the document slip that will be printed out by the departments to easily search the documents that they sent, specially for those who use printed documents.
- **Storage:** The Storage is for storing the documents that the offices and departments created and received on their workstations.
- **Server:** The server will be the backup storage file of the approved documents in case there is an emergency happening in the school.
- **Network:** The Document Management System with Tracking and Monitoring is a web based platform

that's why the network is very needed to operate the web based system.

4. Description of Methods or Approach
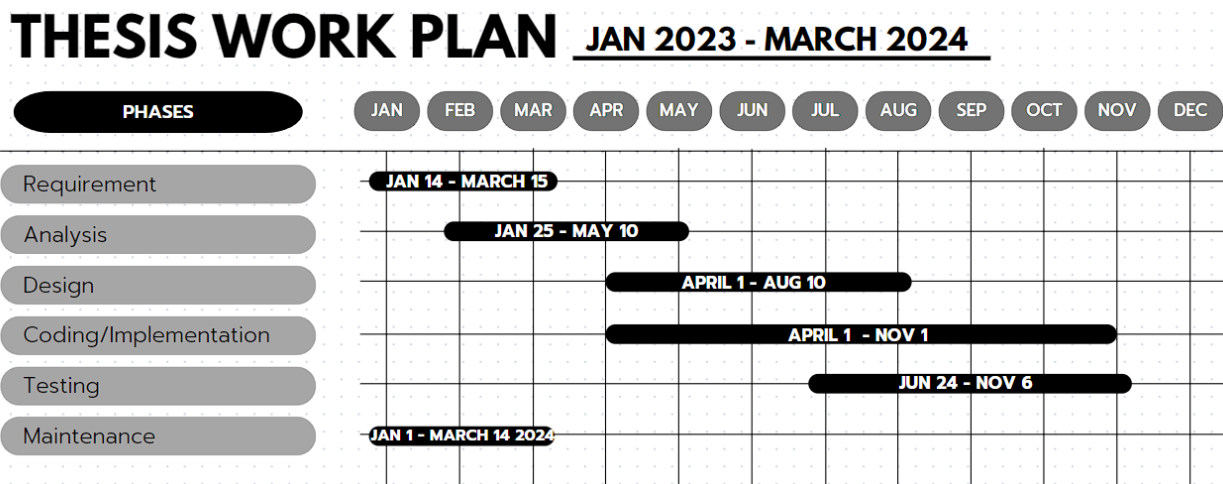## 4.1. Methodology/ Architecture/ Fundamental Algorithm/ Mathematical Models or Formula
Methodology

The software engineering methodology to be used is the Agile software development approach. The researchers will use this methodology because of its flexibility and the freedom it gives not just to the researchers but also to their research locale. This methodology can easily adapt to constant changes in requirements or other circumstances. This will allow the researchers to constantly adjust and apply early or even late changes without having a problem. It is important to cater to these adjustments because the researchers must constantly consult and ask for feedback and recommendations to their research locale through face-to-face communication. The involvement and interaction with the research locale are important to make sure their requirements and specifications will be met and accomplished. Another reason why the researchers used this method is that this method would only require limited planning to start the project. The researchers are favored in this approach since they are more used to the execution and development phase of the project rather than the planning phase of the project. The phases of the Agile software development are the following:

1. **Requirements gathering**- the goal in this phase is to gather information in the research locale regarding the feasibility of the project and the specifications they need for the project.

2. **Design the requirements**- the goal in this phase is to design the flow and process of the system with the help of the research locale.

3. **Construction/Iteration**- during this phase the development of the system happens. Changes and improvements will also happen during this phase.

4. **Testing/Quality Assurance**- the goal in this phase is to look for bugs, and errors and make sure the software meets the requirements of the research locale.

5. **Deployment-** during this phase, a working and fully functional system will be deployed in the research locale.

6. **Feedback-** the last phase is to gain feedback from the research locale based on their experience using the system. After gathering feedback, the researchers will work with that feedback.

4.2. CS Thesis Work plan

THESIS WORK PLAN JAN 2023 - MARCH 2024

PHASES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Requirement	JAN 14 – MARCH 15											
Analysis		JAN 25 – MAY 10										
Design				APRIL 1 – AUG 10								
Coding/Implementation				APRIL 1 – NOV 1								
Testing						JUN 24 – NOV 6						
Maintenance	JAN 1 – MARCH 14 2024											

5. Ethics Consideration

The researchers will prioritize ethical considerations in the research locale. The researchers will ensure the safety of information and privacy of the individual that will participate in this study. Before conducting any data gathering with the participants involved in the study, the researchers must have the full permission of the said participants. The researchers and the participant must come up with a written agreement stating the scope and limitations of their participation in the study. This agreement must guarantee that every data or information gathered must remain confidential and should be treated with utmost care to protect the privacy of the participants involved.

6. Conclusions

The results of the developed website were a great success and met the users requirements and goals of the study. The website is a combination of PHP, HTML, CSS and JavaScript programming language with Visual Studio Code as the IDE. For data storing and management, MYSQL is used as the website's database.

- The website that has been developed became a centralized digital workstation for the Dean's Office when managing and processing documents.

- The website also allowed departments and offices of Manuel S. Enverga University Foundation Candelaria Inc to track and monitor documents. This will help avoid losing documents and confusion

across offices and departments because of document mix-up.

- The website increases the efficiency and convenience of the work process as expected due to the system's flow becoming much simpler and easier to understand.

- The website has an option to send documents that are either purely digital or traditional paperwork, this lessens the use of paper documents thus saving resources.

- Processed documents will be saved and archived for future referencing.

7. Recommendations

Upon evaluation and testing of the system, the researchers have found some areas that would need improvements for a better use in the future. The following are the recommendations for future studies similar to the system.

1. Since one of the goals is to centralize the digital workstation at the Dean's Office, the researchers recommend integrating or embedding a pdf viewer that can insert signatures directly in the website instead of using a third party application.
2. The researchers recommend adding document tracking and monitoring for document requests inside or outside the school. This will be helpful for students requesting school documents that would sometimes take days to process.
3. The researchers recommend creating a reminder or notification reminding users about pending documents that haven't been processed after a couple of days.
4. The user interface of the system could use a little bit of tweaking and improvements.

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