**DOCUMENT MANAGEMENT SYSTEM FOR CENTRAL PHILIPPINE UNIVERSITY LOCAL AND INTERNATIONAL LINKAGES AND AFFILIATIONS CENTER (LILAC) WITH CROSS-MATCHING ALGORITHM**

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**CHAPTER I**

**INTRODUCTION**

**Overview of the Current State**

The Local and International Linkages and Affiliations Center (LILAC) at Central Philippine University (CPU) in Jaro, Iloilo City is crucial in expanding the university’s global reach and facilitating student mobility programs. It bridges CPU and various academic institutions, organizations, and industries worldwide, creating opportunities for students and faculty to engage in exchange programs, internships, and collaborative research initiatives. The center is dedicated to fostering partnerships that enhance internationalization efforts, enabling students to gain cross-cultural experiences and academic exposure beyond the university. By organizing and facilitating student exchange programs, faculty mobility, internships, and research collaborations, the center ensures that CPU remains competitive in a rapidly globalizing academic landscape.

At present, LILAC relies on manual methods such as spreadsheets and physical documents to track international student activities, academic partnerships, and other pertinent documents. Student data is currently stored in Microsoft Excel, making retrieval and filtering inefficient. If the director or secretary needs specific records, they must manually search for them or request data from other staff. Compiling reports for different college departments or administrative purposes results in inefficiencies due to the absence of a structured system.

Additionally, the management of Memorandum of Understanding (MOUs) and Memorandum of Agreement (MOAs) lacks an automated system for tracking contract expiration. There are no notifications or reminders to prompt the secretary when a contract is about to expire. As a result, renewal of contracts is often missed, leading to potential lapses in partnerships. Without a centralized platform, monitoring the number of active university partners and determining whether partnerships are still valid or need renewal becomes challenging. This absence of a system hinders the university’s ability to maintain strong academic collaborations.

Academic awards and recognitions play a vital role in enhancing the reputation and visibility of CPU. These awards acknowledge the achievements of students and faculty and serve as a testament to the university's commitment to excellence in education. By actively pursuing and qualifying for various academic awards, LILAC can showcase its successful international collaborations, innovative programs, and impactful research initiatives. Recognition from these awards can attract prospective students, faculty, and partners, thereby fostering a culture of academic excellence and international engagement. Furthermore, awards can provide additional funding opportunities and resources that can be reinvested into programs that enhance student mobility, research capabilities, and overall institutional growth. Therefore, implementing a robust system that effectively cross-matches the university’s activities with award criteria is essential for maximizing CPU's potential to secure these prestigious recognitions.

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**Desired State of Technology**

The desired state of technology for LILAC is a Local Area Network-based (LAN) system designed to support document monitoring, academic award qualification, and international engagement management at CPU. This system will allow students and faculty staff to easily submit and access activity forms online, ensuring a more efficient and accessible process. A structured database will be implemented to store and classify records of administration, faculty, staff, and students, with advanced filtering and search functionality for quick data retrieval. The platform will feature automated MOU/MOA tracking, sending timely notifications for upcoming contract expirations to prevent lapses in partnerships. Additionally, a password-secured financial monitoring system will be integrated to track budgets for travel, activities, and other engagements, ensuring transparency and accuracy. A cross-matching algorithm will evaluate the office’s academic and international activities against award criteria, allowing administrators to identify areas for improvement and maximize award eligibility. The system will also include a scheduling module with automated notifications to facilitate meetings, exchange student processes, and contract deadlines. Designed for local access, the LILAC system will be securely maintained within the school’s internal network, ensuring that file encoding and sensitive data management remain strictly within the office for confidentiality and compliance.

**Statement of the Problem**

1. LILAC uses spreadsheets and physical documents to track international student documents, activities and academic partnerships, making data entry, retrieval, and filtering slow and prone to human error.

Objective: Design a database repository digital platform to streamline the management of international student records, activities, and academic partnerships.

1. There is no system to track the expiration of MOUs and MOAs, leading to missed renewals and potential disruptions in partnerships.

Objective: Create a module to track the status and expiration dates of MOUs and MOAs, with automated notifications for timely renewals to maintain institutional partnerships.

1. The lack of a system that maps CPU’s activities to potential academic awards results in missed opportunities to gain recognition, enhance the university’s reputation, and attract partners, students, and funding.

Objective: Design and develop the AwardMatch module using a cross-matching algorithm, which helps the university connect its international activities, programs, and achievements with academic award criteria and ensures that the university doesn't miss any chances for recognition.

1. Lack of a centralized system for tracking and monitoring events managed by LILAC.

Objective: Create an events organizer to track, monitor, and manage events held by the Local and International Linkages and Affiliations Center (LILAC).

1. Generating reports for administrative purposes or for different college departments requires manual data compilation, which results in delays and inefficiencies.

Objective: Create a report module that automatically gathers and organizes data from centralized records.

**Objective of the Study**

General Objective

To design and implement **LOCAL AND INTERNATIONAL LINKAGES AND AFFILIATIONS CENTER (LILAC):**

**A DOCUMENT MANAGEMENT SYSTEM using CROSS-MATCHING ALGORITHM FOR ACADEMIC AWARDS**

Specific Objectives

\*\* Transfer here the objectives provided in the Statement of the Problem

**Scope and Limitation of the Study**

This study focuses on developing a LAN-based system to improve the manual process of managing documents and data at LILAC of CPU. The system will automate event tracking, MOU/MOA management, financial documentation, and academic award qualification.

However, the study has its limitations. The system will not handle direct communication with international partners or manage the execution of events but will focus on data organization and tracking. Additionally, access to the system will be restricted to LILAC staff and administrators, with no external user access.

**Significance of the Study**

Director and Secretary. The study will streamline document and data management within LILAC. By implementing this system, staff can efficiently track and manage events, contracts, and financial transactions, improving accuracy, reducing human error, and enhancing reporting and decision-making.

Students and Faculty. The system will indirectly benefit students and faculty by enhancing internationalization efforts. Improved management of exchange programs, internships, and academic partnerships will create more opportunities for global exposure and academic collaboration, enriching the educational experience.

University. The study will help Central Philippine University monitor active partnerships, ensuring timely renewal of MOUs and MOAs. This will strengthen and expand academic collaborations, improving the university’s global competitiveness. Additionally, the system will reduce mismanagement risks and missed academic award opportunities, reinforcing CPU’s reputation as an institution committed to internationalization.

**CHAPTER II**

**REVIEW OF RELATED LITERATURE**

Document Management System

*Efficiency of Electronic Document Management Systems: A Case Study*

This study explores the transformation of health data management systems over the past century, emphasizing the role of technological advancements such as big data analytics and the Internet of Things (IoT). This study contributes to the existing literature by analyzing the progression of health data systems from paper-based records to digital platforms, including blockchain technology. The findings highlight the limitations of current systems and underscore the need for a secure and real-time health data management framework. The study further suggests that integrating big data analytics can enhance disease diagnosis, prognosis, and prevention strategies. These insights offer a valuable foundation for future research aimed at improving healthcare information systems and optimizing patient care. (Abaci and Medini, 2022)

*The Role of the Document Management System in Optimizing Business Processes*

This study examines the role of digital document management (DMS) systems in enhancing organizational flexibility, productivity, and agility. It emphasizes the importance of DMS in automating and optimizing business processes through integration with Enterprise Resource Planning (ERP) systems. The research outlines a business model for electronic document and records lifecycle management, focusing on processes such as document creation, approval, and secure distribution. The findings suggest that this approach improves organizational structure, reduces costs, and increases operational efficiency by streamlining workflows and minimizing errors. The study also highlights key DMS features such as digitization of physical documents, centralized storage, and advanced search capabilities, which contribute to improved productivity. (Orlov, 2024)

Event Tracking System

*Event Tracking System Using Web Apis And Expert System: A Review*

This study focuses on developing a global event management system that uses modern technologies such as Artificial Intelligence, Distributed Database Management Systems, and Web 3.0 services to address the challenges of managing increasingly complex events. The study highlights the limitations of traditional event management systems, such as spreadsheets and outdated databases. It proposes a web-based platform to automate registration, event listing, venue selection, gallery management, and crowd control tasks. The system includes separate interfaces for both administrators and participants, streamlining event planning and reducing costs. The findings suggest that such an advanced system can efficiently handle all aspects of event management, providing a unique identity for users and improving overall management efficiency. (Shrivastava et al., 2024)

**CHAPTER III**

**METHODOLOGY**

Agile methodology with RAD components organizes software development around rapid, iterative prototyping and continuous feedback loops. Rather than waiting to deliver a complete feature, our approach quickly produces working prototypes refined in successive iterations. For example, "complete and optimize the login process" can be treated as one iterative component, where a prototype is built, user feedback is gathered, and improvements are made continuously until the process is fully refined and ready for production. This blend ensures high adaptability and faster time-to-market while focusing on delivering value in small, testable increments.

1st Iteration: Core Foundation (4 weeks)

* Infrastructure Setup:
  + Establish a cloud-based development environment with a CI/CD pipeline
  + Configure development, staging, and production environments
  + Implement an automated testing framework
* Database Implementation:
  + Design a normalized MySQL schema with a proper indexing strategy
  + Create database tables with appropriate relationships and constraints
  + Develop data migration scripts and a versioning system
* User Management:
  + Implement secure authentication with multi-factor options
  + Create a role-based access control system
  + Develop a responsive UI for user onboarding and profile management
* Validation Activities:
  + Weekly stakeholder demos with documented feedback loop
  + User journey mapping and usability testing
  + Performance benchmarking of core components

2nd Iteration: Partnerships Management (3 weeks)

* MOU/MOA Tracking System:
  + Develop a document repository with versioning capabilities
  + Create a partnership lifecycle workflow with status-tracking
  + Implement a configurable notification system for renewals and deadlines
* Partnership Analytics:
  + Design data visualization for partnership health metrics
  + Develop reporting capabilities for partnership ROI analysis
  + Create a partnership opportunity pipeline tracking
* Integration & Testing:
  + Conduct integration testing with the core authentication system
  + Perform load testing on the document repository
  + Hold user acceptance testing sessions with partnership managers

3rd Iteration: Events Management (3 weeks)

* Event Planning Tools:
  + Create an event planning workflow with milestone tracking
  + Implement resource allocation and capacity management
  + Develop an attendee management system with registration capabilities
* Event Execution Features:
  + Build a check-in system with QR code/mobile integration
  + Implement a real-time event analytics dashboard
  + Create a post-event feedback collection mechanism
* System Integration:
  + Connect events to partnerships for cross-referencing
  + Implement calendar integration with popular platforms
  + Develop API endpoints for external system integration

4th Iteration: Financial Management (4 weeks)

* Transaction Processing:
  + Implement a double-entry accounting system
  + Create budget planning and tracking tools
  + Develop approval workflows for financial transactions
* Reporting Infrastructure:
  + Build a customizable reporting engine with export capabilities
  + Create interactive dashboards for financial KPIs
  + Implement data visualization components for trend analysis
* Compliance Features:
  + Add audit trail functionality for all financial transactions
  + Implement role-based financial data access controls
  + Create regulatory compliance reporting templates

5th Iteration: Awards Cross-Matching & System Completion (4 weeks)

* Award Matching Algorithm:
  + Implement probabilistic matching with configurable thresholds
  + Create a data normalization pipeline for heterogeneous award sources
  + Develop a machine learning component for match refinement
* System Optimization:
  + Implement database query optimization and a caching strategy
  + Add asynchronous processing for large dataset operations
  + Conduct performance tuning based on production-like data volumes
* Final Integration:
  + Complete cross-module data flow and dependency management
  + Implement comprehensive system monitoring and alerting
  + Create system-wide search capabilities across all modules
* Deployment Preparation:
  + Develop a production deployment checklist and rollback procedures
  + Create comprehensive user documentation and training materials
  + Implement automated smoke testing for post-deployment verification