



ENHANCED INFORMATION RETRIEVAL: AEMILIANUM COLLEGE INC.'S LIBRARY MANAGEMENT SYSTEM

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Abstract. The aim of this research paper is to design and develop an online Library Management System (LMS) for Aemilianum College Inc., addressing the limitations and challenges associated with traditional library management. The proposed system offers electronic access to various resources, including books, magazines, and other library materials, thereby enhancing the existing manual library setup for research, general knowledge, and recreational purposes. The motivation behind this study stems from limitations such as document deterioration over time, loss of books due to natural disasters (e.g., typhoons), rising costs of high-value books, instances of misplaced files, and the need for seamless access to local resources like journals, theses, and research works. To overcome these challenges, the researchers introduce a web-based Library Management System that provides convenient, reliable, efficient, and cost-effective services to librarians and library users. By addressing the limitations of physical libraries, this system aligns with the growing demand for technological advancements in digital library audits and accommodates users' evolving learning habits. The integration of available technological resources maximizes the benefits and utility for library users, making information retrieval more efficient and accessible.

Key Words: Digital Library Audits, Ease of Access, Information Retrieval, Library Management, Library, Web-Based System

INTRODUCTION

In today's rapidly evolving information age, educational institutions recognize the paramount importance of efficient access to knowledge and information. Libraries play a vital role in facilitating learning, education, and training by providing a wealth of resources and reference materials. With the emergence of new technologies, both traditional and

digital libraries have found common ground, enabling them to coexist and enhance their services.

This research study focuses on the development of a cutting-edge Library Management System (LMS) specifically tailored for Aemilianum College Inc. The primary objective is to enhance information retrieval capabilities, ensuring seamless access to a wide range of educational resources, encompassing both online and physical book references.

By harnessing the power of technology, the aim of this modernized LMS is to revolutionize the way library resources are managed, accessed, and utilized. The study aims to streamline and optimize various aspects of the library's operations, empowering librarians and users with efficient tools for collecting, storing, organizing, and retrieving information. The system will be accessible through a web-based application and mobile platform, providing librarians and clientele with an interface that is both user-friendly and easily accessible.

The development of this enhanced Library Management System is driven by the desire to overcome the limitations associated with traditional library management. These limitations include the gradual deterioration of physical documents over time, the loss of books due to natural disasters, the rising costs of valuable resources, and the challenges of misplacements and missing files. Introducing a web-based solution addresses these limitations, offering a convenient, reliable, and cost-effective approach to managing library resources.

Furthermore, this study acknowledges the growing demand for technological adaptation in the digital age. By leveraging advancements in information technology and digital library audits, Aemilianum College Inc.'s Library Management System seeks to align with the evolving learning habits of students and maximize the utilization of available technological resources.

The research endeavor aims to contribute to the improvement of Aemilianum College Inc.'s library services by enhancing information retrieval, promoting efficient resource management, and fostering a productive environment for both the library staff members and the college community. Embracing this modernized Library Management System will position Aemilianum College Inc. at the forefront of providing enhanced access to educational materials, empowering its students and faculty in their pursuit of knowledge and academic excellence.

Specific Objectives

Specifically, the study aimed to develop an Online Library management and enable seamless searching, borrowing, and returning of library materials through an intuitive and convenient interface:

1. Librarian Features (Admin User Module):
 - 1.1 Dashboard

- 1.1. a. Book Listed
- 1.1. b. Book Issued
- 1.1. c. Registered Users
- 1.1. d. List of Authors
- 1.1. c. List of Categories
- 1.2. Categories
 - 1.2. a. Add Category
 - 1.2. b. Manage Categories
- 1.3. Authors
 - 1.3. a. Add Authors
 - 1.3. b. Manage Authors
- 1.4. Books
 - 1.4. a. Add Books
 - 1.4. b. Manage Books
- 1.5. Active User
- 1.6. Update Password

2. Student Features (Client User Module):

- 2.1. Book Listed
- 2.2 Issued Book
- 2.2 User Profile

Requirements and Planning

The purpose of this phase was to identify and address the challenges faced by the librarian in the existing book borrowing procedure and checking the availability of library books. An interview was conducted involving the librarian and students to assess the challenges and requirements of library management. Additionally, the researcher employed technology to gather additional data necessary for the development of the proposed system.

In addition to the data collected through interviews, extensive research was conducted to analyze industry best practices and existing library management systems. This research phase aimed to gain insights into the latest trends and features that could enhance the proposed system. By reviewing case studies and consulting relevant literature, the researchers identified key requirements for the new library management system. These requirements encompassed various aspects, including user-friendly interfaces for both librarians and students, seamless integration with existing library databases, robust security measures to protect sensitive information, efficient book search and retrieval mechanisms, and comprehensive reporting functionalities for tracking library usage and resource availability. The gathered information and identified requirements formed the foundation for the subsequent planning phase, where the researcher developed a detailed roadmap and timeline for the system's development, ensuring that all key functionalities and objectives were addressed in the implementation process.

Functional Decomposition Diagram

The objective of functional decomposition was to divide a substantial and intricate process into smaller, more manageable tasks, enabling the developer to gain a better grasp of the entire process. The accompanying diagram illustrates the breakdown of the system's processes.

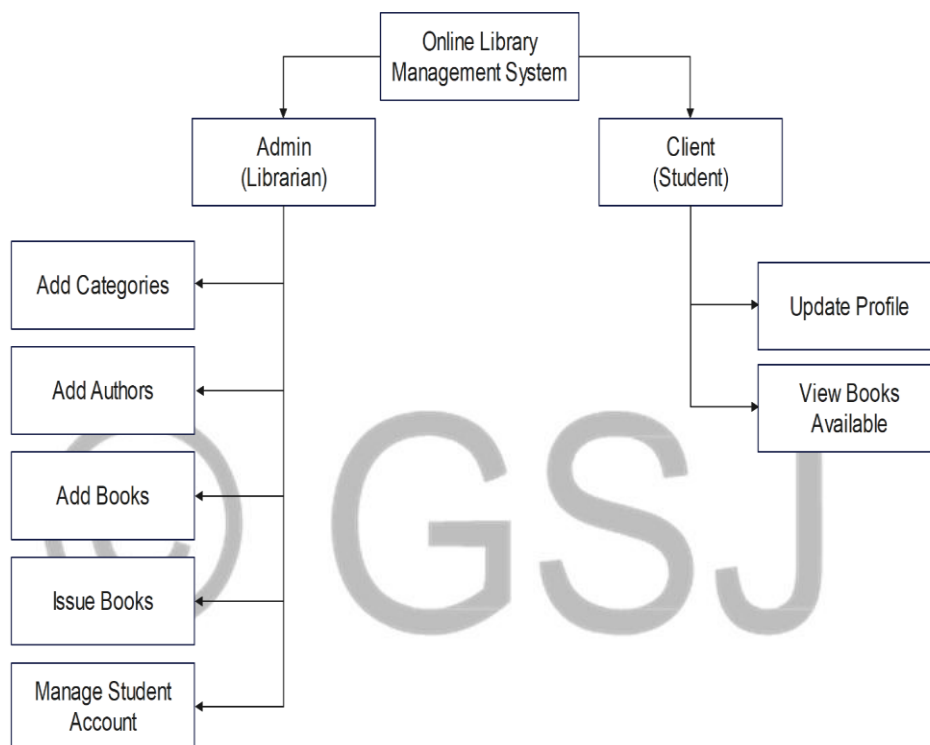


Figure 1 – Functional Decomposition of System

Figure 1 illustrates the functional decomposition of the Online Library Management system specifically designed for Aemilianum College Inc. This visual representation provides an overview of the system's features and functionalities, as well as the varying levels of access granted to different individuals. The system incorporates a well-defined two-tiered accessibility structure, with students serving as clients and the librarian assuming the crucial role of an administrator.

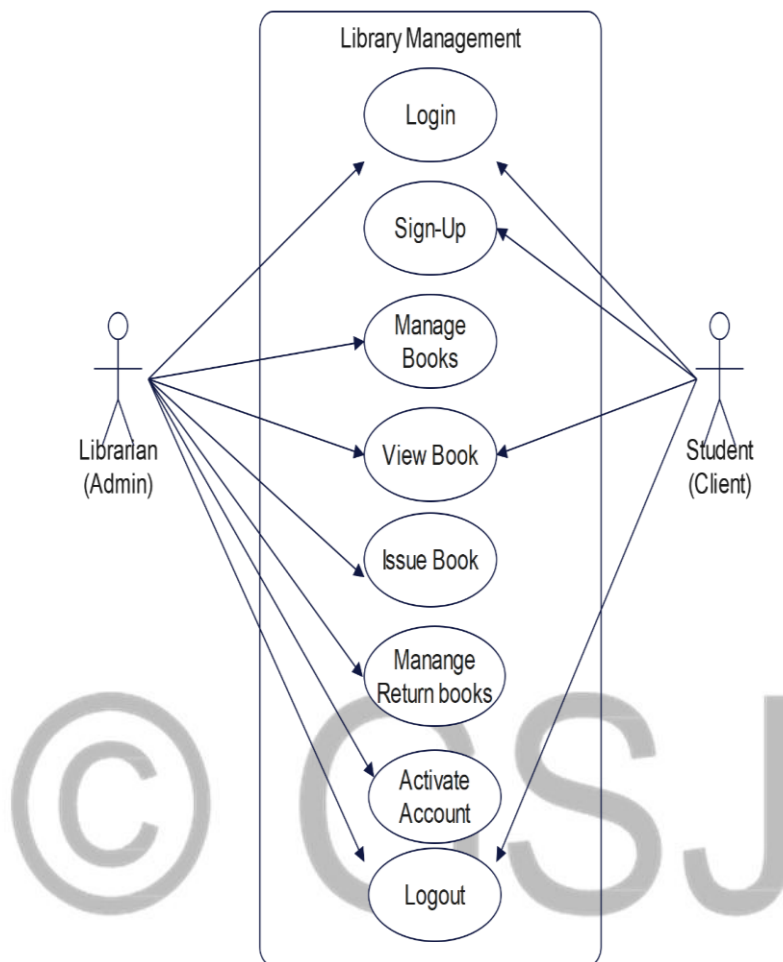
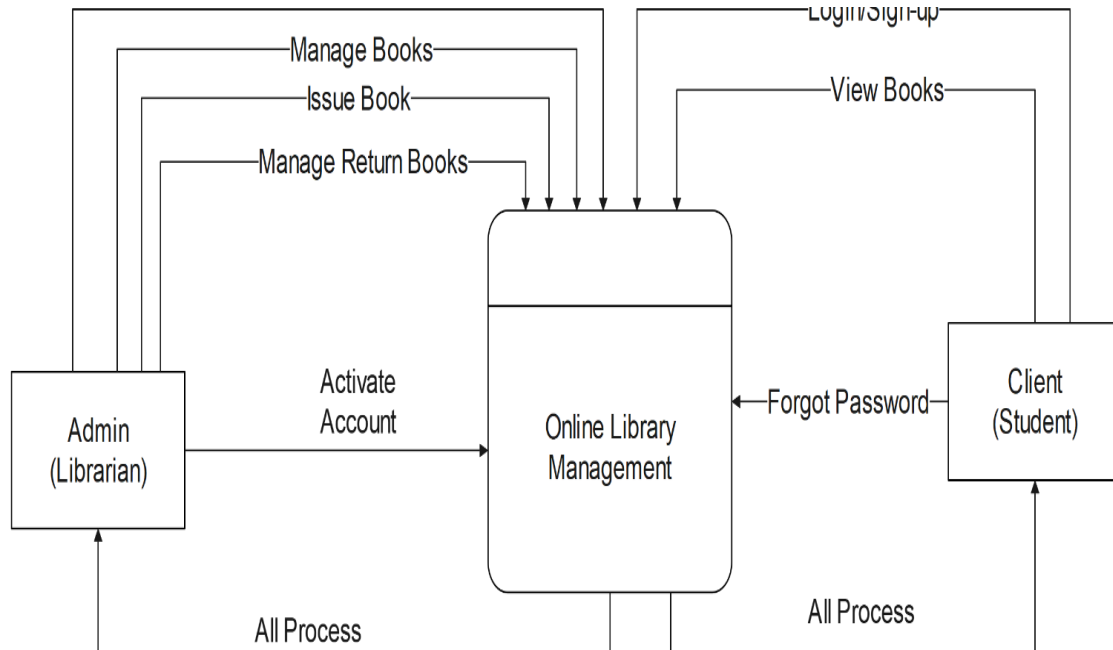


Figure 2 - Use Case Diagram

Figure 2 illustrates the diagram depicting the primary user of the study as the Admin, who possesses full control over the system. The Admin is responsible for overseeing the entire process within the system. Conversely, the client, represented by the student, has limited capabilities. They are able to update their profile and view the list of available books but do not have administrative privileges.



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Figure 3 - System Context Diagram

Figure 3 presents the online library management system designed for Aemilianum College Inc. The diagram provides a visual representation of the interaction between end-users, including clients and admins, and the system itself. It effectively illustrates the flow of data among these users, showcasing how information is exchanged within the system.

During the initial phases of creating the system overview, data flow diagrams (DFDs) were commonly used. These diagrams specifically depicted the Student Dashboard, offering a clear visual understanding of the data flow within the system.

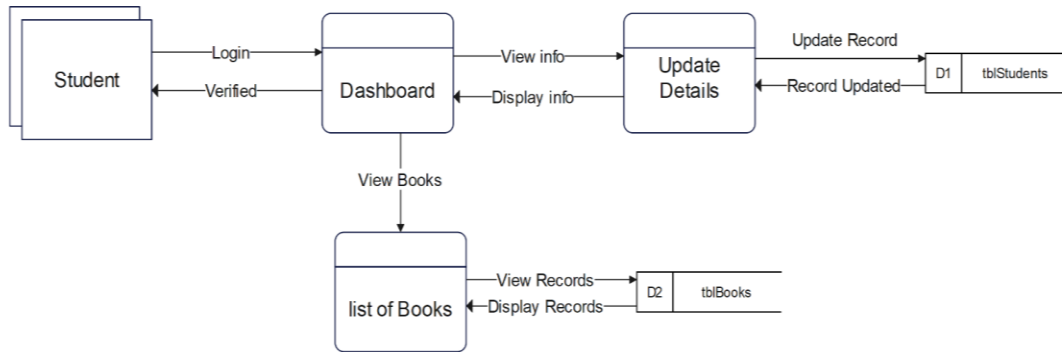


Figure 4 - System Data Flow Diagram of Student (Client)

Figure 4 illustrates the Data Flow Diagram (DFD) with a specific focus on the client student within the system. The diagram showcases that the client, representing the student, has restricted access to the system. Their capabilities are limited to viewing the book list and updating their own profile.

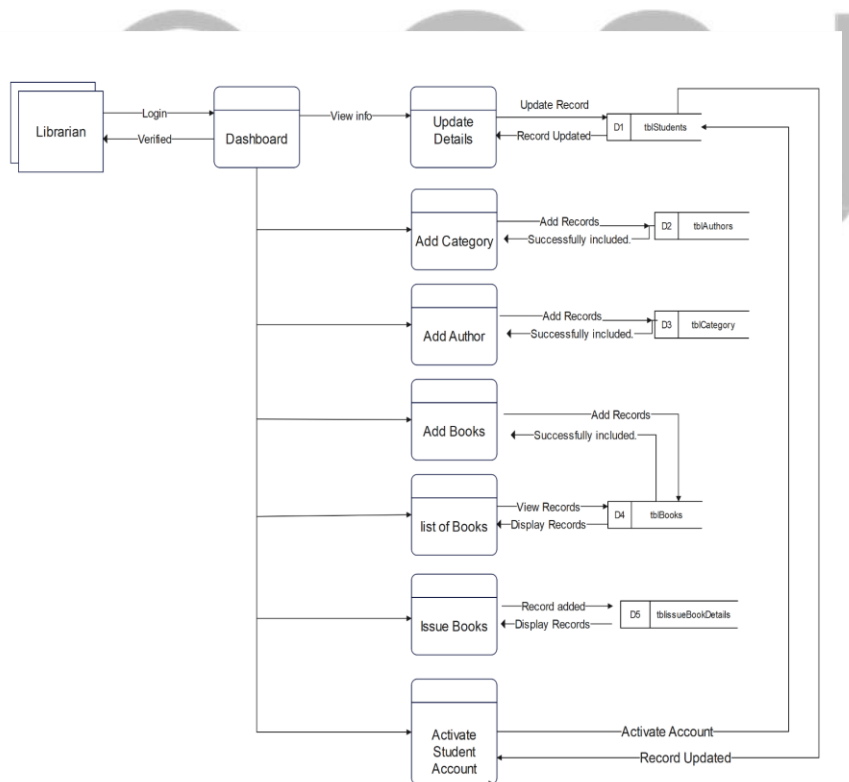


Figure 4.1 - System Data Flow Diagram of Librarian (Admin)

Figure 4.1 depicts the Second Level Pictorial Diagram of the online library management system implemented at Aemilianum College Inc. This detailed diagram provides a comprehensive visual representation of the primary processes carried out by the admin, represented by the librarian. As the librarian, the admin possesses complete access and control over all the processes within the system.

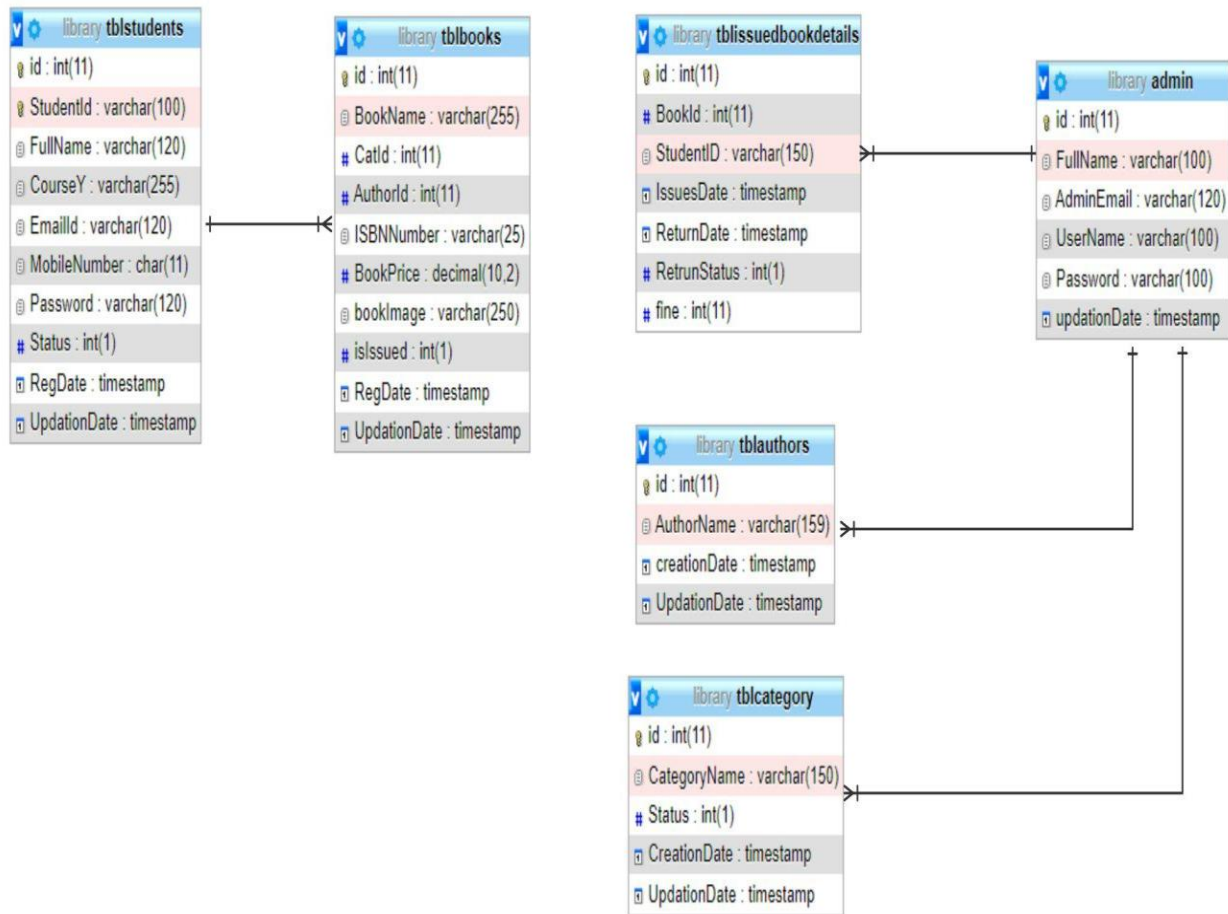


Figure 5 – Entity Relationship Diagram

Figure 5 illustrates the Entity Relationship Diagram (ERD) of the online library management system developed for Aemilianum College Inc. The ERD has been meticulously designed to ensure that each table and entity aligns with the system specifications. This diagram presents the backend flow of the system, showcasing the relationships between different tables. It accurately represents how data is connected and related from one table to another.

Summary of Findings

During the development, testing, and evaluation of the system, the following findings have been established:

1. The developed Cloud-Based Library Management System for Aemilianum College Inc. incorporates multiple technologies, providing online and mobile access. The system automates the management and provision of library resources, catering to the diverse demands of different users. It enables both the library admin and students to access the system regardless of their distance from the school library. The utilization of user-friendly technologies ensures ease of access and navigation.
2. The system ensures credible management and monitoring of library resources, including catalog processing, storage, retrieval, updating, and information preservation. With the presence of online and mobile applications, the system significantly reduces the likelihood of errors.
3. By implementing this system at Aemilianum Library, the institution can achieve cost-cutting benefits, particularly in terms of physical file cabinets that are prone to deterioration over time or damage caused by natural factors.

Conclusion

Based on the findings of this study, the following conclusions have been formulated:

1. The developed system has successfully met the requirements and expectations of researchers and learners at different levels within Aemilianum College Inc. With the positive results obtained from testing and evaluation, the system is now ready for implementation and use.
2. Integrating a modern-based system with traditional library management elevates the daily operations of the library by ensuring accessibility and efficiency of library information. This integration enhances the overall functionality of the library and improves its services.
3. The system, equipped with fully-functional features, has received an adaptive and remarkable response from the targeted learners. Its user-friendly interface and overall satisfactory user experience design have contributed to a positive reception and high levels of user satisfaction.

Recommendations

Based on the conclusion, the following recommendations are offered:

1. Consider incorporating features such as online book reservation on the student's dashboard, allowing the library assistant to prepare and make the books ready for pick-up.

2. Enhance the interface to provide improved search options for student references, making it easier and more efficient for students to find relevant resources.
3. Add an additional feature that enables online reports of the library resources' inventory, along with a print option for creating backups and hard copies of the reports.
4. Implement a prompt message on the admin's dashboard, specifically when dealing with books that have the same titles but different ISBNs. This prompt should request the ISBN only to avoid re-entering redundant fields, such as the author's name.

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