**CAPSTONE CORNER: A SECURE AND USER-FRIENDLY ARCHIVING SYSTEM**

A Capstone Project

Presented To the Faculty Of

Information Technology Pangasinan State University

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DE VEGA, DIOSDADO JR B.

PARIS, ALFRED D.

SANCHEZ, JAYSON O.

SANTOS, REA V.

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## Chapter 1

### INTRODUCTION

#### 1.1 Context of the Project

PSU-San Carlos City Campus's Bachelor of Science in Information and Communication Technology (BSICT) program was offered in 2005. The campus’ head at the time was Dr. Dominador N. Simon. He sent several faculty members to take advantage of the PSU University Scholarship Program and enroll in the BSICT program offered at the PSU-Urdaneta city campus. After two years of school, Dr. Simon asked her. Evelyn B. Lomboy if the school is able to offer the BSICT program on campus. Ms. Lomboy responded positively with enthusiasm and courage. Grandma. Lomboy then took the lead in delivering the show despite the anxiety and suspicions of some. She was the first IT faculty with 23 students enrolled in the first year, then 48 students in the second year until the BSICT program became the preferred program on campus and had to be limited. An additional instructor hired in 2006 was Mr. Lin V. Tadeja, Mr. Christopher A. Rodriguez in 2007, Dr. Gilbert M. Talaue in 2008 and Mr. Jose Carlo N. Gamboa in 2009, and Dr. Fernando S. Viray, Jr. in 2010. There are currently 11 qualified BSIT faculty members on campus. The program's nomenclature was changed to BSIT in 2008 to comply with NUMBER CHED REMEMBER ORDER (CMO). 53 series from 2006. (University of HOTEL MANAGEMENT, BUSINESS ADMINISTRATION and INFORMATION, paragraph 1).

Thesis archive system is designed to provide a foundation for the management and archiving of thesis documents. It consists of three main pages: one for administrators, one for faculty, and one for students/users. The administrator updates the existing profile. This includes modifying information about a particular thesis, such as adding or changing the title, author, summary, keywords, and any other relevant data. Administrators can also add new records to the system when new dissertations are submitted or archived.

The admin page manages the transactional aspect of the system. It facilitates the borrowing and return of thesis works. Students or users who need access to a particular thesis can request to borrow that thesis, and administrators can manage the borrowing process by keeping track of borrowed items and their due dates. When a student returns a thesis, the administrator will update the corresponding status to make it available to other users. The thesis storage system includes a database component that ensures the confidentiality and integrity of the records. The database is used to backup and restore all thesis documents and related data.

This feature ensures that even in the event of a system crash or data loss, information can still be recovered and restored. On the user side, the student or user page provides them with a convenient interface to view and search their thesis material. They can easily access their thesis and get the necessary information at any time. They manage the thesis archive, update and add new records, manage the borrowing and returning of thesis books, and provide database backup and restore functionality. Meanwhile, students can benefit from the system by accessing and searching for their own thesis materials according to their needs.

Laravel is a web application framework with expressive and refined syntax. The web framework provides the structure and starting point for developing your app, allowing you to focus on building something great while we handle the details.

Laravel strives to provide an exceptional development experience while providing powerful features such as full dependency injection, expressive database abstraction layer, queues and scheduled operations, checks unit and integration, etc.

Laravel is a framework that can grow with you, whether you are new to PHP web frameworks or have years of experience. We'll walk you through your first steps as a web developer or support you as your skills grow. We can't wait to see what you come up with.

The proposed system is a web-based application that provides secure storage for synthesis projects and synthesis testers. The main goal of this project is to allow BSIT students to store their final year summaries, allowing first year students to find references and ideas for future or upcoming senior year summaries. their own and allow third-year groups to check whether the system is appropriate. proposal is accepted or not. The system will be written using the Laravel framework and has many features and functions related to this type of system. This one has user friendly features and nice UI using CSS and bootstrap. The proposed web application is intended to store the current system of summaries and documents in an electronic version, from 2021 to the present day. Check user-entered headers if there are duplicates in the database. And check the user issues and features as well as the title. Check user characteristics to see if they meet the basic criteria of Pangasinan State University.

#### 1.2 Objectives of the Project

The Capstone Corner project aims to develop a secure and user-friendly archiving system and proposal checker for (BSIT) Bachelor of Science in Information Technology specifically, it aims to:

1. Identify the existing manual process of Pangasinan State University San Carlos CHMBAC regarding the monitoring of the CHMBAC thesis and Information Technology Capstone Project.
2. To determine the features of the system that aligns to the functional and non-functional requirements.
3. To test the usability of the system.

#### 1.3 Significance of the Project

This project will be valuable and significant to students, teachers, school, and future researchers. The result of this project may help the following individuals and group:

**Administrator**. The administrator will be able to store securely finalized capstone projects and modify all types of accounts.

**Students**. Using this system, lower-year students can find some references and ideas for their future or upcoming final-year project, allowing the third-year groups to check if the system that they will propose is acceptable or not. The student can view archives, search archives and use the compatibility checker.

**Faculty.** A faculty can view and search capstone projects. They can also manage an archive they uploaded and manage student accounts.

**College.** This system is beneficial for CHMBAC because it provides a dependable and efficient way for CHMBAC to manage and store significant data and documents while guaranteeing the security and privacy of sensitive information. They can also use the system in proposal session for them to check if the presenter’s title is existing or not.

**Future Researchers.** This project could also serve as the basis or as a reference and guide for future researchers who wish to conduct the same study, or any study related to the topic.

#### 1.4 Purpose and Description

The system is designed to be user-friendly, with an intuitive interface that allows CHMBAC staff to quickly upload, organize and access documents. Its goal is to provide a reliable and efficient way to manage and store important data and documents while ensuring the confidentiality and security of sensitive information. In addition, it has sophisticated search and filtering features that make it easy to quickly locate files or information. Capstone Corner is created with security in mind using the middleware limitations and token functionality of the Laravel framework in addition to a user-friendly interface. It has advanced encryption and access restrictions to ensure that only authorized people can access sensitive data. The compatibility checker provides end users with a platform on which they can check if their proposed system project is accepted. The platform first checks the user-entered header and checks if it has similarities with other systems. Second, the problem will be checked to see if it meets the PSU's composite criteria. Overall, Capstone Corner provides CHMBAC with a safe and reliable storage system that is easy to use and maintain. With a compatibility testing tool students can check the feasibility of the system that will be provided to them.

#### 1.5 Scope and Limitations

The proposed project is titled “Capstone Corner: User-friendly and Secure Storage System” for Pangasinan State University BSIT San Carlos Campus. The system will be downloaded and stored online for convenient access by student users. The system has three access levels such as Administrator, Faculty and Student. CHMBAC DEAN will be an administrator who can manage the system, such as review capstone projects, student and faculty accounts, he can view capstone projects that have been uploaded to the system. Faculty will upload the student's final capstone project. They can also view and search project summaries. Students can view files, search for files, and use the compatibility checker. The system allows administrators to insert or update new information into the database, such as new summary projects and new account registrations.

The system also allows administrators to manage all tasks including adding, updating, monitoring, and storing data from the BSIT platform of the City of San Carlos campus of Pangasinan State University in a database. Whether. As a result, all data is easier to handle and manage by BSIT administrators. All research is effectively done using the name of the capstone project. Students are allowed to research capstone projects anytime, anywhere if there is an internet connection. Students can search and view the title of the platform. The system does not include the following features such as file creation, private messages, chat as well as video and audio. The system only accepts files in PDF format. For system compatibility, the system can only check the title if it has similarities with the database abstraction projects. In the proposed capstone project, the feature and issue will be sent to the faculty and administrators whether they meet the criteria and feedback will be returned to the students.

## Chapter 2

### REVIEW OF RELATED LITERATURES AND STUDIES

**2.1 Related Literature**

This chapter present a review of literature and filed up after an in-depth search done by the researcher.

# 2.2.1 Archiving and document management at taibah university: a case study (taibah university 2019)

Different teams of professionals can access shared network drives and files, including organizational documents, accounting data, and meeting information, can only be accessed by authorized users. The use of a secure network-based automated system ensures quick data access, efficient storage and management, easy circulation of information within the organization, and the use of electronic storage. All documents collected and stored by Taibah University experts are confidential and backed up, however long-term storage is not guaranteed for all types of documents (University Taibah 2019). Storage involves additional costs for storing and managing large amounts of data; therefore, the school does not provide this service for all types of documents it collects and stores.

**2.4.1digital humanities and the use of web archives (vlassenroot et al., 2019).**

Their research is a continuation of their description of the national web archiving state of the art (published in the first issue of the International Journal of the Digital Humanities), now extended to archiving. on social networks (Vlas enroot et al., 2019). ). They describe current legal, technical, and operational aspects of preserving social media content, such as management and preservation policies. Their analysis was supplemented by the results of an online survey to which 15 heritage organizations (national libraries and national archives) responded.

# 2.5.1based digital archiving efforts boosted by the pandemic (Lacsamana, 2021)

This is an article published on June 16, 2021 by Brontë H. Lacsamana, discussing the impact of the COVID-19 pandemic on stored procedures in different agencies in the Philippines. He started by referring to the archives of the University of the Philippines (UP), whose plans to transfer funds had to be halted due to uncertainties and restrictions caused by the pandemic. As a result, they are forced to emphasize digital work, improve digital assets, and train their employees through webinars. Nationwide, digitization initiatives are underway, with the Senate Legislative Records and Records Service (LRAS) and the House Archives Authority (HRep) making progress in digitization. legislative records and improve access through online tools and systems. The document also emphasizes the importance of ensuring public access to archives once they are digitized. While ABS-CBN's film restoration initiative is focused on making movies available through the internet, the Mindanao Film Archive has experienced workflow delays and limited access to users. public due to temporary closure. The National Archives of the Philippines (NAP) was established in 2007 and since then has endeavored to issue circulars, implement electronic records management policies and promote inter-agency cooperation. regional and national governments. This article deals with NAP in relation to policy and partnerships.

# 2.6.1 Entitled records for life: digital archiving to transform business productivity (Epson, 2022)

Based on an article titled Records for Life: Digital Storage for Business Productivity Transformation On June 27, 2022, on EPSON's official blog, the benefits of switching from conventional physical storage to digital storage will be discussed. in the writing. It highlights the fact that digital archiving involves more than just converting paper documents to a digital format. It highlights the benefits of reducing workflow, transitioning to smart storage, and improving productivity and efficiency with scanners. Physical records are kept in spacious storage rooms using traditional archiving methods, which can take up a lot of space and are prone to being labeled or misplaced. As a result, time can be wasted looking for specific documents instead of more useful things. These barriers are removed thanks to digital storage, allowing for better organization and worker productivity. The essay highlights the effects of digital storage on various businesses, especially in the healthcare sector. It describes how digitization has transformed telemedicine services, hospital information sharing, and patient care. Digital healthcare archiving improves patient experience and ensures up-to-date records, delivering tangible benefits. Traditional storage in a normal office environment includes dedicated storage areas and a tedious sorting process. Organizations can save space and work more efficiently by developing advanced scanners like the Epson scanner. Traditional repositories can be converted into searchable, unified digital files, reducing the burden on back-end and front-end operations. Customers benefit from digital storage by being able to use cloud storage, digitally sign documents, and manage administrative hassles on the go. The article also mentions the positive impact of scanning on sustainability. The risk of losing personal information is reduced and an organization's carbon footprint is reduced when confidential documents are shared digitally rather than sent by post or courier.

# 2.7.1 Web archives as a data resource for digital scholars (vlassenroot et al., 2022)

Based on an article titled Web Archives as Data Resources for Digital Researchers published on March 8, 2019 by Eveline Vlassenroot, Sally Chambers, Sven Lieber, Alejandra Michel, Friedel Geeraert, Jessica Pranger, Julie Birkholz and Peter Mechant, where they discuss exploratory analysis of web hosting and social media. Their study is a continuation of their description of the national Web archiving state of the art (published in the first issue of the International Journal of the Digital Humanities), now extended to archiving. social media. They describe current legal, technical, and operational aspects of preserving social media content, such as management and preservation policies. Their analysis was supplemented by the results of an online survey to which 15 heritage organizations (national libraries and national archives) responded. The authors discuss and reflect on significant challenges and shortcomings in social media archiving that are of great relevance to future researchers of this data.

**2.8.1 Online document management system.** **(Joseph Christian g. noel, 2019)**

With storage prices falling and capacity constantly increasing, the issue of how and where to store records remains unresolved. Resolved or normal user. Indeed, with the increasing number of files stored by users, the main issue today is the efficient and effective management of files available to users. By "managed" we mean a system that allows easy access, organization, and retrieval of user-maintained files, as well as the ability to automatically perform certain features. The authors wish to build a prototype of such ThesisFS document management system. ThesisFS will have all the basic functionality of a web-based file system and will have additional document management features such as intelligent document search called Folder Search, Indexing and Tagging. The automated actions are called Smart Indexing and the automated user-defined actions are called Action Folders.

**2.9.**1 **Online thesis archiving system for university of Makati**. ( Aljane gilles, 2019).

The research aims to develop an online thesis storage system for UMAK to help students, professors or anyone in need easily access theses. Users can access the system even when they are not at school because it is an online system. The user will register by filling out the registration form. When registering, the system will send a verification email to the user for security reasons. The system has the function of searching, previewing the full thesis and abstract, users can also download the thesis. The search includes filters by title, author, subject, year submitted, and program title. Users will be able to find out which theses are viewed the most. They can also save a specific thesis offline by adding it to their profile. The system will be managed by an administrator who is a librarian. Admin can update, delete and upload thesis. The system has a dashboard showing the number of registered users, the number of theses per school, the number of views per thesis, and the number of abstracts consulted. The project requires Sublime Text 3 for the front-end engine using PHP, HTML, CSS, JavaScript while for the back-end engine XAMPP and MySQL. XAMPP is used only as a development tool, allowing web designers and programmers to test their work on their computers without internet access. MS Office 2016 is required in the software for documentation purposes. Adobe Photoshop is used to edit the images that will be used for the system. The domain name will be used for website maintenance as it is an online system. The researcher used CamScanner to scan documents. After taking a hard copy of the thesis sample, the researcher imports the image into CamScanner and edits it, after editing the image will be saved as a PDF. This will be saved in the system database. CamScanner helps researchers digitize dissertations in libraries. The system requires a browser because it is an online system. Google Chrome is the browser used by the researcher. (Aljane Gilles, 2019).

**3.1.0 Archives in an Academic Library: The Case of a Private: The Case of a Private University in the Philippines. (Barut, Sheryll D. and Cabonero, 2021)**

The study used qualitative research methods to determine the position of AU in 10 fields. The researcher-evaluated checklist has been compiled against the RA Profile Standard 9470 and is placed in the context of the SMU profile. It was submitted for review by four (4) panels of library and research professionals in December 2019. The primary documentary evidence used was annual reports, newsletters, handbooks. and the ULRC handbook; and EMS circulars, memos and manuals. Scanning documents and photographic documents are also used to provide evidence of the status of the SMU's repository. The interview helps to cross-check the data extracted from the documents.

**3.2.0 Two Reports on Web Archiving: Literature Review and Tools Analysis (Jackie Dooley, March 28, 2018 )**

The tools we reviewed are Archive-It, Heritrix, HTTrack, Memento, Netarchive Suite, SiteStory, Social Feed Manager, Wayback Machine, Web Archive Discovery, Web Curator Tool, and Webrecorder. Most tools designed for web archives focus on collecting and storing technical metadata for accurate transmission and reproduction, but minimal descriptive metadata collection, partly because that metadata exists very little in the collected files. . Therefore, descriptive metadata must be generated manually, either internally or externally. The title of the web page (as recorded in its metadata) and the date of collection are regularly recorded, but it may not be possible to extract them automatically. A title is sometimes unnecessary, such as "home page" or "header". Not all tools define descriptive metadata in the same way. Hopes for automatic descriptive metadata generation may be futile unless creators of text-based web pages regularly incorporate more metadata than may be available for collection. The development of new tools and improvements to existing ones is actively underway.

#### 3.3.0 The Use of Personal Digital Personal Digital Archiving For Effective Learning During Pandemic Covid-19 (Naufal Ahmad Rijalul Alam,2022)

Personal digital storage may include the following steps: Examples of social media include emails, photo documents (including those saved on mobile, desktop, or social media), tweets, Instagram posts, and Facebook pages, receipts in digital form, email or e-mail correspondence, digitized family photos, and online portfolio or personal website. Personal digital archiving is how individuals manage and store their digital records so they can be used now and in the future. Well-managed personal repositories can help individuals make more informed decisions about how their files are used in everyday life (Wicaksono, 2021).

#### 2.2 Summary of Related Literature

|  |  |  |  |
| --- | --- | --- | --- |
| **Author/Year Published** | **Title** | **Advantage** | **Disadvantage** |
| (TAIBAH UNIVERSITY 2019) | Archiving and Document Management at Taibah University: A Case Study | Quick access to data, effective storage and management, easy flow of information in an organization, and use of electronic archiving. | Limited archiving for long periods of time and additional costs associated with storing and managing large amounts of data. |
| (VLASSENROOT ET AL., [2019](https://link.springer.com/article/10.1007/s42803-021-00040-5#ref-CR1)). | digital humanities and the use of web archives. | Description of legal, technical, and operational aspects of preserving social media content. | The study's dependence on answers from only 15 heritage institutions may restrict the study's generalizability. |
| **(LACSAMANA,2021)** | **Based Digital archiving efforts boosted by the pandemic.** | Enhancement of digital assets, emphasis on digital work, and training through webinars. | Workflow delays and limited public access due to temporary closures. |
| (EPSON,2022) | entitled Records For Life: Digital Archiving to Transform Business Productivity. | Reduction of workflow, smart archiving, increased productivity and efficiency. | Potential risk of data breaches and cybersecurity threats. |
| (EPSON,2022) | entitled Records For Life: Digital Archiving to Transform Business Productivity. | Enables a comprehensive overhaul of the workflow. Save storage space and get rid of labeling and positioning problems by transforming paper archives into searchable digital files. | It also involves a sizable upfront investment in cybersecurity measures, employee training, and technology.  Firms are more susceptible to data loss due to technical failures. |
| **JOSEPH CHRISTIAN G. NOEL, 2019)** | **Online Document Management System.** . | Students, faculty, and other users can utilize the system to access theses even while they are not on campus. This improves the convenience and flexibility of research. | Users must rely on a stable internet connection to access the theses because the system is online. Users' ability to use the system properly may be hampered by limited or intermittent internet connectivity. |
| **Barut, Sheryll D. and Cabonero, 2021** | **Archives in an Academic Library: The Case of a Private: The Case of a Private University in the Philippines.** | This degree of rigor improves the study's findings' dependability and trustworthiness, offering a thorough picture of the UA's current situation. | he exclusion of diverse perspectives and other archival resources may restrict the study's depth and range of results. |
| **Jackie Dooley, March 28, 2018** | **Two Reports on Web Archiving: Literature Review and Tools Analysis** | This raises the chances of locating a suitable technology that meets specific online archiving criteria. | Lack of automatic extraction of descriptive metadata from web pages impedes productivity and may result in inconsistent or incomplete metadata entries, reducing the general accessibility and discoverability of preserved material. |
| **Naufal Ahmad Rijalul Alam,2022** | **The Use of Personal Digital Personal Digital Archiving for Effective Learning During Pandemic Covid-19** | Guaranteed that their personal digital archives include varied elements of their lives and activities by including a wide variety of digital assets, allowing a holistic preservation of digital footprint. | Issues in identifying the appropriate preservation tactics, metadata standards, and technologies to utilize, which may necessitate continual efforts to stay educated. |

#### -2.3 Synthesis

Existing systems, both domestic and foreign, are considered as references for the development of information systems. The study identified features that are present in these systems but not in the proposed system, Capstone Corner:

A secure and user-friendly storage system. The researchers thoroughly analyzed and evaluated the systems involved, taking into account their modules and functions.

Related studies, mostly local, show that employees who have now migrated the best digital archives from traditional paper archives are having a hard time adapting to the environment. their workplace with a digital storage environment.

**2.4 Gap**

#### Despite Pangasinan State University (PSU)'s emphasis on providing training and research opportunities in the field, there is still a lack of a comprehensive application created to meet specific needs and challenges. for user-friendly and secure storage system management. As a result, proponents identified a significant shortcoming related to the lack of a storage system at CHMBAC. The lack of specialized software for this purpose has several limitations, including the inability to improve data security, promote efficient document management, and store electronic copies of the Capstone project. Due to these limitations, the PSU cannot efficiently allocate resources and make informed decisions. By closing this gap and creating a Capstone Angle:

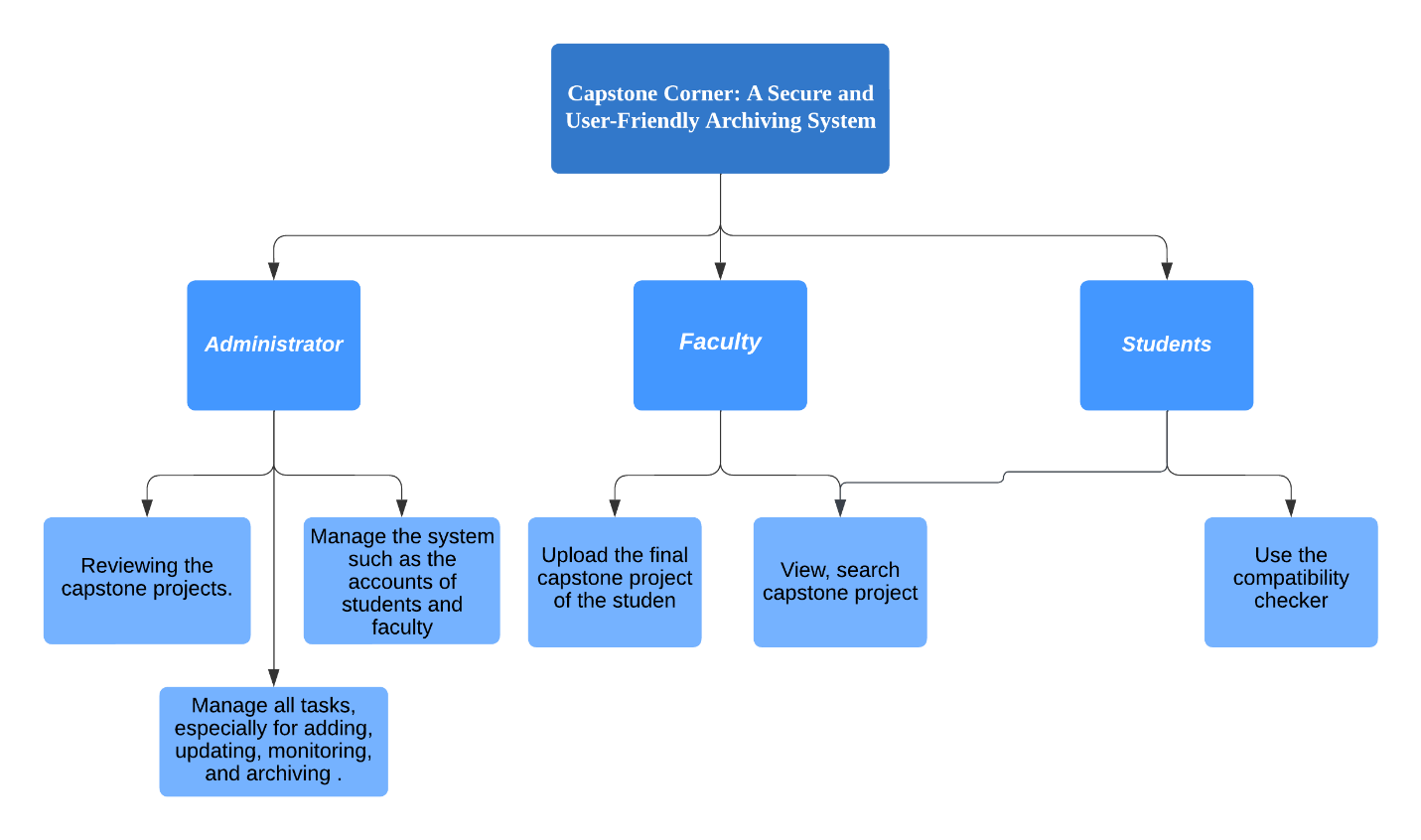
#### A secure and user-friendly storage system. The promoters hope to radically change the way MACHBC manages its stored procedures. CHMBAC final year projects will be archived, and freshmen can find resources and ideas for their upcoming or upcoming senior year projects, and third year teams can rate evaluate whether the system they propose is suitable. By providing CHMBAC with a powerful tool that combines a reliable, secure and user-friendly storage system that is easy to use and maintain, Capstone Corner has provided:

#### A secure and user-friendly storage system aims to fill this void. It aims to maximize CHMBAC's revenue generation and decision making through the adoption of our technology.

#### 2.5 Conceptual Framework

Concept maps are an effective tool for discovering connections between concepts of the project. Knowledge of these connections and visualizing them can aid in knowledge discoveries of the course material.

The Capstone Corner: A Secure and User-Friendly Archiving System's conceptual operation is shown in figure 2.1



**Figure 2.1 Concept Map of a Secure and User-Friendly Archiving System**

How the system will operate, and flow is shown in Figure 2.1. There are three tiers’ users starting with the administrator, who manages all tasks like evaluating capstone projects, student accounts, and faculty accounts. Next is the faculty. They submit the students' final capstone projects and have access to see and search for them. The students come last. Students have access to files and read, search, and use the compatibility tester.

#### 2.6 Definition of Terms

The following terms defined as operationally and logically for better understanding of this project.

**Archive. This refers to** A database or storage system designed for managing and safe storage of data for Capstone projects. For project materials like documents, reports, and code repositories, it would be a central repository.

**Capstone Corner.** **This refers to** The name of the web-based application that provides a Secure for storing the capstone projects and a title and criteria compatibility checker.

**Capstone project. This refers to** a concrete illustration of their comprehension of the principles and use of secure and user-friendly archiving systems.

**CHMBAC.** **This refers to** The beneficiaries of this system.

**Compatibility.** **This refers to** the system's ability to efficiently integrate and cooperate with different software components.

**Criteria.** **This refers to** the set of requirements or standards used to assess the effectiveness and quality of the system.

**Secure. This refers to** the use of controls and procedures to guarantee the privacy, accuracy, and accessibility of archived data.

**Title.** **This refers to** The data needed from the user that the system will check if it has a similar in the database.

**User-friendly.** **This refers to** An archiving system's user-friendliness is defined as its simplicity and intuitiveness from the users' point of view.

**Users.** **This refers to** the admin, faculty and students.

## Chapter 3

### 

### METHODOLOGY

The quality of the material, as well as clear, specific explanation of how they will be study is done, is critical for the study to be an organized and effective effort. This is what it implies and is a component of the research methodology, which includes the requirement analysis, system framework, data analysis, technical background, implementation plan, statistical tools, and network diagram, which are used to establish its validity and reliability, data gathering procedures, and the appropriate statistical treatment of data.

#### 3.1 Requirement Analysis

The analysis of requirements is crucial to the success or failure of a system or software project. The requirements must be written, actionable, quantifiable, tested, traceable, relevant to identified business needs or opportunities, and detailed enough for system design. The process of defining user expectations for a new or improved application is known as requirements analysis (ReQtest, 2018). It encompasses all tasks performed in order to determine the expectations of diverse stakeholders. As a result, "requirements analysis" refers to the process of analyzing, documenting, validating, and maintaining the requirements of software or systems. High-quality requirements are written, actionable, quantifiable, testable, and traceable, and they help identify business opportunities. The primary source of data in the identification of requirements is the first step in the gathering of information, the state, and the current process of Pangasinan State University. After gathering the necessary information, the developers investigated the system's problem. Developers create the user's requirements. The developers thoroughly analyzed all of the requirements essential to meet the desired idea for the system to be constructed.

### 3.1.1 Hardware and Software Requirements

The developers meticulously detailed the hardware and software requirements that would meet the created system’s expectations. In software deployment, the disclosure of hardware and software requirements allows the system to perform as intended. The set of documents or documentation that described the behavior of a system includes the variety of elements that attempt to define the intended functionality required by the stakeholder to satisfy their different users.

### 3.1.2 Hardware Requirements for System Development

Hardware requirements are the statements of requirements that would identify and dictates the performance of the system in order to satisfy both clients and owners of the system. Identifying the hardware requirements enables the system to provide its best performance and handle the processing of data (Siedle, 2015). The hardware requirements for the development Capstone Corner: A Secure and User-Friendly Archiving System are very important aspect of the development.

## . Software Requirements for System Development

This chapter comprises various procedures and methodologies for to achieve the target objection of the project. The method and step presented will guide the developers in completing the input process and output phases for developing the Capstone Corner: A Secure and User-Friendly Archiving System.

**Table 3.1 Software Requirements**

|  |  |
| --- | --- |
| **Computer Hardware Components** | **Specification** |
| Display | 1280x720 |
| Processor | Intel core i3 |
| RAM | 8 GB |
| Hard Disk Drive | 125 GB (SSD) |
| Mouse / Keyboard | USB / Wireless |

## Software requirements is a set of documents that explain a software application's characteristics and behavior. It consists of a few numbers of aspects that seek to define the customer's intended functionality to satisfy their various consumers. To ensure smooth project development, every team member must understand the development process in the same way. This would define the features and behavior of the system or software application for commercial use (Inflecta, 2020).

**Table 3.2 System Development Software Requirements**

|  |  |
| --- | --- |
| **Computer Software Components** | **Specification** |
| Windows Operating System | Windows 10 |
| Database | MySQL |
| Programming Language | PHP /Java Script / CSS / HTML |
| Web Browser | Google Chrome /Microsoft Edge – Latest versions / Brave |
| Framework | Laravel |

#### 3.2 System Framework

Agile-Scrum software development will be the project's methodology. Agile software development is a set of methods that emphasize iterative development and the evolution of requirements and solutions through collaboration among self-organized, cross-functional teams. Agile methods encourage a flexible project management process that encourages regular review and adaptation, a leadership philosophy that promotes teamwork, self-organization, and accountability, a set of engineering best practices that enable the rapid delivery of high-quality software, and a business approach that aligns development with customer needs and company objectives. Scrum can be traced back to Hirotaka Takeuchi and Ikujiro Nonaka's influential Harvard Business Review essay "The New Product Development Game" in 1986. This article examined how companies such as Honda, Canon, and Fuji-Xerox approached product development in a scalable and team-based manner, with an emphasis on the empowerment of self-organized teams.Scrum was founded in 1993 as a software development process by Jeff Sutherland and his colleagues at Easel Corporation, who were inspired by the concepts presented in the article. They combined the article's principles with ideas from object-oriented development, empirical process control, iterative and incremental development, productivity enhancement, and complex and dynamic system management. The term "Scrum" comes from the sport of rugby and refers to how a game is restarted after a foul or when the ball is out of play.

#### 3.3 Tools for Data Analysis - Use Case, ERD, Data Dictionary

This area of the study discussed the different tools used for data analysis. It also includes the used case diagrams and entity relationship diagram models for the representation of the systems’ workflow.

**Data Analysis**

Important data are gathered primarily from the dean of the college of hospitality management business administration and computing in Pangasinan State University, San Carlos City Campus. The main respondents of this project are the Bachelor of Science in Information Technology Department within the PSU SC. The respondents are result in random sampling to find them reliable in conducting usability test. The true identity of the respondents is not revealed for confidential purposes. The developers used different data gathering instruments for acquiring valuable and relevant information needed for the study. They utilized different methods in order to obtain necessary information to complete the study.

**Document Analysis** - The focus of the analysis should be the critical examination, rather than mere description of the documents. It is a social research method and is an important research tool in its own rights. Documentary work involves reading lots of written material.

The document analysis is a social research method and an important research tool in its own right. It is also an essential component of most triangulation schemes, which combine methodologies in the study of the same phenomenon (Bowen, 2009). The developers undergo on a thorough analysis of online appointment system and inventory and management system documents was conducted, determining and identifying the needs and challenges of the current online veterinary management with the appointment system.

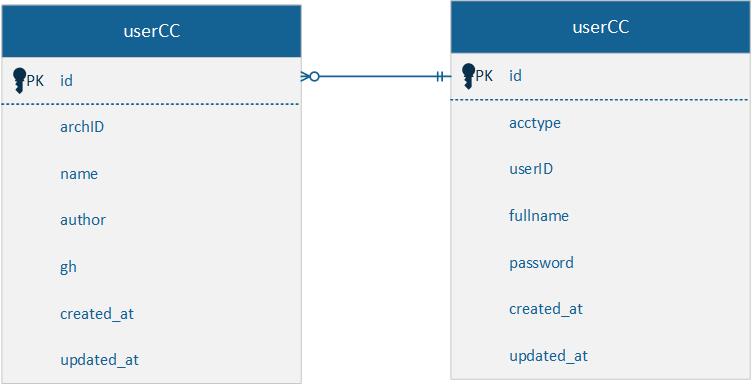
**Interview** – To avoid misinterpretation of the question, the questions should be asked as written for all respondents. For the same reason, clarification of the question should be avoided. However, if there is a misunderstanding, the questions can be repeated. The questions should be asked in the order specified in the questionnaire, as a specific question may not make sense if the questions preceding it are skipped. An interview is a formal encounter in which one or more people are being questioned, discussed with, or evaluated another individual in order to obtain background information (Malicdem, et.al, 2012). The developers interviewed and discussed with the stakeholders and clients involved in the study in order to obtain the necessary data and information to support and strengthen the study. In addition, interview gives the developers a better response rate than mailed questions, and the people who cannot read and write can also answer the questions.

**Internet Sources** – The internet has made researching a topic easier than ever before. People with internet access can simply pull up a search engine, type, and click away instead of going to the library. According to lumencandela (2020), scholarly journals and databases are the most common sources of reliable, credible information on the Internet. These academic, peer reviewed collections offer extensive reports, case studies, articles, and research studies to help you with your research. The developers used internet websites in gathering relevant data and obtaining current information and related articles relevant to online veterinary management with the appointment system. Many related studies are found on the internet which helped the developers to strengthen their points in developing the study.

**Survey** – the developer’s utilized surveys to gathered information and to avoid biased opinion that way affect the outcome of the study. A survey, according to qualtrix (2020), is a method of gathering information from a sample of people by asking relevant questions with the goal of understanding populations as a whole. Surveys are an important source of data and insights for everyone involved in the information economy, from businesses to the media, to government and academia. In relationship to the study, the survey is a research method used for collecting data from a predefined group of respondents to gain information and insights into various topics of interest. The data is obtained through the use of standardized procedures to ensure that each respondent can answer the questions at a level-playing field to avoid biased opinions that could influence the outcome of the research or study.

**Use Case Diagram**

The information and persons engaged in the developed system's process are represented in figure 3.2. It entailed the administrator is in charge of the system's overall transactions. The administrator is able to login in the system. Administrator also managed the to monitor the sales. The inventory also facilitates by the administrator. The control and checking of the products done by inventory management of the system. The records of assets and crops are safely kept in the system. Analytics is also one feature of the developed system which would help the administrator to identify the monthly and latest sales of the agriculture. Furthermore, the administrator is capable of accessing the information in the system which enables them to manipulate the content of the system from inside to outside. The used of case diagram is a one way to summarize the details of a system and users within that system. It is generally shown as a graphical representation of interactions among different elements in the system. Use case diagrams would specify the events in a system and how those events flow, however, use case diagram does not describe how those events are implemented.



**Figure 3.1 ERD**

#### The Entity Relationship Diagram (ERD), also known as the ER Diagram or the ER model, is a sort of structural diagram used in database architecture. An ERD contains several symbols and connectors that depict two crucial pieces of information: the major entities inside the system scope and their interrelationships.

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**Figure 3.2 Use Case**

#### 3.4 Technical Background

This developed capstone project is a web application to help the agriculture department at PSU SC. According to Robert Gibb (2016), “A web application is a computer program that utilizes web browsers and web technology to perform tasks over the internet. Web applications use a combination of server-side scripts (PHP and ASP) to handle the storage and retrieval of the information, and present information to users”. PHP or Hypertext Pre-processor is the most popular server-side scripting language in the world. It is known to be one of the simplest programming languages and 48 it is the most used server-side scripting languages for web development. PHP is being widely utilized in developing web applications and become one among main languages for developers to make new applications. Leading social networking sites like Facebook and reputed organizations like Harvard University are both supported by PHP which makes PHP popular and increases it credibility. PHP is considered a very effective technology that offers a convenient development process with many additional to aid it. In fact, according to the Popularity of Programming Languages Index (PPLI), PHP is the fifth most popular coding languages in the world. With those supports and claims, the developers would utilize the PHP as the main development language. PHP provides the developers with the following advantages such as: (1) Platform Independent, (2) Open Source and Dynamic Library Support, (3) Organized, (4) Free Availability, (5) Database, (6) Easy to Understand and Code, (7) Easy Integration and Consistency. In addition, PHP is a scripting language that implements complex feature on a webpages should incorporated. JavaScript is an essential part of the web, used on 95% of all websites and the web is an essential part of modern life. The web allows us to do things that used to be possible only in native applications installed on our computers. These modern, complex, interactive websites are often referred to as web applications. JavaScript frameworks power much of the impressive software on the modern web including many of the websites you likely use every day. In today’s technical web development era, websites are nothing without responsive design frameworks. The introduction of these front-end development frameworks has helped developers focus on the development of the user-centric applications.

In the capstone project, the developers would developed a web application called Agri-Farm Assets and Crops Monitoring System, which would utilize Hypertext Pre-processor (PHP) as the programming language and JavaScript (JS) along with Cascading Style sheets (CSS) as the PHP framework. With the introduction of JS Framework and CSS Frameworks, developers are now able to extend the functionality of a number of applications. It provides convenient interface and capability to create a web application. It is embedded with the template engine, which is commonly used for the listing of fantastic web layouts for web applications that would be helpful in developing web applications. The list of these exceptional front-end web development frameworks is much more extensive than the others. We have managed to summarize the ones that are truly innovative in the features. They are easy to use and learn and help developers to scale the functionality of the applications. Technical solutions is used to select, design, and implement solutions to requirements. Solutions, designs, and implementations encompass products, product components, and product related lifecycle processes either singly or in combination as appropriate (Wibas 2021). Typically, these activities interactively support each other. Some level of design, at times fairly detailed, can be needed to select solutions. Prototypes or pilots can be used as a means of gaining sufficient knowledge to develop a technical data package or a complete set of requirements. Quality attribute models, simulations, prototypes or pilots can be used to provide additional information about the properties of the potential design solutions to aid in the selection of solutions. Simulations can be particularly useful for projects developing systems-of-systems. 50 The developers created a web-based application called Agri-Farm Assets and Crops Monitoring System using PHP, HTML, CSS, Bootstrap, JavaScript, jQuery, MySQL, XAMPP. This monitoring system with point of sales, inventory, and analytics was created using version 7 of PHP. The system might not operate well with the old PHP version such as PHP version 5 and below. The PHP version 6 and 7 can run the system without any problems but PHP version 8 might have because it is an up-to-date version of PHP that have a lot of new features, improvements, and developments. And if you are using version 5 below you can upgrade anytime. In addition, for its User Interface Design, developers used a HTML and CSS for a better lightings and design that the user would satisfy within each page. And also Bootstrap for a responsive design, by the use of HTML, CSS, Bootstrap, we can create a user-friendly interface. Finally, developers also used JavaScript and jQuery to add some functions of the system, for the back end, developers used MySQL. Developers used XAMPP allows you to build your website offline by using the local server. And for Integrated Development Environment, programmers used sublime text software for building applications and editing the codes.

**Software Used in the System**

Developers utilized different software application and programs to develop the system. This said application are as follows:

**PHP**. The PHP stands for PHP: Hypertext Pre-processor, is a widely used open-source general-purpose scripting language that is used to build dynamic websites. When a 51-website visitor visits a page, the server executes PHP instructions and provides the results to the visitor's browser.

**HTML**. The Hyper Text Mark-up Language (HTML) is a collection of mark-up symbols or codes that is used to structure a web page and their contents. HTML is made up of element or tags and attributes which work together to identify document parts and tell the browser how to display them.

**CSS**. Cascading Style Sheets, is a language for describing how Web pages are presented, including colors, layout, and fonts. It enables the presentation to be adjusted for different types of devices, such as huge displays, small screens, or printers. The separation of HTML and CSS makes it easier to maintain websites, share style sheets across pages, and customize pages for diverse situations.

**Bootstrap**. The bootstrap is the most popular, free and open-source framework for creating responsive layout in web pages, with much less effort. It contains HTML, CSS, and JS components for creating forms, buttons, navigation, dropdown, modals, layout and many other things, the list is very long indeed.

**JavaScript**. JavaScript is a scripting language that enables you to create dynamically update content, control multimedia, animate images, and pretty much everything else. It enables you to integrate dynamic features into web pages that you would not be able to do with only HTML and CSS.

**MySQL**. MySQL is a relational database management system based on SQL – Structured Query Language. The application is used for a wide range of purposes, including data warehousing, e-commerce, and logging applications. The most common use for MySQL, however, is for the purpose of a web database.

**XAMPP**. The XAMPP is a cross-platform web server that is free and opensource. It is a short form for Cross-Platform, Apache, MySQL, PHP, and Perl. XAMPP is a popular cross-platform web server that allows programmers to write and test their code on a local webserver before converting to a live server.

#### 3.5 Implementation Plan

The implementation plan describes how the information system will be deployed, installed and transitioned into an operational system. The plan contains an overview of the system, a brief description of the major tasks involved in implementation, the overall resources needed to support the implementation efforts. The plan is developed during the design phase and is updated during the development phase.

The implementation of Capstone Corner: A Secure and User-Friendly Archiving System in the Pangasinan State University, San Carlos Campus to help the department of Information Technology goal of the study. The content of this system should adapt to the users’ requirements. The developers are responsible for creating and developing an implementation plan for the developed system. These developers would provide with a description of how the information system would be deployed, installed, and turned into a functional system. Once completed, the table below reflects the suggested implementation strategy for the Capstone Corner: A Secure and User-Friendly Archiving System. It outlines the approach required, the activities carried out, the people engaged, and the time span of each activity.

|  |  |  |  |
| --- | --- | --- | --- |
| **STRATEGY** | **ACTIVITIES** | **PERSONS INVOLVED** | **DURATION** |
| Approval from the PSU SC Bachelor of Science in Information Technology Dean | Letter of Approval from the Researchers | Researchers, IT Faculties and CHMBAC Dean | 3 Weeks |
| System’s Implementation | Installation of the system and required software and hardware | Researchers, Faculties | 5 Hours |
| Information Distribution | System Manuals | Researchers, Information Technology Department Dean, | 1 Day |
| 1 Day Training | Training and Lectures of System Users | Researchers, Administrator, IT Faculty, CHMBAC Dean, | 1 Day |

#### 3.6 Statistical Tool

Statistics is the study and practice of advancing human knowledge through quantitative analysis of empirical data. It is based on statistical theory, which is ab application of mathematics. In which, Statistical tools are tools which are purposively make or are used for data collection and analysis in research methodology. This also includes the scaling system, which was used by developers as a technique to monitor the respondent’s interpretation of facts. The developers used weighted arithmetic mean to determine the average response for each item of the five (5) options in each item in the questionnaires namely, 5 (Strongly Agree), 4 (Agree), 3 (Neutral), 2 (Disagree), 1 (Strongly Disagree).

The following is the mathematical formula for the weighted arithmetic mean.

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Description automatically generated

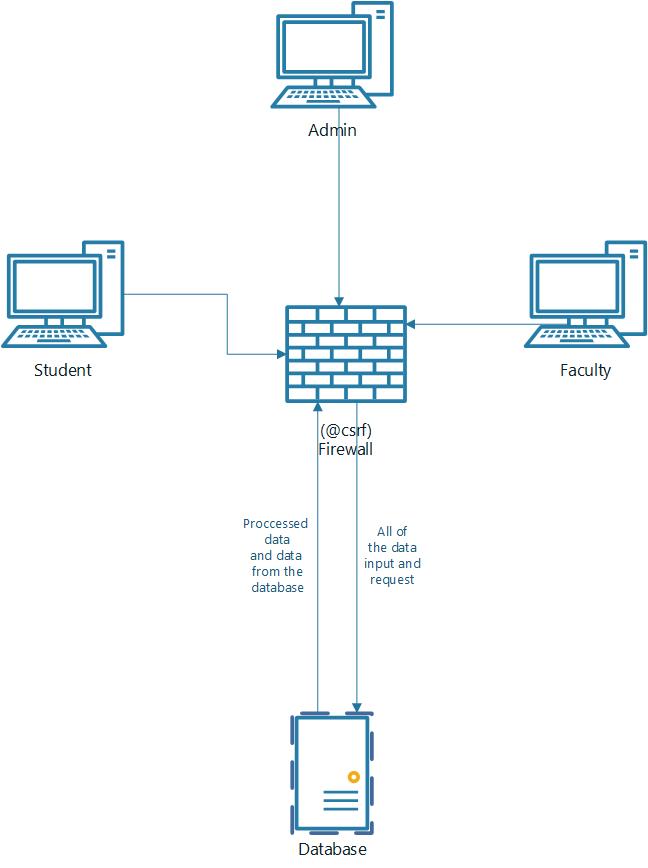
|  |  |
| --- | --- |
| Where: | 𝑊(𝑎𝑣𝑒) = weighted mean |
| 𝑊𝑖 | = weight of frequency of each option |
| 𝑋𝑖 | = value of each option |
| 𝑁𝑖 | = the number of respondents |

|  |  |
| --- | --- |
| **Scale** | **Points** |
| Strongly Agree | 5 |
| Agree | 4 |
| Neutral | 3 |
| Disagree | 2 |
| Strongly Disagree | 1 |

**Table 3.4 Scales and Point in the Instrument**

The table 3.4 shows the scales and points used in the acceptability test conducted on the system. It demonstrated that 5 points is equivalent to strongly agree on the questions being asked, 4 point is equivalent to agree on the questions being asked, 3 points is equal to neutral on the questions being asked, 2 points is equivalent to disagree on the questions being asked, and lastly, 1 point is equivalent to strongly disagree on the question being asked.

#### 3.7 Network Diagram

The system framework of the developed system is based on the functional and non-functional requirements identified by the developers. The identification of those requirements is based on the strict principles of validity. Developers gathered information that would utilize in developing the system framework.

**Figure 3.4 Web Network Diagram**

The Capstone Corner: A Secure and User-Friendly Archiving System for Pangasinan State University, San Carlos City, provides access to the admin. The feature of the system is focused on archiving capstone, account management and title compatibility checker wherein admin can manage all of the accounts including the faculty and students. Also, the additional feature for the system we called compatibility checker was a feature for both admin, students and faculty where the feature ask the user to input a capstone title, feature and problem and this attributes will be processed by the system if it has an existing similar system. The procedure by which the system is consists of defined procedures and features such as development and coding, quality assurance, testing and implementation. The systems’ web network diagram depicts the entire process, but it does not explain the whole process happens in the system but rather shows the flow of operations.

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