Eastern Visayas State University – Ormoc Campus Theses/Capstone Project Manuscript Archiving System

A Capstone Project Proposal
Presented to the
Faculty of Bachelor of Science in Information Technology
Computer Studies Department
Eastern Visayas State University – Ormoc City Campus

In Partial Fulfillment
of the Requirements for the Degree of
Bachelor of Science in Information Technology

By:
Barnaba, Emmanuel O., Jr.
Canete, Jadies R.
Niegas, Ma. Elena

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ABSTRACT

The rapid increase of digital information across various sectors has created an urgent demand for efficient archiving system to preserve and manage data systematically. Small to large academic institutions handle multiple manuscripts every year, this includes Eastern Visayas State University – Ormoc Campus specifically the Computer Studies Department. The department is still relying on physical copies of these manuscripts, thus needing more physical space for these physical copies. The need for a digital archiving system is imperative for EVSU-OC, as they continue to rely on traditional method of preserving these academic papers.

The transition to a modern archiving system is essential to streamline document management processes, enhance accessibility for future reference, and ensure long-time preservation of invaluable academic resources. With this, we have developed an innovative solution to significantly enhance document management and preservation at our institution. This archiving system will transform the traditional way of submitting physical copies of final manuscripts into digital ones. Which is easier, less time consuming, and easy accessibility of manuscripts for future reference. The process starts by uploading the final manuscript to our system in PDF format, and then be approved, and the manuscript will be available for searching and accessing.

1.0 CAPSTONE PROJECT DESCRIPTION

In the age of digitalization and infobesity, educational institutions face a growing challenge of effectively managing and preserving their intellectual assets. Eastern Visayas State University – Ormoc Campus, as a leading educational institution, is not an exception to this problem. Due to the large number of academic theses and capstone project manuscripts, the need for a comprehensive archiving system has become more critical than ever.

The EASTERN VISAYAS STATE UNIVERSITY – ORMOC CAMPUS WEB-BASED THESIS/CAPSTONE PROJECT MANUSCRIPTS ARCHIVING SYSTEM is a capstone project proposal aimed at providing a complete web-based platform for preserving, managing, and retrieving theses and capstone projects at the Eastern Visayas State University (EVSU) Ormoc Campus. The system will be designed to expedite the entire process of preserving, searching, and accessing these academic works, while also offering a user-friendly interface for both students and professors.

1.1 OVERVIEW OF THE CURRENT STATE TECHNOLOGY / BACKGROUND OF THE STUDY

Digital archiving system is software for managing documents and data that are stored digitally. Over the years, EVSU-OC has gained a reputation for nurturing research and academic excellence among its students. The institution is extremely proud of the research and scholarly achievements of its graduates, which culminate in their theses and major projects. However, the current process of managing and archiving these valuable manuscripts may impose several challenges.

At present, the submission and storage of thesis and capstone project manuscripts are largely dependent on physical copies. This leads to difficulties in indexing, accessing, retrieval, and sharing of these scholarly works among students, faculties, instructors, and researchers. Furthermore, the lack of centralized archiving system might result in instances of data loss, limited access to these scholarly works, and time-consuming administrative efforts.

The proposed EVSU-OC Web-based Thesis/Capstone Project Manuscripts Archiving System aims to meet these challenges by providing a secure, user-friendly interface, and versatile platform that manages theses and capstone project manuscripts. By digitalizing the archiving process, we envision a comprehensive solution that not only simplifies record-keeping but also encourages knowledge sharing, collaboration, and academic growth.

1.2 CAPSTONE PROJECT OBJECTIVES

1.2.1 GENERAL OBJECTIVE

- ✓ To provide a complete web-based platform for preserving, managing, and retrieving theses and capstone projects at the Eastern Visayas State University (EVSU) Ormoc Campus.

1.2.2 SPECIFIC OBJECTIVES

- ✓ To expedite the entire process of preserving, searching, and accessing these academic works, while also offering a user-friendly interface for both students and professors.
- ✓ To make the process of archiving theses and capstone project manuscripts as simple as possible.
- ✓ To speed up the entire process of conserving, searching, retrieval, and accessing theses and capstone project manuscripts, while offering a secured centralized database, guaranteeing a consistent experience for all users and secured information.

4.4 SCOPE AND LIMITATIONS OF THE PROJECT

The scope for this proposed project is within Eastern Visayas State University – Ormoc Campus specifically in Computer Studies Department only. The main focus of the system is to centralize the storage, organization, and management of thesis and capstone project manuscripts, therefore making the entire process smooth, and promoting efficient retrieval and access.

While the capstone project "Eastern Visayas State University – Ormoc Campus Web-Based Thesis/Capstone Archiving System" provides an innovative approach for archiving, organizing, and retrieving academic works, several limitations must be acknowledged. Here are the following limitations:

- ✓ Data transfer from manual procedures can sometimes be difficult, necessitating meticulous preparation and execution. Data migration to the web-based system may provide issues. It might be difficult and time-consuming to ensure a seamless transition and correct data movement.
- ✓ Manuscript with poor legibility: Due to the natural aging process of physical documents, some old manuscripts might suffer from deterioration, making the writings or letters difficult to read or unclear.

1.4 SIGNIFICANCE OF THE CAPSTONE PROJECT

Capstone projects are generally developed to vitalize student's critical thinking, oral communication skills, teamwork abilities, research, and problem-solving skills. It will also help students to develop them into well-rounded and well-prepared graduates. Archiving management system is important to each educational institution as well as to the field of Information Technology, as it helps store, index, classify, and manage digital scholarly papers while ensuring the integrity and maintenance throughout the lifecycle. It also makes sure that the scholarly papers are stored in an organized manner so that the students, researchers, and instructors can streamline the process of retrieving and accessing the papers.

2.0 RELATED LITERATURE AND STUDIES

According to Zuheng Lv & Heyuzi Shi (2020):

Archive management is one of the routine tasks of colleges and universities. The effective use of college archives is of great significance to college brand building, cultural heritage, teaching reform, scientific research and innovation. It improves the efficiency of archives staff, reduces the burden on staff, and increases the utilization rate of college archives.

According to Zhaoyan Rong (2020):

With the continuous development of society and the arrival of the information age, the mode of information resource sharing in university archives management has become the mainstream trend of development.

According to Zhang, J., Wang, Q., Pan, Y., & Liu, X. (2021):

Formulate an electronic file structure that meets their own needs and provides users with a wealth of data entry and collection methods. It will gradually become a mainstream drawing and document management system model. It will have a better development prospect.

According to Suhada S, Amali N, R Takdir, and Pakaya, G (2021):

The purpose of this study is to create an administrative information system that is capable of managing and archiving documents. The system development employed a prototype method. The development resulted in web-based information systems document archiving.

According to Zuheng L, and Jinsong W (2020).

The development of archiving system deepens the reform of the education and teaching system in colleges and universities, at the same time, the system can provide theoretical and practical guidance for solving the problems existing in colleges and universities.

According to Jaymer M.J, Elbert S.M, Edsel Matt O.M, (2020):

The Department of Social Worker and Development (DSWD) Caraga continuously generates records daily.Their records management system is conventional, giving them hard time retrieving and keeping track of the records. The Records Management System was developed to assist the DSWD records officer and its offices for fast record tracking that provide fast and efficient services. It is an application for digital archiving and indexing of documents cataloged into administrative, financial, legal, personnel records, and social services records.

According to Moon, Seonghyeon & Shin, Yoonjung & Hwang, Bon-Gang & Chi, Seokho. (2018):

Current economic, social and political situation is crucial to successfully conduct and complete overseas construction. Getting those kinds of information promptly may be a challenge for the contractors, because the useful information usually exists in an unstructured form which needs additional data pre-processing before analysis. The primary purpose of this research is to develop a prototype of a construction document management system for international contracts, which provides the user-needed information the system was as UNI-Tacit (User-Needed Information).

According to Alokluk, Jamilah (2019):

Educational institutions face the challenge of coping with large volumes of information presented as printed or paper-based and electronic data. Traditional archives adopted for depositing printed documents have been replaced recently with digital archival and data management systems to organize and store all the possible information collected and used in universities and colleges.

According to Farry, C. (no date):

Academic archives and special collections have long been valued as experimental spaces for undergraduate research instruction, particularly at small institutions with teaching missions and a focus on undergraduate education. Moving beyond skills-based instruction, academic librarians are exploring how digital archives represent a pedagogical opportunity for innovative approaches to undergraduate instruction in the digital humanities. Archives instruction that focuses on critical engagement with digital archives can enable students to confront epistemic questions around the representation of archival records in a digital environment and what it means to organize, describe, and publish cultural materials online.

According to Das, R., Jain, K.K. and Mishra, S.K. (2018):

Archival research is a much under-rated and under-utilized method of research in management studies. Yet multi-disciplinary undertakings being observed in recent times, such as in knowledge

management (KM) systems, business history and social network studies, among others, indicate that there is a lot of potential to be explored and archive methods strengthen, contextualize, and broaden any research project, especially when studying businesses and organizations.

3.0 TECHNICAL BACKGROUND

The Eastern Visayas State University – Ormoc Campus Web-Based Thesis/Capstone Project Manuscripts Archiving System is a comprehensive digital platform designed to streamline the management, storage, and accessibility of thesis and capstone project manuscripts for students, faculty, and other stakeholders at the Eastern Visayas State University's Ormoc Campus.

The goal of this system is to provide a comprehensive web-based platform for archiving, administering, and retrieving theses/capstone & manuscript projects at the Eastern Visayas State University (EVSU) Ormoc Campus. The system will be designed to speed up the process of conserving, looking for, and accessing these academic publications while also providing a user-friendly interface for both students and instructors.

The main purpose of the system is to make archiving theses and capstone projects as straightforward as feasible. Instructors will be able to electronically submit the student work using the web-based platform. Furthermore, a centralized database will be established to securely store and manage the saved works while adhering to stated file formats and naming conventions. This will improve the retrieval and accessibility of scholarly papers.

The necessity for this system stems from the difficulties associated with traditional paper-based archiving systems. Traditional methods of storing and retrieving academic documents like as theses and capstone projects are inconvenient, time-consuming, and prone to physical damage or loss. Furthermore, identifying and accessing certain papers from a large collection becomes difficult.

Aside from preservation, the system will have a user-friendly search interface that will enable students and professors to quickly locate and obtain theses and capstone projects by utilizing criteria such as author name, title, or keywords. With these features, the system will accelerate the entire process of storing, searching for, and accessing theses and capstone projects, ensuring a uniform user experience for all users.

This project's purpose is to address these challenges by providing an efficient, user-friendly, and secure system for preserving and accessing academic articles. The system will be totally web-based, with users able to access it via ordinary web browsers on a variety of devices such as PCs, laptops, tablets, and smartphones.

3.1 TECHNICALITY OF THE CAPSTONE PROJECT

- ✓ Web-Based Platform: The system will be accessed via a website, like Facebook or Google. Students, instructors, and staff will be able to access the system using their web browsers (such as Chrome or Firefox) without the need to install any specific software.

- ✓ Document Upload and Storage: Users will be able to upload and save their thesis and capstone project papers on the system. These documents will be safely saved in a database, like a digital file cabinet, and will be easily retrievable in the future.

- ✓ Search and retrieval: The system will have a smart search capability that will allow users to rapidly locate certain documents. It's similar to utilizing a strong search engine (such as Google) to locate information on the internet.

- ✓ Versions of Documents: The system will maintain track of several versions of the same document. As a result, when someone updates their thesis or capstone project, they will not lose their earlier work and will be able to easily identify what modifications were made.

- ✓ Simple and User-Friendly Interface: The system's website will be simple and user-friendly, making it simple for everyone to explore and utilize. It will be built in such a way that users will be able to locate what they need without feeling overwhelmed.

- ✓ Data Backup and Security: All papers saved in the system will be constantly backed up and kept in secure locations, in the same way that people back up essential information to external hard drives or cloud storage services.

- ✓ Scalability: The system will be built to support a huge number of papers and users. It implies that even when more students and professors use the system, it will continue to function normally without becoming sluggish or crashing.

- ✓ Compatibility: The system will be compatible with a wide range of devices, including PCs, laptops, tablets, and smartphones. You can access your papers regardless of the device you use.

- ✓ Secure Data Transmission: When users upload or view their documents, the system will encrypt the data as it travels between their device and the system's server. It's like delivering a secret message that only the intended receiver will be able to read.

3.2 DETAILS OF THE TECHNOLOGIES TO BE USED

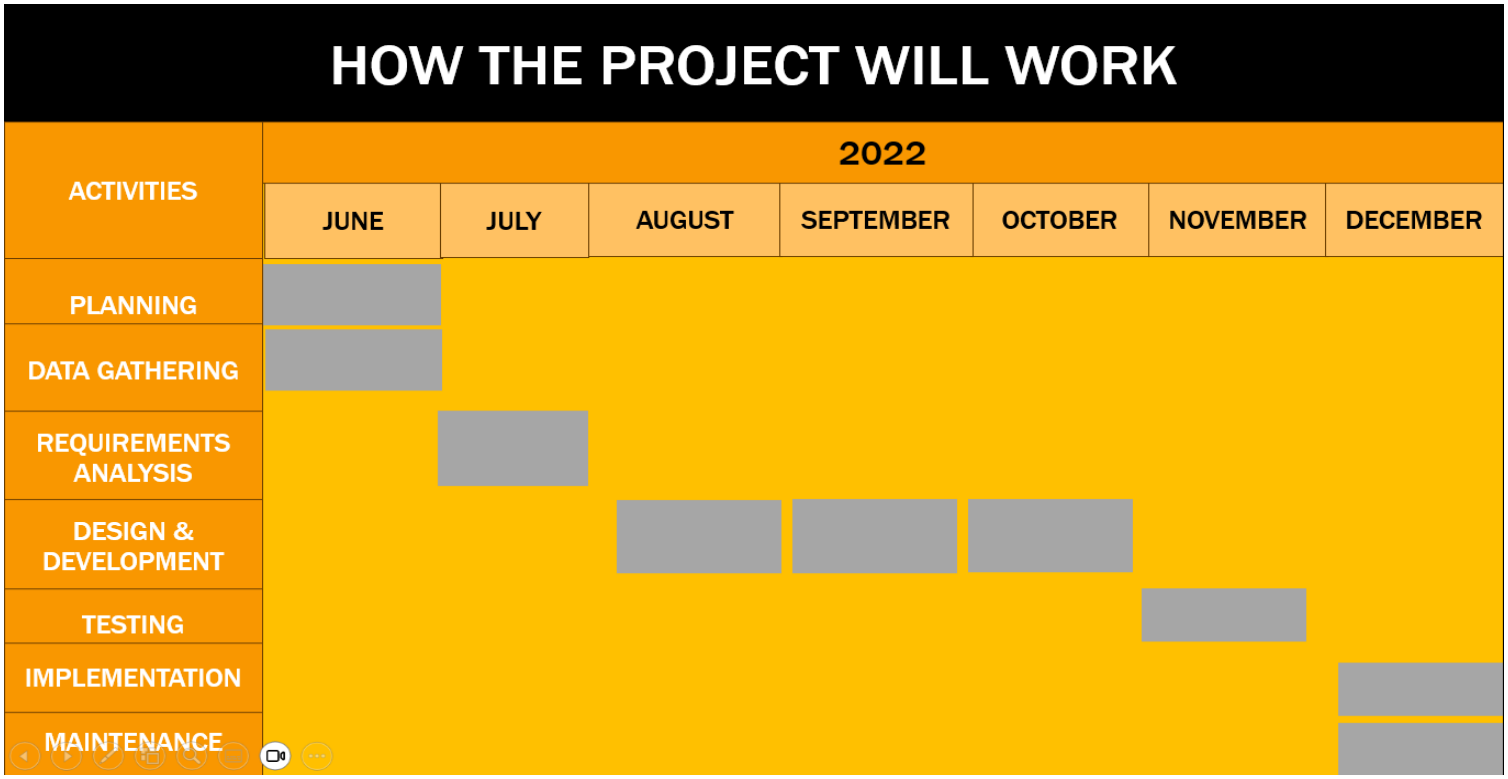
- ✓ RDBMS (Relational Database Management System): A dependable Relational Database Management System will be used to store and manage the thesis and capstone project papers, as well as their metadata. MySQL, a popular open-source RDBMS, might be a good option. Because of its resilience, versatility, and scalability, it is perfect for managing massive amounts of data.

- ✓ Front-End Technologies: The web application's front-end, with which users will interact directly, will be built using conventional front-end technologies. The visual layout, styles, and interactive aspects of the user interface will be created using HTML, CSS, and JavaScript. This may also be explored to improve user experience and responsiveness.

- ✓ Server Hardware: Depending on the scope of the project and the anticipated number of users and documents, a dedicated computer server to host the application and database may be required. To guarantee seamless operation and data availability, server hardware should fulfil performance, storage capacity, and reliability criteria.

3.3 HOW THE PROJECT WILL WORK

Table 1.0



METHODOLOGY

In this paper, our proposed system has been developed based on the Software Development Life Cycle (SDLC) standards which is one of the popular approaches in developing a software. To define and present solutions for the problems identified in this study, the proposed system was developed using the Rapid Application Development model (RAD).

According to kissflow.com, Rapid application development model is a software development methodology focusing on building application in a short period of time by rapidly producing prototype of end user, it is based on prototyping and quick feedback with less emphasis on specific planning. With RAD, developers may quickly iterate and update the software without having to start from scratch. This ensures that the outcome is more quality-focused and meets the needs of the end customers.

Planning and Analysis Stage

In this stage, we conducted the planning, data gathering, and analysis of the requirements needed to develop this system. It was just a short period of time, because RAD is focused on the quick feedback from users and continue to develop the system based on the end-user's feedback.

Design and Development
In this stage, we quickly developed and designed a system that will provide the needs of the students, faculty, and admin in the department, and also for the future researcher of the Computer Studies department and other researchers outside the campus. After the design, our programmer starts developing the system to meet the user needs.

In the development stage, we develop the archiving system which it can determined and understood how users will interact with the system. In this stage, the first thing to do was to develop an archiving system that the programmer designed and customized the features required creating a database. After thorough development, we demonstrated the system to the user on how to use and interact with it.

Testing and Implementation
In this stage, we tested out our system to few users and get their feedback. After thorough evaluation, there are some features that needs to be enhance or modified. We then implemented the system in Computer Studies department, in EVSU-OC for observation if it will be efficient and productive. The system is implemented through web based and testing will be done to know it's efficiency.

Appendix A

Figure 1.0

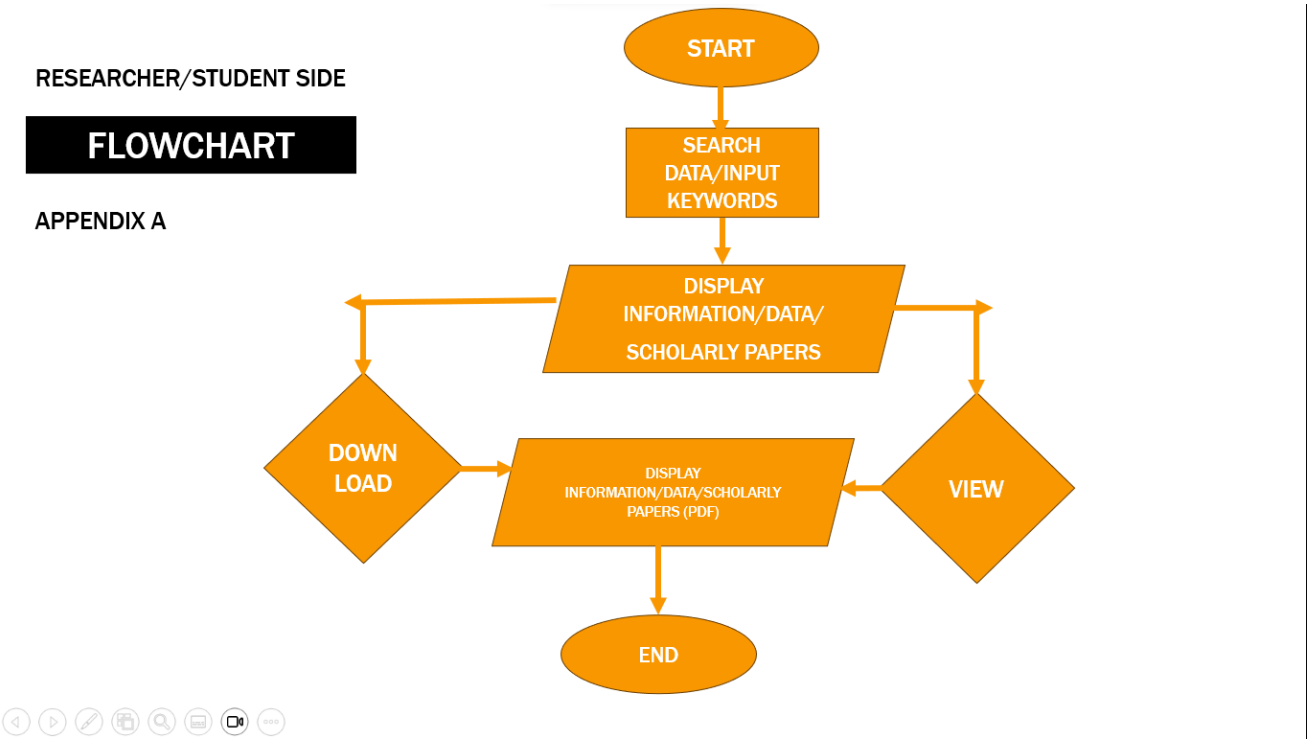
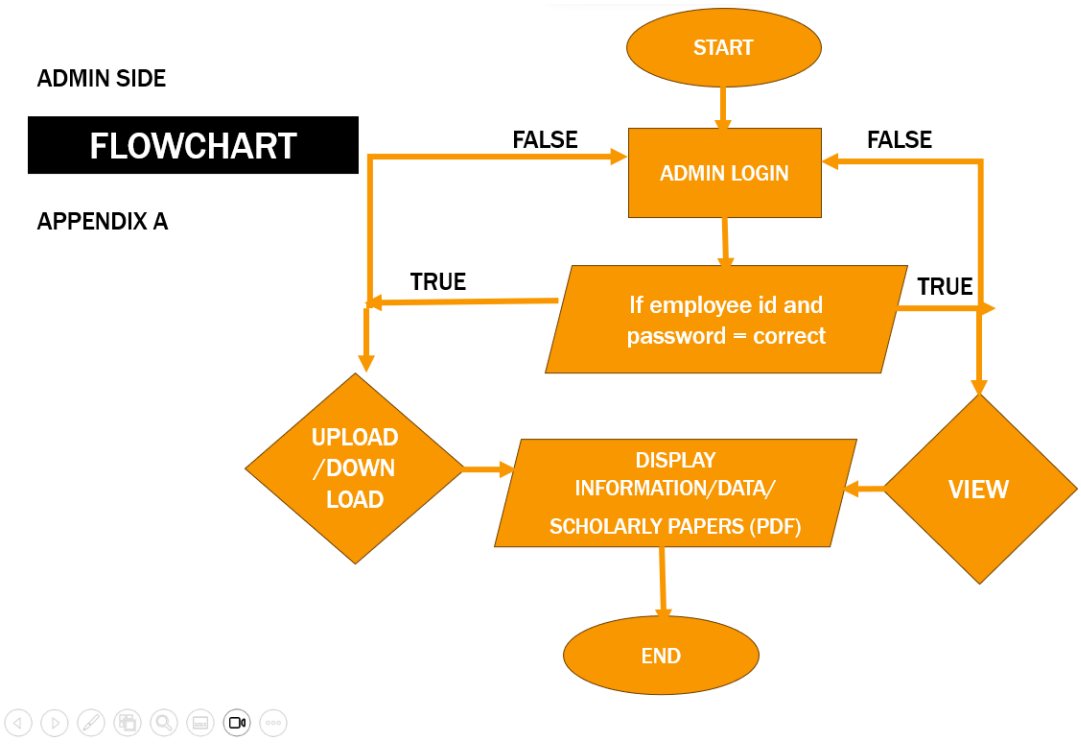


Figure 1.1



Appendix B

Figure 2.0

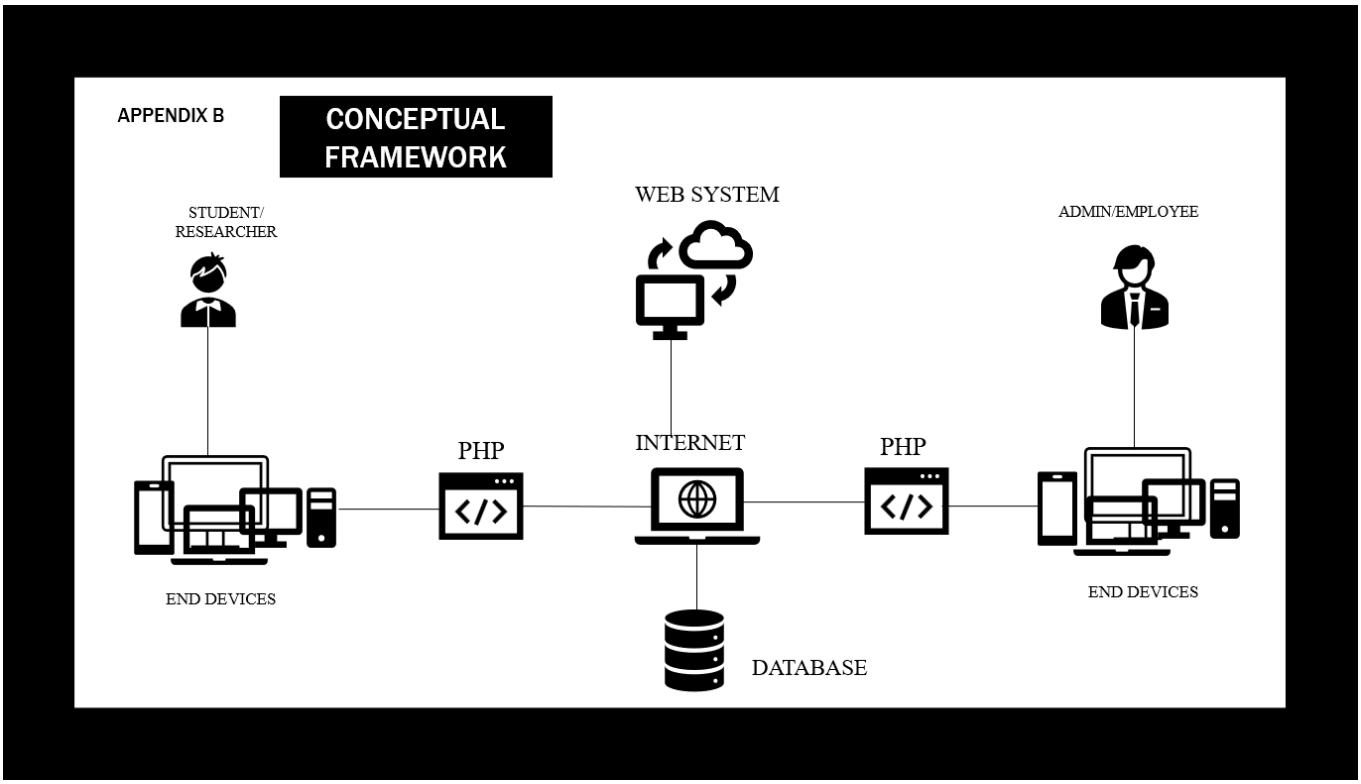
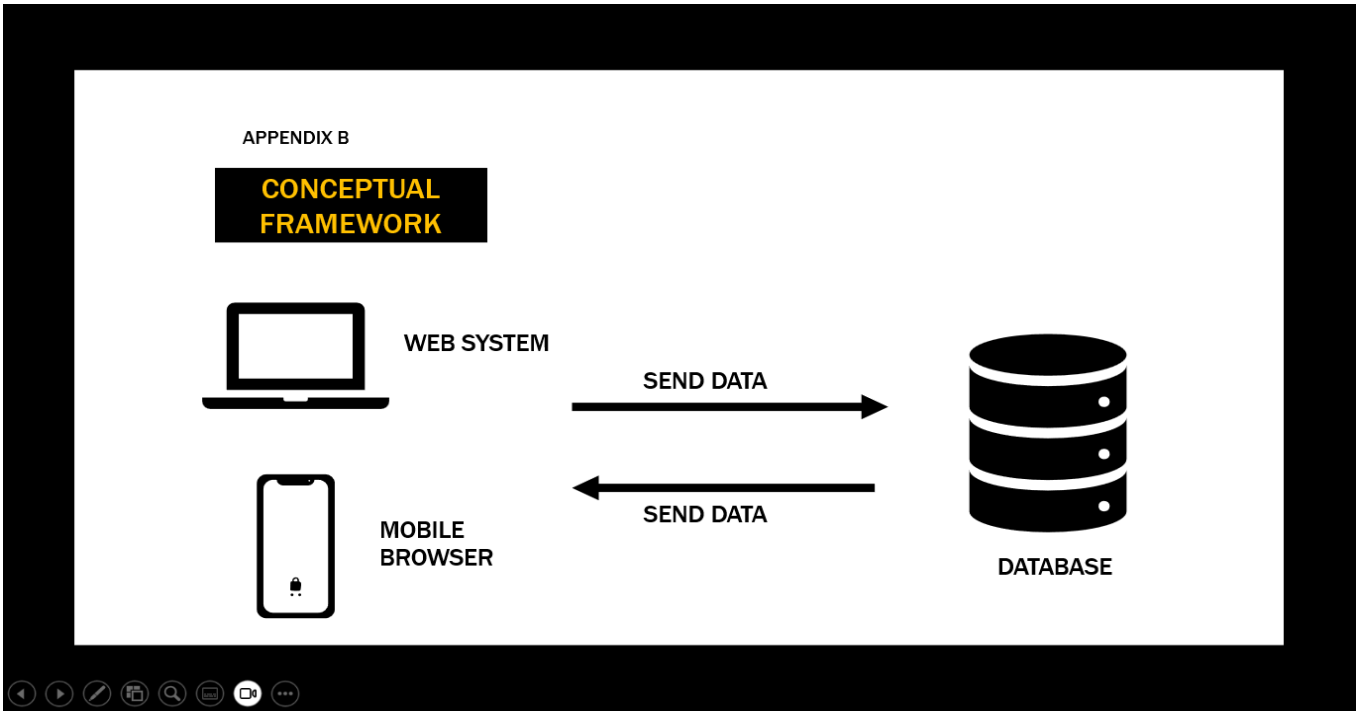


Figure 2.1



4.0 The <XYZ> System

The archiving system will be a web-based application that is accessible through standard web browsers designed to streamline the process of storing, managing, and accessing the thesis/capstone project manuscript. The system will also have a secure authentication with different access levels of administrators, students, and researchers. The archiving system will have a scalable architecture to accommodate the increasing data of submissions and users. Although the system will have a user-friendly interface for seamless interaction, it will impose a robust security measure ensuring the data confidentiality, integrity, and protection against unauthorized access. Different modern web browsers and devices like smartphones, tablets, desktops, and laptops will be compatible for this system.

Here are the functional requirements of the archiving system to be developed:

- ✓ User Registration and Authentication
- ✓ Manuscript and Thesis Submission
- ✓ Metadata Management
- ✓ Advanced Search and Retrieval
- ✓ Review and Approval Workflows
- ✓ Access Controls
- ✓ User/Admin Dashboard
- ✓ Collaboration Features
- ✓ Data Backup and Recovery

4.1 SYSTEM OVERVIEW

The “EVSU-OC Web-based Thesis/Capstone Project Manuscript Archiving System” is an innovative web-based platform designed to modernize the archiving process of thesis/capstone project manuscript in Eastern Visayas State University – Ormoc Campus. By default, the current system used in EVSU-OC specifically in the Computer Studies Department only use the manual or the traditional submission of the manuscripts. The department needs the new digital system to store and organize these manuscripts.

This system is beneficial for both the faculty and the students, also for the researchers in current time and for the future needs. In current situation, the manuscripts are stored physically in the office and don't have the proper organization to help the students or researchers find the manuscript they wanted. With this archiving system, the manuscripts will be stored in a digital form, which is more convenient for the students to search and access the manuscripts in an easy way and less time consuming.

These are the main features of this system:

- ✓ Electronic submission – students can submit their approved manuscripts without the need for manual submission making it easier for the students.
- ✓ Centralized repository – the system acts as centralized repository, securing all the data or manuscripts in a digital format that will be stored in the system for easy access.
- ✓ Advance search and filter – the system will provide an advance filter and search that enables quick and accurate retrieval of thesis/manuscripts based on various criteria.
- ✓ Download and view of manuscripts both in pdf form and applicable for both researchers and uploaders.
- ✓ Review workflows – administrators or instructors can efficiently review, and approve manuscripts uploaded by the students.
- ✓ Cloud storage for data backup and recovery.

4.2 SYSTEM OBJECTIVES

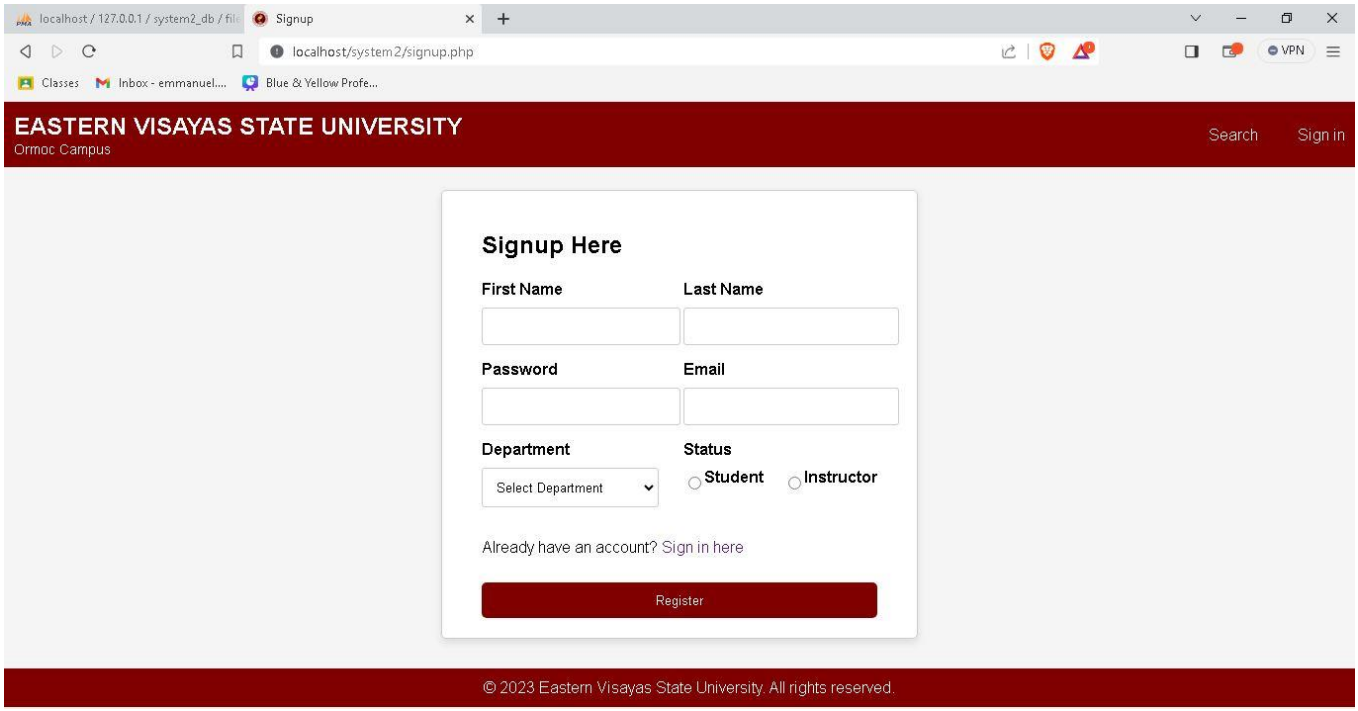
Each of the system must met the specific requirements it stated to be able to develop it successfully and met the functionality. The main scope of this system is to organize and store the manuscripts digitally for seamless retrieving and accessing. In order to achieve these objectives, the system must have the following specific requirements:

- ✓ User Registration and Authentication – the system must allow the users to create accounts with email address and unique passwords, it must also have the password reset/recovery functionality, and the role-based access control for students, administrators, and faculties.
- ✓ Manuscript and Thesis Submission – the system must allow the students to submit their approved and final thesis/capstone project manuscript, file format must be in PDF (since PDF cannot be edited)
- ✓ Metadata Management – the system must capture and store essential metadata (title, author, keywords, academic program or course, date of submission, etc.) associated with each manuscript.
- ✓ Advanced Search and Retrieval – the system must have the functionality to filter out keywords, authors, publication dates, academic programs, or courses, etc.
- ✓ Review and Approval Workflows- the system must only allow the administrator or faculty to access and approve manuscripts that are uploaded by the students.
- ✓ Access Controls – the system must have the functionality for different levels of access for viewing, editing, and approving manuscripts.
- ✓ User/Admin Dashboard –the system must have personalized dashboard for administrators to track the submissions, approvals, activities within the system.
- ✓ Collaboration Features – the system must allow the users to share manuscripts with different academic departments, or the entire EVSU-OC community.
- ✓ Data Backup and Recovery – the system must have cloud storage since this can easily accommodate growing volumes of data, using cloud storage for data backup and recovery can also increase the accessibility of the manuscripts, and automatically backups the data stored in this system, reducing the risk of data loss. Cloud storage providers invest heavily in security measures, ensuring your data is secure and protect stored data, in the event of disaster or data loss incident, cloud storage can facilitate quick and efficient data recovery.

4.3 SYSTEM FUNCTIONS

User Registration and Authentication

Figure 3.0



In Figure 3.0, the image shows the Registration Form for the User. The form has the input boxes for the first and last name, password, email address, in what department are you in, what's your status either you are a student or instructor. It also has a "Sign in here" button which will direct you to the login form or page. For the security of this system, the information that will be entered in this form will be encrypted when stored in our database. The system will also display a message if the email address you entered has already been used.

Figure 3.1

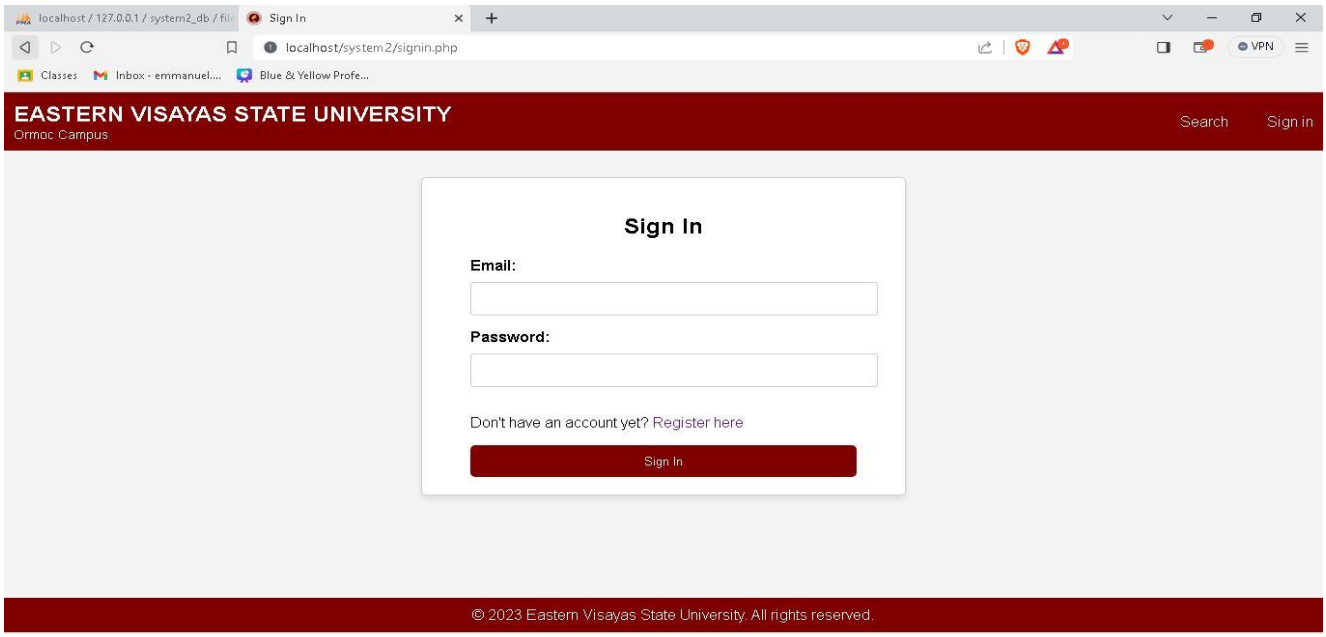
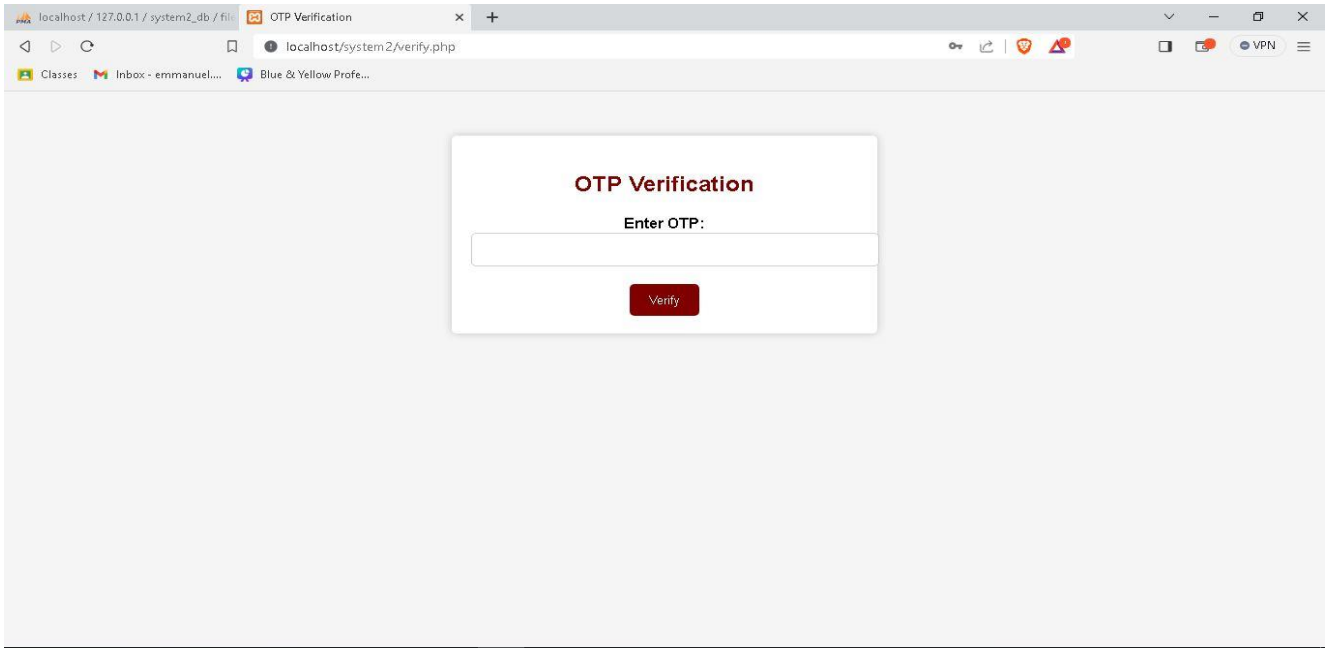
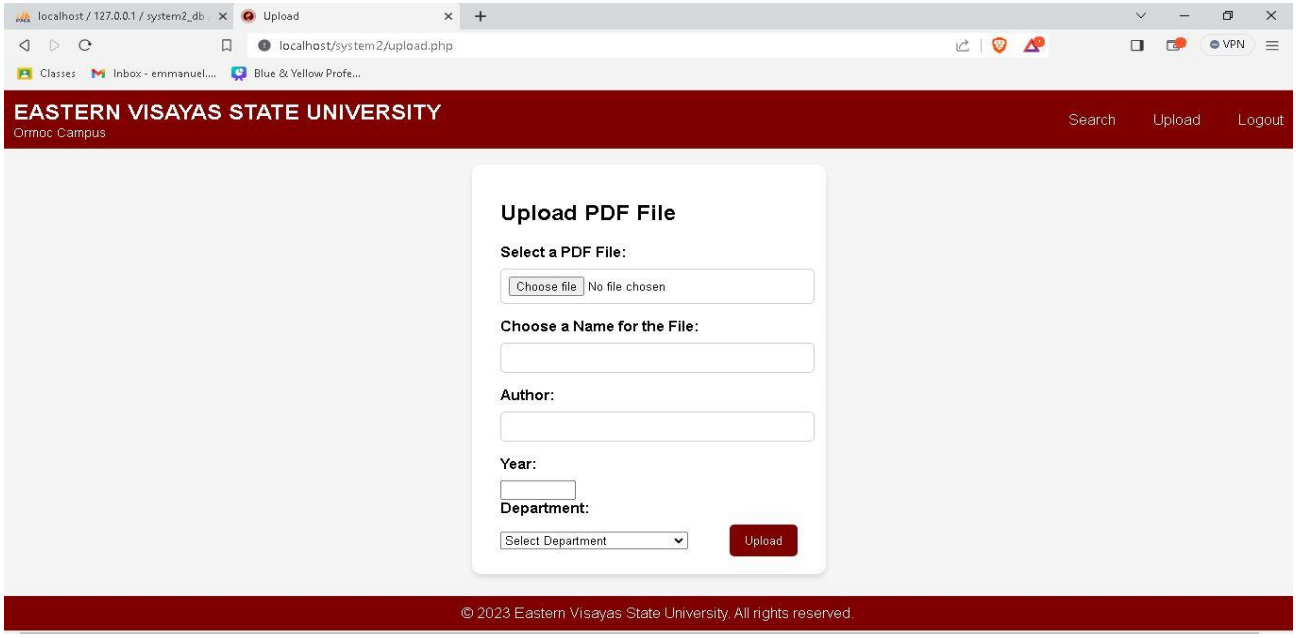


Figure 3.1.1



In Figure 3.1 and 3.1.1, after the user registered successfully, it will redirect to the sign in page and ask for the credentials that have been registered earlier. Then an OTP verification form will be displayed asking for the One Time Pin that has been sent to your registered email address. This is for the verification and authentication of the user.

Figure 3.2

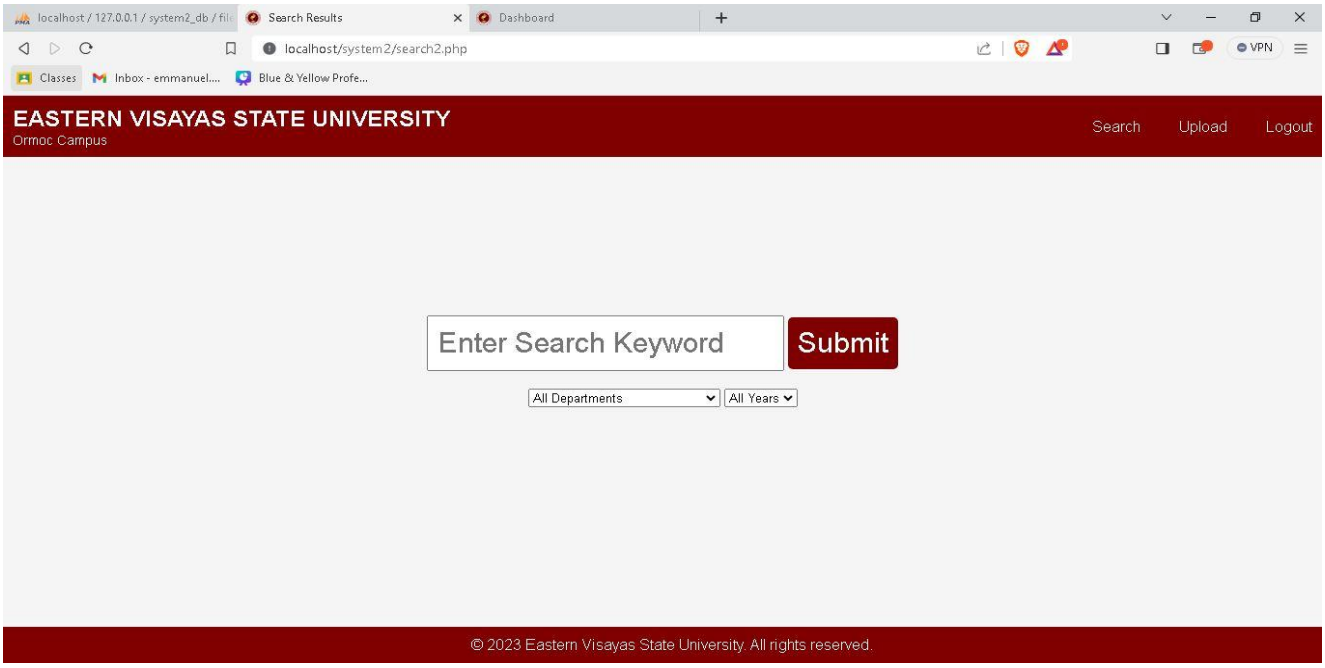


In Figure 3.2, after the user has been verified through the OTP verification, it will redirect to the Upload page where the user can upload the final thesis or capstone project manuscript. This function is intended

for students who upload their final capstone project manuscript for submission and approval of the admin or faculty.

Advanced Search and Retrieval

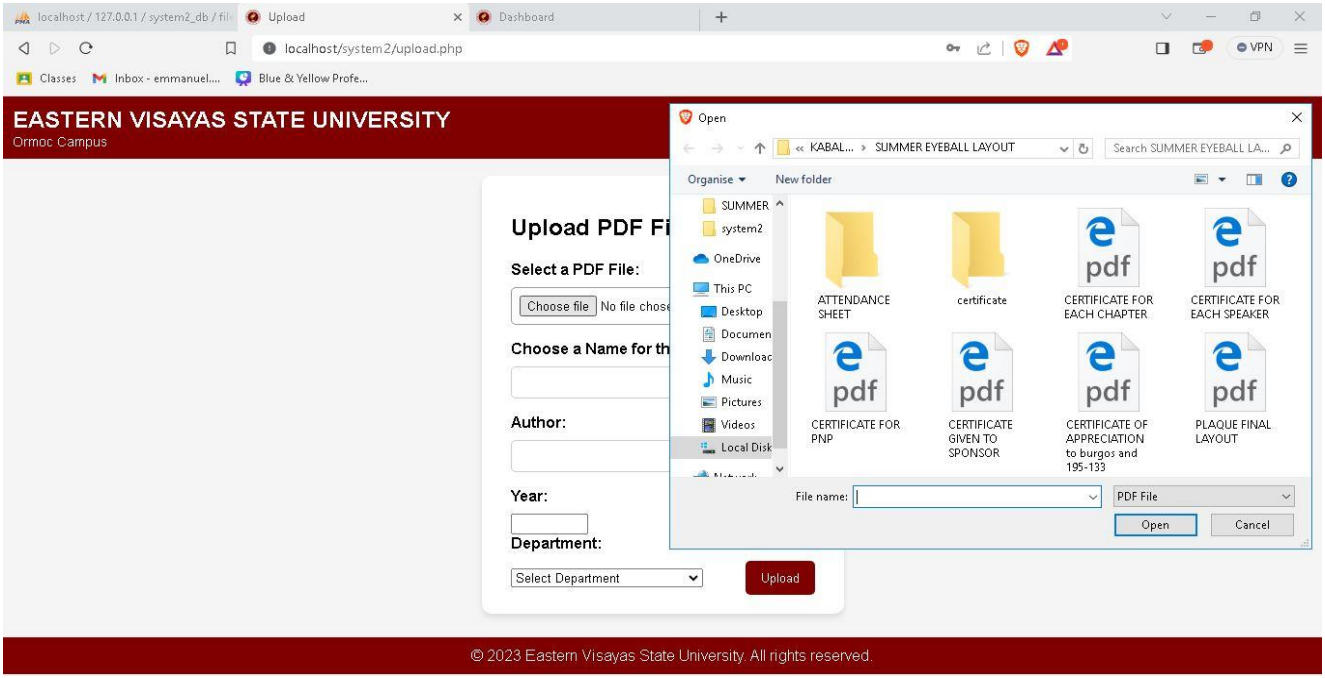
Figure 4.0



In Figure 4.0, it shows the "ADVANCE SEARCH AND FILTER" function where the user can search for the specific keywords, date, or year, and in what department or program you prefer to. This "ADVANCE SEARCH AND FILTER" can provide a quick and accurate retrieval of manuscripts.

Manuscript/Thesis Submission

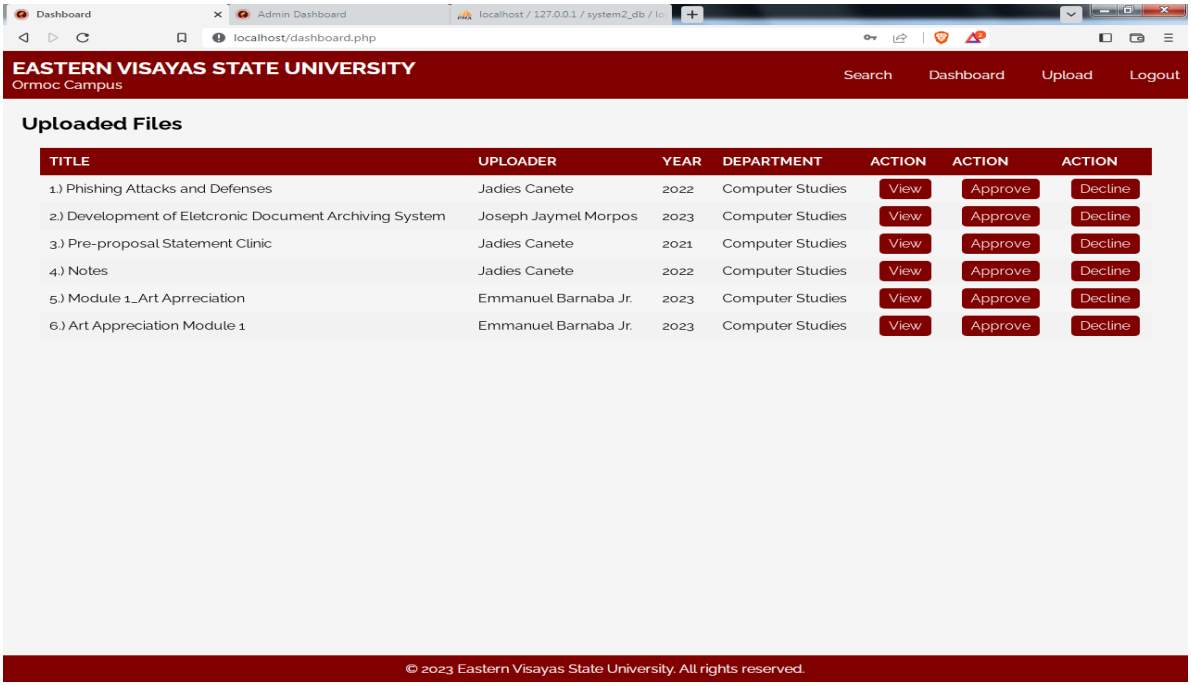
Figure 5.0



In Figure 5.0, it shows the function for the “SUBMISSION OF THESIS OR CAPSTONE PROJECT MANUSCRIPT”, as shown in Figure 3.2 after verifying the user’s account, the system will redirect the user to this page where specifically, the students, can upload or submit their final thesis or capstone project manuscript. The user can choose what file he/she should upload, but in this system, it prefers the “PDF Form” of the file since PDFs cannot be altered or edited. It will also ask for the title or name of the file, name of author, year, and what department or program it will be uploaded. This page also shows the “METADATA MANAGEMENT” requirement.

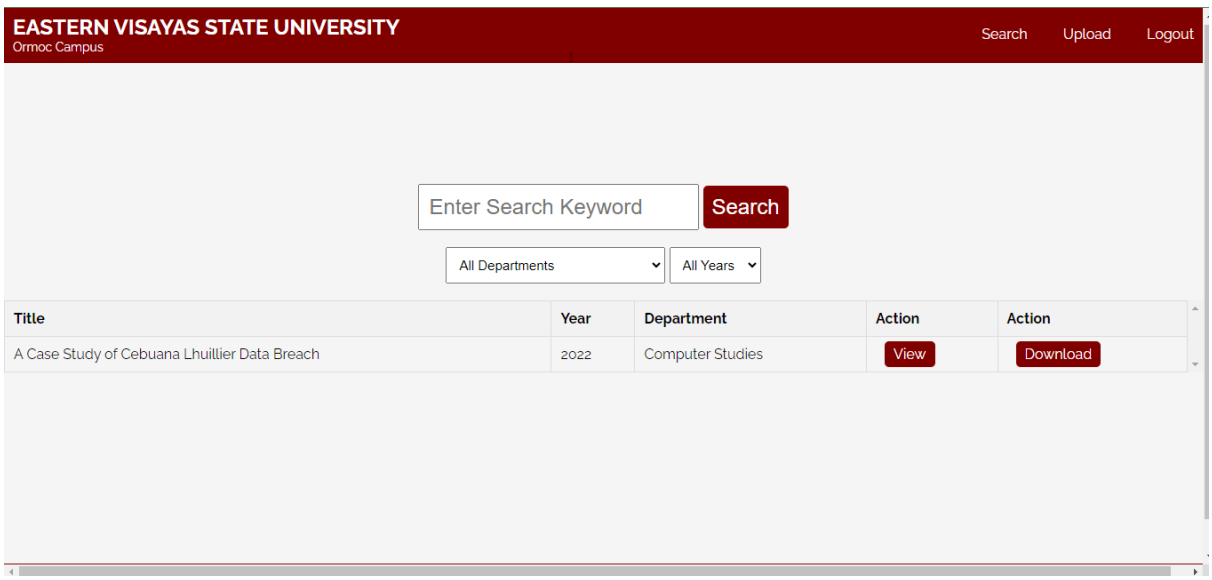
Review and Approval Workflows

Figure 6.0



In Figure 6.0, it shows the function for the thesis or capstone project manuscript approval. This is for the administrator or instructor side, in which the instructor can only be the one who can approve the manuscripts which are uploaded by the students. This image also shows the function for the User/Admin Dashboard, and Access control where the admin can track the pending uploaded files for approval, changes to the manuscript, and activities within the system.

Figure 7.0



In Figure 7.0, it shows the function for both researcher and instructor to “DOWNLOAD OR VIEW” the manuscript in PDF form. It also shows the buttons in nav bar where the user can logout, search for a manuscript, and upload a file.

4.4 SYSTEM SCOPE AND LIMITATIONS

System scope:

- ✓ The system will be able to store and organize thesis/capstone project manuscript that are in PDF form.
- ✓ The system will be able to provide users with access to thesis/capstone project manuscript through a web interface.
- ✓ The system will allow the user to register and choose the specific category (student or instructor).
- ✓ The system will allow the user to search and retrieve documents based on keywords, metadata, and dates.
- ✓ The system will allow the retrieval of documents in any device as long as it has internet connection.

System Limitations:

- ✓ The system will have a limited storage capacity.
- ✓ Documents or manuscripts may take a few seconds to retrieve, depending on the database size and search complexity.
- ✓ The system does not perform optical character recognition or OCR, so it cannot search the content of the manuscript without text metadata.

Assumptions:

- ✓ The system assumes a stable internet connection for users to access and retrieve the manuscripts.
- ✓ The system assumes that users provide the accurate metadata when searching for a specific manuscript for efficient document retrieval.
- ✓ Documents should be uploaded in common, supported file (PDF file only).
- ✓ Regular data backups of the archive are assumed to be taken to prevent data loss in case of system failures.

4.5 PHYSICAL ENVIRONMENT AND RESOURCES

This part we are about to discuss the Environment and Resource, hardware and software resources needed to implement and to execute the system.

To utilize the web-based system users must have access to computers or laptops. These devices are crucial for interacting with the system. It is important that these devices can run web browsers smoothly allowing users to comfortably navigate the systems user graphical interface and utilize its various features. Computer and laptop devices provide the computing power to load and display web pages, search the database well as view or upload academic theses and capstone project manuscripts. Choosing a web browser is vital in ensuring a user experience.

To ensure access and interaction, with the system’s interface it is recommended that users utilize popular web browsers such as Google Chrome, Mozilla Firefox, Microsoft Edge, or Safari. These browsers have a proven track record of compatibility with web applications. By using any of these browsers users can effortlessly input search queries, view archived documents, and perform tasks within the system.

For connection to the web-based system having high speed internet access is vital. It allows users to establish a fast connection to the systems servers. This becomes particularly crucial when accessing documents, conducting searches, or uploading new manuscripts. A stable and high-speed internet connection (be it Wi Fi or wired) significantly reduces loading times. Guarantees access to the system's extensive resources and services.

Using Ngrok Server for deployment, we may rapidly and temporarily make your locally hosted system available to internet consumers. It's a useful tool for development and testing, allowing us to share your work with others and receive feedback before launching your system into production. However, for long-term and production use, it is best to migrate to a more robust hosting option with improved scalability and security capabilities.

To summarize, users must have access to personal computer or laptop devices equipped with standard web browsers to utilize the web-based archiving system. Furthermore, for flawless engagement with the system's online platform, a high-speed and stable internet connection, such as Wi-Fi or a connected connection, is required. These standards, taken together, offer users a solid and efficient way of managing, searching, and accessing academic theses and capstone project manuscripts within the system.

4.6 ARCHITECTURAL DESIGN

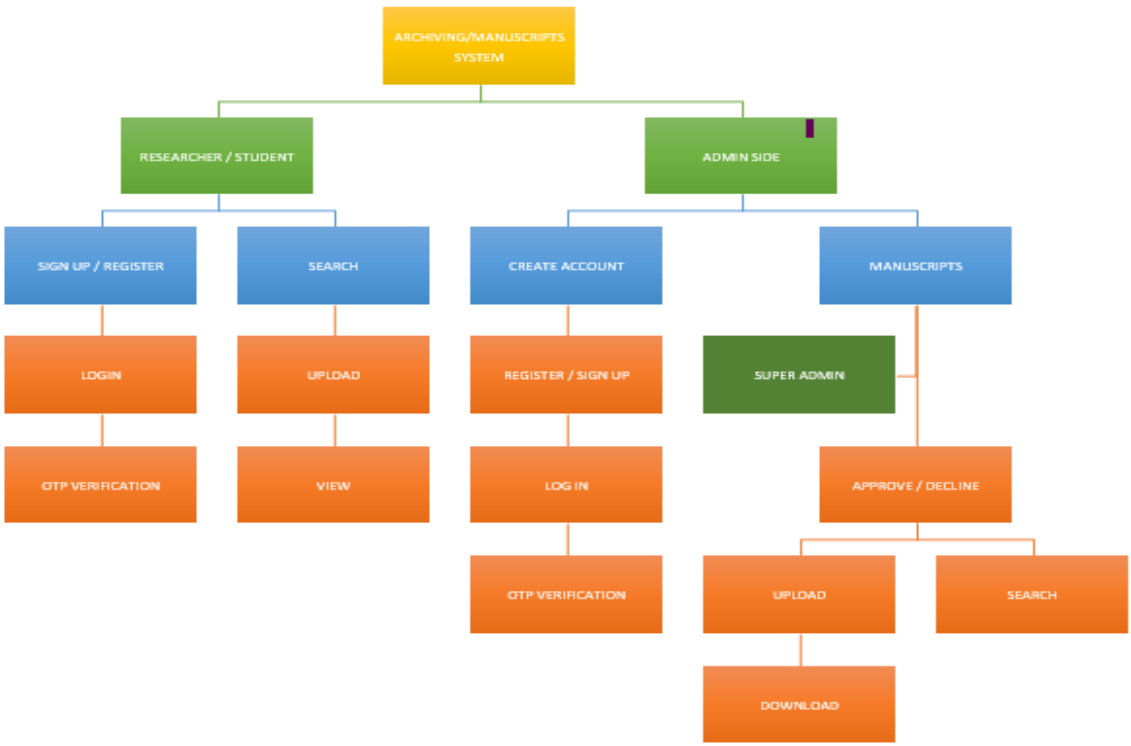
System Type: Online Digital Archiving System

The internal system design section is a crucial component of the architectural design for the archiving system. It serves as blueprint for how the system is structured initially, illustrating the software and hardware components and their relationships.

Here are the major components of this archiving system.

Software components: this section explore the software components that constitute the archiving system. These includes modules, databases, and other critical software elements. Below is a figure for the hierarchical chart to visually represent the software component hierarchy.

Figure 8.0



Data Flow Diagram

Figure 9.0

RESEARCHER / GUEST

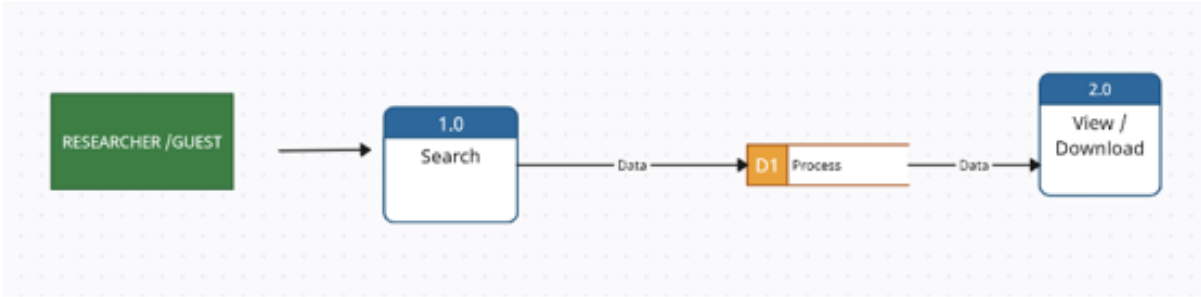


Figure 9.1

DATA FLOW CHART

STUDENT SIDE

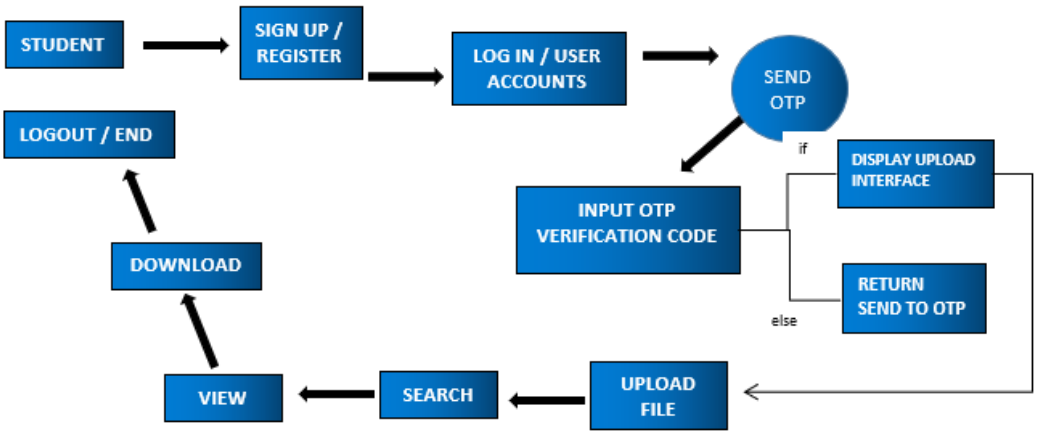
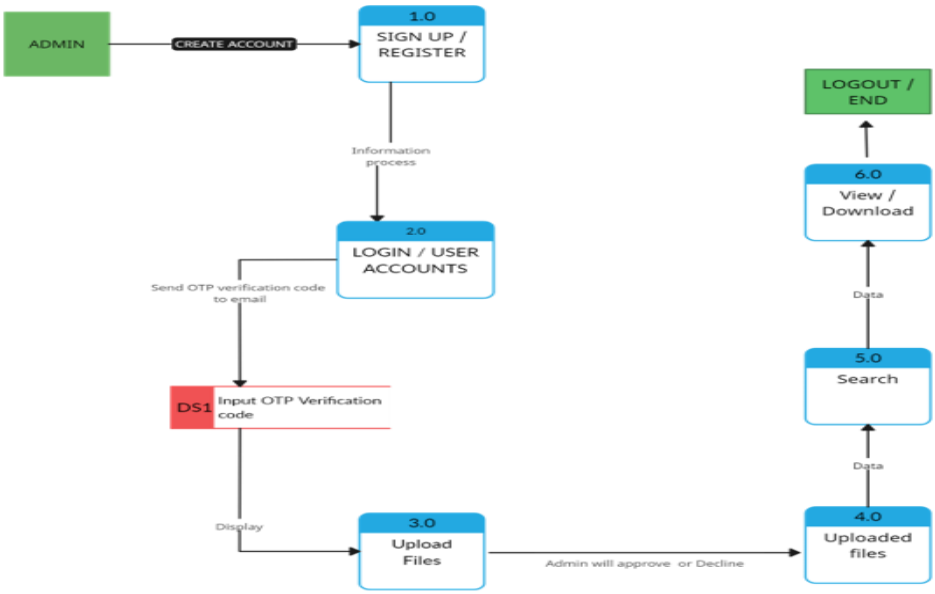


Figure 9.2



Archiving Application:

The central software application that manages the archiving process. It includes the user interface that allows users to upload, access, search, and managed archive documents.

Database Management System (DBMS) and Document Repository:

The DBMS is used to store digital documents, metadata, and user accounts, access controls, and system configurations. In this system, we used MYSQL and MariaDB. A component for storing the actual archived documents, typically in an organized and secure manner. The documents are stored on file servers, cloud storage, or within the DBMS.

Search and Retrieval Engine:

Allows users to search for manuscripts using keywords, year ranges, and metadata. Uses full-text search capabilities for accurate results. Implements a download function for those who wants to download the file.

Metadata Extraction and Management:

Tools for extracting and managing metadata from archived documents. Stores document metadata including title, author, date, and keywords. Automates metadata extraction from document context. Enables customizable metadata needs for specific archiving needs.

Security and Access Control:

Implements role-based access control to manage user permissions. Encrypts data both in transit and at rest for enhanced security. Sends OTP to the user's email address for verification. Security components, including encryption tools, intrusion detection systems (IDS), antivirus software, and firewall management, to protect the system against security threats. The system also enforces access control policies, ensuring that only the authorized users can view and manipulate documents and metadata.

Notification and Communication:

Components for sending notifications to users about manuscript rejection, submission, approvals, and other system events. This includes email notification systems.

Network and Connectivity

To access the archiving system online, we used Ngrok to host it online. Ngrok played a crucial role in ensuring that our archiving system's services and applications were accessible via the internet, despite being located behind firewalls and NATs. It made it possible for us to make important software elements—like the user interface and data retrieval tools—available to other users and partners.

Ngrok is a cross-platform application that enables developers to expose a local development server to the Internet with minimal effort. The software makes your locally hosted web server appear to be hosted on a subdomain of ngrok.com, meaning that no public IP or domain name on the local machine is needed [1].

Hardware components: To ensure the safe and effective handling of preserved data, an archiving system depends on a strong collection of hardware components. A robust server or hosting environment, whether on-premises or in the cloud, is frequently used as the system's core hub to host the software components.

Networking Equipment

Routers and switches ensure that data flows efficiently between servers, client, and storage devices. Firewalls secure the network against unauthorized access.

Storage Devices and Servers

Since the archiving system is hosted online, it needs server to run, handle data processing, indexing, and access. We used a laptop with Intel Core i3 processor @ 1.90 Hz, RAM of 8GB, 256GB SED Solid State Drive, for the storage device and server. The SSD use flash memory for storage, providing faster data access. This is used for the primary data storage in our archiving system.

We also used another laptop for the application server, which run the archiving system, as the database server, that stores metadata, indexing information, and manage the database along with the RDBMs used. It also used as the web server, email server, and file server, which are used to access the system through web-based interfaces, and store and manage files within the system.

5.0 DESIGN AND IMPLEMENTATION ISSUES

In the fast-evolving landscape of education, the need for efficient and comprehensive management of capstone projects and manuscript has never been more pressing. Capstone projects manuscript serve as the culmination of a student's academic journey, allowing them to apply the knowledge and skills they have acquired throughout their studies. However, the administration and oversight of these projects can be complex, often involving numerous intricate processes, and diverse requirements also capstone projects manuscript can deteriorate overtime since it is submitted in a physical copy. To streamline this critical aspect of higher education, the "THESIS/CAPSTONE PROJECT MANUSCRIPTS ARCHIVING SYSTEM " emerges as an innovative solution. This project aims to address the myriad of challenges and intricacies involved in managing capstone theses effectively.

The entire archiving system is consisting of several distributed components:

1. A relational database which stores configuration information and archive “metadata”.
2. A data acquisition engine which gathers data in the filesystem.
3. A graphical interface for inspecting the archiver configuration.
4. A client library for search and queries.

1.1 Relational Database

In an archiving system, a relational database is commonly used to store and manage various types of structured data, including metadata associated with archived documents or manuscripts. Relational databases are preferred for archiving systems because they provide a structured and efficient way to store, retrieve, and manage data. Common relational database management systems (RDBMS) used in archiving systems include MYSQL, PostgreSQL, Microsoft SQL Server, and Oracle Database, among others. In this system, we used the MYSQL RDBMS for storing and managing the data including document metadata. The database can support indexing of metadata and content, allowing for fast and

accurate search operations. User data, including user profiles, authentication credentials, and access control information, is typically stored in a database.

The database also stores summary information for logged data, including data format, file name, and file status. The database can implement security measures such as encryption and access controls to protect archived data from unauthorized access.

In general, we used relational database to handle different types of data efficiently.

2.2 Data Acquisition Engine

The function of data acquisition engine is to collect, retrieve, and import data from various sources and prepare it for storage, analysis, or further processing in a computer system or database. Data acquisition engine plays a vital role in various applications, including archiving systems, scientific research, industrial automation, and data analysis. For this system, the data acquisition engine collects data from a wide range of sources, including manual input of users. We used this technique since our system collects data from the manuscripts that are manually uploaded by the users. In the context of archiving systems and databases, the data acquisition engine retrieves data from external sources, such as web scraping, database queries, or file uploads. It ensures that the data is obtained accurately and securely.

There are still lots of function that data acquisition engine does. The acquired data may undergo transformation processes to convert it into a format compatible with the target system. Since the uploaded files are in PDF format only, we used this tool or technique to obtain the file format we want from the target user.

Data acquisition engines are essential components in systems where data needs to be efficiently and accurately gathered from diverse sources for various purposes, from scientific research and industrial automation to business intelligence and archiving systems.

3.1 Graphical Interface

The graphical user interface (GUI) for inspecting the archiver configuration is a crucial component of an archiving system, as it allows administrators to manage, configure, and monitor the system's settings. The GUI start with a sign in and registration functions, which allow the users to register and sign in into the system. Users should be required to log in to access configuration interface. The GUI can support different user roles with varying levels of access.

For archiving systems like this that provides user-generated content, the GUI can provide tools for user management, including user registration, access control, and user roles. The GUI allow the customization of search and retrieval settings, including indexing preferences, search filters, and search result ranking.

The design and layout of GUI of this system prioritize user-friendliness, accessibility, and intuitive navigation. The system's GUI is also responsive, ensuring that users can access and configure the archiver from different devices and screen sizes.

4.1 Client library

This archiving system uses SQL data libraries which plays a crucial role in managing and interacting with the underlying relational database system. SQL data libraries facilitate the establishment of connections to the relational database used for storing archived data. This connection is fundamental to the interaction between the archiving system and the database.

SQL data libraries enable the execution of SQL queries against the database. These queries can include various operations like SELECT (for retrieving data), INSERT (for adding new data), UPDATE (for modifying existing data), and DELETE (for removing data). The system also uses SQL data libraries to retrieve archived data from the database, facilitate the insertion of new data into the database, support the modification or archived data, and when documents or data need to be removed from the archive (in compliance with retention policies), these libraries enable the execution of deleting specific records.

SQL data libraries also support transaction management to ensure consistency and reliability of database operations. This includes creating and modifying tables, indexes, and relationships in the database to accommodate the archiving system's data structure. The libraries also provide error handling and reporting mechanisms, enabling the archiving system to handle unexpected database errors gracefully, log errors, and notify administrators if necessary.

Libraries also help manage security aspects of database interactions. They often support parameterized queries to prevent SQL injection attacks and enable access control and authentication checks, which we imposed in this system. In terms of compatibility, SQL data libraries are designed to work with specific database management systems (e.g., MYSQL, PostgreSQL, Microsoft SQL Server).

By integrating these libraries into this archiving system, it streamlines the interaction with the relational database. It's now easier to manage, retrieve, and manipulate archived data. This simplifies the development process, enhances security, and ensures the integrity of the data.

The first obstacle we confront revolves around accommodating the diverse array of screen sizes associated with the various devices our users employ. This challenge necessitates a dynamic approach to web development. To overcome it, programmers turn to a technique known as "media queries." Media queries are indispensable tools within the realm of responsive web design, as they enable us to tailor the appearance and functionality of our platform based on the unique characteristics of each device. Through strategically placed breakpoints in our CSS (Cascading Style Sheets) code, we define specific screen width ranges where adjustments are required. Within each media query, we can then specify alterations in styles, layouts, and design elements, thus ensuring a seamless and delightful User Interface (UI) and User Experience (UX) for our users across all devices, be it smartphones, tablets, laptops, or desktop computers. This not only enhances usability but also addresses the ever-evolving nature of technology and user expectations, ultimately promoting user satisfaction and optimizing accessibility.

The second subsequent challenge we face pertains to the seamless delivery of essential communication to our users. Specifically, we employ the PHPMailer API as our solution for sending generated one-time passwords (OTPs) to facilitate user account verification. This task is critical in ensuring the security and authenticity of user accounts within our system. PHPMailer, a popular email-sending library for PHP, serves as the bridge connecting our system to the user's email inbox. It allows us to craft and transmit OTPs via email, which users can then utilize to verify their accounts.

We also identified and resolved an issue within the OTP (One-Time Password) sending process. Our solution involves implementing a 60-second window for users to input the OTP sent to their email. If a user fails to verify the OTP within this time frame, they receive an alert and are redirected back to the sign-in page. From there, they can request a new OTP and repeat the verification process until they successfully enter the OTP before it expires. This process not only enhances the security of user data but also streamlines the verification process, providing a reliable and convenient means for users to access and engage with our capstone management system.

Third challenge we successfully addressed involves optimizing the search functionality within our capstone management system. The specific issue centered on enabling users, particularly students and faculty, to efficiently search and access papers that have been approved by the system administrators. To enhance the overall user experience and streamline the retrieval of approved documents, we implemented a robust search bar. This feature empowers users to enter keywords or specific criteria to locate approved papers swiftly, contributing to improved accessibility and efficiency within the system. As a result, users can more effectively track capstone projects, ultimately facilitating a more user-friendly experience for all stakeholders involved.

Also searching for specific keywords within a PDF document is a common and invaluable practice when seeking precise information. However, the success of this search method is significantly influenced by the presence or absence of Optical Character Recognition (OCR) technology. When OCR is not utilized, attempting to find keywords within a PDF becomes an arduous task. In the absence of OCR, a PDF is essentially treated as an image file, rendering it inaccessible for conventional text-based searches. In such scenarios, the search for keywords can only be fruitful if you possess the exact document title or have access to the document's metadata. This underscores the vital role OCR plays in making PDFs searchable. By converting the visual content within a PDF into machine-readable text, OCR facilitates efficient and accurate keyword searches within documents. Therefore, while searching for keywords in a PDF is an invaluable tool for information retrieval, the presence or absence of OCR technology significantly impacts the success of this endeavor, emphasizing the need to consider OCR for enhanced document search capabilities.

To sum it up, the ability to conduct keyword searches within a PDF document is contingent upon whether OCR technology is employed. The absence of OCR essentially treats the PDF as an image file, rendering conventional text-based searches ineffective. The inclusion of OCR, on the other hand, transforms visual content within PDFs into machine-readable text, enabling efficient and accurate keyword searches. This distinction underscores the critical importance of implementing OCR to enhance document accessibility and search capabilities, allowing users to extract meaningful information from PDFs without being reliant on specific titles or metadata.

We have also implemented an update to our user email policy, which prevents the duplication of email addresses. Now, when a user attempts to input an email address that is already registered in our system, the system will not allow it. This means that we can avoid having duplicate email entries in our database. This enhancement ensures data integrity and prevents users from unintentionally creating multiple accounts with the same email, leading to a more streamlined and organized user management process.

Another problem we encountered when implementing this system is access control and authentication. The archiving system we developed offers users the flexibility to register and choose their role, whether

as a student or instructor. While this openness allows for easy onboarding, it can sometimes lead to individuals self-designating as instructors without appropriate qualifications or authorizations. To address this concern, we have implemented a “SUPER ADMIN” function within the system. The SUPER ADMIN role is specifically designed to review and approve registered accounts, with a special focus on those selecting the instructor category. The SUPER ADMIN feature provides this function, when a user creates an instructor account, their access is initially set to "pending," requiring the Super Admin's review. Once the Super Admin confirms that the account belongs to a legitimate instructor, access is granted. Until this approval is granted by the Super Admin, the instructor account remains unable to proceed independently. This additional layer of control ensures that only qualified and verified individuals are granted instructor status, maintaining the integrity and quality of our platform.

Furthermore, we've taken substantial steps to refine both the search results and the instructor dashboard, all with the goal of delivering outstanding user experience within our system. Our enhancements involve a more intuitive design for the search results, offering users a seamless and visually appealing way to find the content they seek. Simultaneously, we've revamped the instructor dashboard, making it more user-friendly and efficient, allowing instructors to manage their content and interactions with ease. These improvements collectively ensure that users and instructors can navigate, interact, and engage with our system in a more streamlined and enjoyable manner, ultimately elevating the overall quality of their user experience.

Lastly, we've introduced a significant enhancement to our paper management system, particularly when it comes to handling paper rejections. Now, when instructors decide to decline a paper submission, they are prompted to provide remarks explaining the reason for the rejection. Once these remarks are submitted, they are automatically sent to the uploader's email account. Simultaneously, the rejected paper is promptly removed from the database. This improvement streamlines the communication process between instructors and authors, ensuring transparency and allowing authors to understand the reason for the rejection while maintaining database cleanliness by removing declined papers.

The "THESIS/CAPSTONE PROJECT MANUSCRIPTS ARCHIVING SYSTEM" represents a significant advancement in the management of capstone projects and manuscripts in the ever-evolving landscape of education. Our project addresses the intricate challenges involved in overseeing these critical academic endeavors and ensures that users, including students, faculty, and administrators, experience a seamless, efficient, and secure platform. We've tackled issues related to diverse screen sizes, optimizing search functionality, and enhancing email communication. Additionally, we've improved the security and user-friendliness of our system by implementing features like the Super Admin, preventing email duplication, and refining the search results and instructor dashboard. These developments not only streamline the management of capstone projects but also enhance the overall user experience, making educational endeavors more accessible and efficient for all stakeholders.

6.0 RESULTS AND OBSERVATIONS

The Theses/Capstone Project Manuscript Archiving System was developed to assist the EVSU-OC particularly the Computer Studies Department for fast record tracking and managing of manuscripts that provide fast and efficient services. It is a web-based archiving system that digitally stores the final manuscripts that were submitted by the students. These manuscripts are vital in the institution and have a corresponding retention period since these are in physical copies which will deteriorate in long period of time.

In our archiving system, we performed different tests to evaluate its functionality, performance, and data management capabilities. These tests were designed to ensure that the system effectively archives and retrieves data, complies with data retention policies, and provides a seamless user experience.

The system development starts by storing the paper-based manuscript into digital form. It is done by uploading the manuscript to our system in a PDF format. The user or student who is the author must do this upload, but first, the user must register to our system before the upload is done. The next step is approving or declining the manuscript, by ensuring that the metadata of the certain manuscript is properly inputted. This is done by the instructor or admin who is in-charge of the approval of the uploaded manuscripts.

Data intake, search and retrieval, access control, and document versioning were just a few of the components of the archiving system that were covered by functional testing. Results indicated that the system effectively ingests and indexes data from multiple sources, including user uploads. Search and retrieval functionalities run smoothly, with users able to find documents accurately and efficiently. Access control mechanisms were successfully confirmed, ensuring that users could access only authorized content.

To assess the system's response time and scalability, a performance testing was conducted. Response time study showed that the system typically responded quickly to user queries, creating an engaging user experience. The typical response time for search queries stayed well within allowable limits. Testing for scalability showed that the system successfully handled increasing data quantities and concurrent user access, making it appropriate for deployment in organizations with various data storage requirements.

User feedback is significant to our system since this system is developed using RAD and depends on user feedback or insights for further improvements. User feedback indicated a high level of satisfaction with the system's performance and ease of use. Users particularly commended the intuitive search interface and quick retrieval of archived manuscripts.

The system is equipped with user-friendly GUI with five primarily functional pages: Search Page, Registration Page, Sign in Page, Upload, and Dashboard. Upload page is where the data import happens. It allows users to upload manuscripts and record the metadata form entry. While most of the uploaded papers are done manually, the instructor or admin would review all the uploaded files for more accurate and correct file information entry. Testing for the GUI in different types of browsers, devices, and screen sizes was also done.

While the data entry happens in the Upload page, the Search page deals with the manuscripts entered. Searching, viewing, and downloading is facilitated through this page. The search page is the landing page of this system. This page analyzes the most commonly used search queries and patterns to understand the user needs.

But before the data import happens, a user can only upload manuscripts if they were to register and sign into the system. The registration will take place in the Registration page, and logging in to the system is done in the sign in page. Before signing in, the user's account must be authenticated first by sending

OTP to the respectively registered email address. After the authentication, it will now redirect the user to the Upload page.

In the Dashboard page, the appropriate things are done here, including the approval, and declining of manuscripts. The Super Admin also has a dashboard that allows him/her to oversee and manage user registration, particularly those opting for the instructor category.

Overall, for the observations in this system, it exhibits uncompromising functionality, reliable data management, and impressive performance. User satisfaction is high but there is room for improvement and minor interface enhancements.

7.0 CONCLUSION AND RECOMMENDATIONS

This paper presented a system that facilitates the need of digitization and management of paper-based manuscripts of Computer Studies Department in EVSU-OC. The system was developed to accomplish organized storage and archiving of manuscripts that no longer require large physical spaces. Intentionally, this was created to aid the department and for the quick and easy retrieval of the manuscripts. Furthermore, the system's capability to digitally stored the manually uploaded file makes the job of a researcher easier and more comfortable.

In this chapter, we provide in-depth evaluation of the project's outcomes, explaining how the project's objectives were met and identifying areas where improvements are possible. The first objective of this system is to provide an archiving system that will enhance the process of managing, storing, and accessing the manuscripts. By allowing users to create accounts, upload final manuscripts, and manage essential metadata, the system offers a seamless experience. We successfully improved the user interface by implementing a more understandable navigation system and responsive design.

For the user registration and authentication, we have fully met this objective since our system provides creation of user accounts with unique credentials, password with the reset function, and the implementation of role-based access of different categories, such as student, instructor or faculty, and administrators.

We also have fully met the manuscript submission objective, since the system allows users to upload their final manuscripts in PDF format, ensuring that the manuscripts cannot be easily edited or altered. It also achieved the objective in managing the metadata, all the metadata related to each manuscript, such as title, author, keywords, and year of submission are captured and stored.

The system also provides advanced search and retrieval capabilities, allowing users to filter content by title, publication dates, and academic programs. The system offers different level of access control, including viewing, downloading, and approval permissions, to manage who can perform specific actions. Only administrators or faculty members have access to review and approve the manuscripts uploaded by the students.

While we made strides in enhancing authentication, our team encountered challenges with certain security protocols. Further measures are needed to robust authentication. The complexity of implementing the latest security standards necessitated additional resources and expertise that were not initially accounted for.

Recommendations

Based on the findings and conclusions of the study, here are the following recommendations proposed. Implement regular system monitoring to identify performance bottlenecks, security vulnerabilities, or data integrity issues. Consider user feedback and usability testing results to make continuous improvements to the user interface and overall user experience. Strengthen security measures to protect

sensitive academic data. Regularly test the disaster recovery capabilities of the system, including data backup and recovery processes, to ensure that data remains secure and accessible in case of unforeseen incidents.

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