

University of Pardubice

Faculty of Economics and Administration

MASTER THESIS

University of Pardubice

Faculty of Economics and Administration

Institute of Systems Engineering and Informatics

**DESIGN OF A NEW LIBRARY MANAGEMENT SYSTEM BASED ON
PAST EXPERIENCES WITH THE LIBRARIES IN NIGERIA**

Master Thesis

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Outline:

- Current solution
- Problem statement
- Analysis and requirements specification
- Design and implementation

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AUTHOR'S STATEMENT

I declare:

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With profound love and respect, I dedicate this research thesis to the cherished memory of my late mother, **Mrs. Ibronke Mokidi**. Her love, sacrifices, and unwavering belief in my potential continue to inspire me every day. She was a beacon of strength, wisdom, and kindness, and her legacy lives on in my heart. I wish she were here to witness this milestone, but I find solace in knowing that her blessings and guidance have never left me. May her soul continue to rest in peace.

ANNOTATION

Past experiences with Nigerian libraries, where issues like inadequate record-keeping, limited accessibility, and ineffective book cycling still exist, are taken into thought with designing a web-based library management system. In Nigeria, public libraries frequently use manual cataloging, which is prone to errors, delays, and misplaced books. Additionally, because of outdated or disorganized systems, users usually have issues monitoring book availability, borrowing status, and overdue penalties. With real-time accessibility for librarians and users, this system seeks to computerize essential library operations including catalogs, book lending, user registration, and fee management. An interactive search interface that enables users to find books by title, author, or subject will be an essential part of the system. Additionally, the reliability of the system will be increased by integrating authentication for users' mechanisms to prevent book vandalism and unauthorized access. In order to improve efficiency, accessibility, and utilization of resources in Nigerian libraries, this system aims to close the gap between normal library services and new technological needs through the use of web-based technology.

KEYWORDS

web-based library, library automation, catalogue, cloud-based, user authentication

ANOTACE

Při navrhování webového systému správy knihoven se berou v úvahu minulé zkušenosti s nigerijskými knihovnami, kde stále existují problémy jako nedostatečné vedení záznamů, omezená dostupnost a neefektivní koloběh knih. V Nigérii veřejné knihovny často používají ruční katalogizaci, která je náchylná k chybám, zpožděním a ztraceným knihám. Kvůli zastaralým nebo neorganizovaným systémům mají uživatelé navíc obvykle problémy se sledováním dostupnosti knih, stavu půjček a penále po splatnosti. Díky dostupnosti v reálném čase se tento systém snaží pro knihovníky a uživatele digitalizovat základní knihovnické operace včetně katalogů, půjčování knih, registrace uživatelů a správy poplatků. Nezbytnou součástí systému bude interaktivní vyhledávací rozhraní, které uživatelům umožní vyhledávat knihy podle názvu, autora nebo tématu. Spolehlivost systému bude navíc zvýšena integrací mechanismů autentizace pro uživatele, které zabrání vandalismu a neoprávněnému přístupu.

KLÍČOVÁ SLOVA

webová knihovna, automatizace knihoven, katalog, cloud-platforma, autentizace uživatelů

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PROLOGUE

The Software Development Lifecycle of a web-based Library Management System

Hossain, (2023) defines the software development life cycle (SDLC) as a framework for planning, analyzing, designing, developing, testing, and deploying software. There are several approaches to the SDLC, each with pros and cons; the best approach for a given project will depend on the project's size and complexity, resource availability, and team preferences. The five main techniques are Waterfall, V-Model, Iterative, Agile, and Hybrid. The SDLC, according to Stackify (2020), reduces software development costs while also increasing quality and reducing production time. Figure 1 shows how different objectives are achieved by SDLC by following a plan that avoids the common problems of software development projects. Initially, that plan looks for errors in the current systems. It then outlines what the new system must have. The software is then developed through the following steps: planning, defining, design architecture, building, testing, deployment, and analysis. SLDC can prevent unnecessary rework and post-hoc changes by foreseeing costly errors such as neglecting to solicit feedback from the client or end-user.

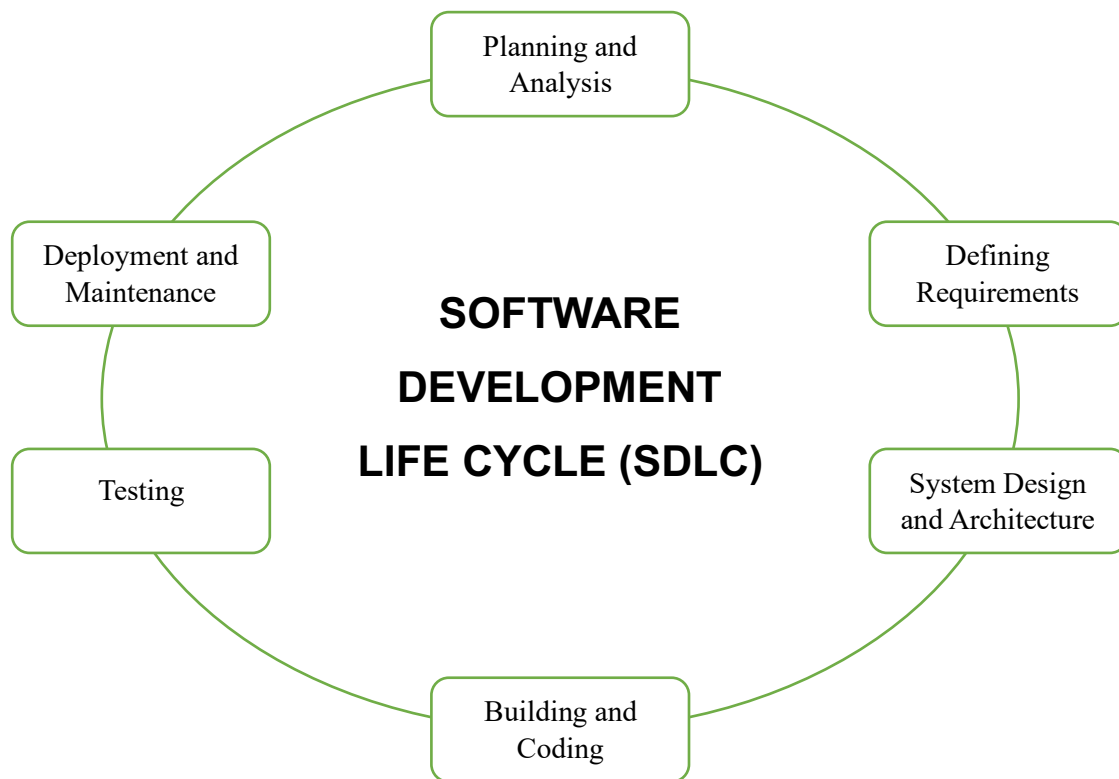


Figure 1: Proposed LMS Software development lifecycle.

Source: Author

Stage 1: Planning and Requirement Analysis

In the SDLC, requirement analysis is the most crucial and essential step. With input from the customer, sales department, market research, and industry domain experts, it is carried out by the team's senior members. The core project strategy and the technical, operational, and economic aspects of the product feasibility study are then planned using this information. During the planning phase, steps are also taken to identify project risks and arrange for quality assurance requirements (Ibe 2019). The technical feasibility study's output identifies the different technical strategies that can be used to carry out the project successfully and with the lowest possible risk. Therefore, planning and analysis identified the system scope, its objectives and requirement for developing the LMS. This phase also describes the functional and non-functional requirement such as the user's role, book records, and search capability etc., timelines, resources of Library Management System.

Stage 2: Defining the Requirements

Following the completion of the requirement analysis, the product needs to be precisely defined, documented, and accepted by the customer or market analysts. This is done through Software Requirement Specification which consists of the product requirements to be designed and developed during the project life cycle. It also phase checks to see if the software is technically and operationally usable and whether or not to proceed with the system development (Ibe 2019).

Stage 3: Designing the System Architecture

A Design Document Specification (DDS) typically proposes and documents many design approaches for the product architecture based on the requirements outlined in the SRS. The most appropriate design approach for the product is chosen after this DDS is reviewed by all significant stakeholders and taken into consideration (Ibe 2019). These factors include risk assessment, product robustness, design modularity, budget, and schedule restrictions. A design approach describes all of the product's architectural modules, as well as how they communicate and flow data with external and third-party modules (Ibe 2019). Each module's internal design within the proposed architecture is clearly explained in DDS. This is the phase where sketches and prototypes for the user interface were developed and the integration of workflows and database schema managing user, books and records.

Stage 4: Building and Developing the Code

The product is built and the actual development commences at this stage in the SDLC. This phase creates the programming code in context with the DDS. Code generation is easily accomplished if the design is carried out in a well-organized and efficient manner (Ibe 2019). Programming tools like compilers, interpreters, debuggers, and others are used to generate code, and developers follow the coding standards. Several high-level programming languages are used for coding, including Java, PHP, Pascal, C, C++, and C. The kind of product to be developed determines the programming language that will be used (Ibe 2019). For the development of the code for both the frontend and backend, HTML, PHP, CSS, JavaScript and CodeIgniter framework was used. The implementation of the database was also designed in the phase using MySQL and XAMPP localhost.

Stage 5: Testing the System

Although testing activities are mainly covered in all stages of the SDLC, this stage is typically a subset of all the stages. However, this stage basically relates to the product's testing phase, during which any problems are identified, tracked, fixed, and tested again until the product meets the SRS's quality standards (Ibe, 2019). This phase is to test that the system functions as expected and it's free from bugs. Unit and integrating testing were used in this phase. Bugs were identified and fixed before deployment.

Stage 6: Deployment and Maintenance

The product is formally released in the appropriate marketplace once it has been tested and is prepared for deployment. Depending on the company's business plan, product deployment can sometimes take place in phases. The product may be tested in a real-world business context and released in a specific sector (UAT, or user acceptability testing). The product may then be released either in or with recommended improvements in its targeted sector, depending on the feedback received (Ibe 2019). The product is maintained for its current client once it is launched into the marketplace. This phase is to deploy the system for user's use and to provide technical support for updates and security.

Table 1 displays the lifecycle phases and their thesis chapter navigation.

Table 1: Chapter signpost

S/N	Lifecycle Phases	Thesis chapter navigation
1	Planning and Requirement Analysis	<u>INTRODUCTION</u>
2	Defining the Requirements	<u>LITERATURE REVIEW</u>
3	Designing the System Architecture	<u>SYSTEM METHODOLOGY AND ANALYSIS</u>
4	Building and Developing the Code	<u>SYSTEM DESIGN AND IMPLEMENTATION</u>
5	Testing the System	<u>SYSTEM DESIGN AND IMPLEMENTATION</u>
6	Deployment and Maintenance	<u>CONCLUSION</u>

1. INTRODUCTION

1.1 Background of the study

A library is an "organized collection of information sources which are made accessible to the people," according to Masiye (2019). Adeniran et al. (2018) define a library as a "Large bank where books and other relevant materials which are meant to improve knowledge are kept and retrieved from, according to their study." Academic libraries, corporate libraries, government libraries, historical society libraries, private libraries, public libraries, school libraries, special libraries, digital libraries, picture libraries, slide libraries, tool libraries, architecture libraries, fine arts libraries, medical libraries, theological libraries, etc. are some of the categories into which libraries can be divided because they are service-oriented centers in Nigeria.

According to Dinesh et al. (2015), a library is a well-structured collection of information sources that are open to the public. Usually, the library has the material in both digital and hard copy formats. As technology developed, it became feasible to access material online, while in the past, access was often made at a library. The outdated methods of keeping it up to date are no longer dynamic or effective. Modern technology is now essential for giving users better service and for quickly retrieving and disseminating information (Neelakandan et al. 2010).

The purpose of public libraries is to provide for the information needs of the general public by offering resources and services at no cost (Okafor 2020). Quoting Emenalor, Akanwa, (2013) described a public library as one that offers services, information resources, and recreational opportunities to the general population, including the young, the old, the literate, and the non-literate. According to Aiyebilehin et al. (2018), public libraries are organizations that support education and eradicate illiteracy by giving individuals within a community access to political, social, and educational materials.

According to Akpohonor (2005), academic libraries comprise those that are a part of postsecondary educational establishments such universities, polytechnics, and colleges of education, agriculture, technology, and research. According to Felicia & Juliana (2010), the academic library serves as the hub or nerve center of scholarship. Corporate, museum, military, and medical libraries are examples of special libraries. However, national libraries are the highest level of libraries in any country; they are established by the government as the nation's information center. The National Library of Nigeria (NLN), the Library of Congress (LC), the National Library

of Britain (BL), and others are examples of national libraries. On the other hand, the ideal way to describe virtual or digital libraries is as libraries without boundaries.

According to Rubin et al. (2020), a typical library system consists of multiple departments, sections, or units, including the acquisition department, cataloguing/classification department, and the reprographic and reference services department. Because different types of libraries differ slightly from one another, this may differ from one library to another. In order to provide effective and efficient services, libraries started integrating information technology (IT) into library administration as they developed, and IT was brought into librarianship. According to Rubin et al. (2020), information resources that were previously saved, recorded, and accessed in print format have now been digitized and made available in electronic format.

The majority of academic libraries, including the Nile University of Nigeria (NUN) library, have automated the majority of their library services in an effort to follow the current trend. However, one of the primary challenges that still face librarians today is the lack of an efficient library management system to enable effective and timely service delivery. In order to address some of these issues, the Library Management System (LMS) was created. Through the integration of specialized library functions and services for library users, LMS offers libraries a comprehensive solution.

Samuel et al. (2018) assert that the Library Management System enables librarians to manage and oversee library operations by creating an electronic system that can record and monitor several kinds of library transactions, including user registration, borrowing and returning library materials, and updating. In order to provide university libraries with sufficient library services to their lots of readers, this study suggests a web-based library management system.

1.2 Aim and Objectives

The aim of this thesis is to design a library management system based on past experiences with the libraries in Nigeria. With the following objectives in mind, this study will manage all types of library operations in an efficient and effective manner, combining them into a single electronic system for easy and automated processing: (a) To enhance control over the academic library's book collection in Nigeria; and (b) To enhance the current manual system of operation in Nigeria

libraries. (c) To create a responsive and easy-to-use e-library system. (d) To store the librarian's, users', and books' records in a computerized manner.

Other objectives are:

1. Improvement of performance and control: The system will be created to address the library's present challenges. The system will be bug-free and will have the ability to add and validate users.
2. Save finances: When the automated system is put in place, fewer people will be needed to maintain the library, which will lower the total cost.
3. Save time: The librarian can save his important time by searching records with just a few mouse clicks and a few keywords.

1.3 Problem Statement

In the existing system, all the records of books and users are done manually, and this takes more time for the managing of borrowed books or returned books and for searching of users and books. Another major disadvantage is that preparing the list of books borrowed and the available book in the library is time consuming. So, after conducting the feasibility study it was decided to computerize the manual Library management system.

The problems that existed prior to a computerized system include:

1. Loss of files: Due to human interaction, files are always lost when digital systems are not used. Records can occasionally be lost because of human error.
2. File damage: Without a computerized system, files are always lost because of events like users unintentionally dropping water on the file. In addition, natural disasters like fires or floods could harm the files.
3. Record search difficulty: If there is no computerized system, it is always difficult to search records, especially if there are a lot of them.
4. Space-consuming: If no electronic system is put in place, the amount of space needed for the physical storage of files and records likewise grows as the number of records grows.
5. Costly: Since there is no automated system, each record paper will need to be added, raising the library's management expenses.

1.4 Significance of the Project

The main purpose of this project is to develop a computerized system that will manage library operations, making it easy for librarians and users to access library resources. It will also assist librarians in managing library data, among other things. Additionally, this system will help librarians manage library information by providing electronic storage solutions.

1.5 Scope of the Project

The proposed system is a Library Management System which will automate the primary library operations in Nigeria. The first subsystem is the user registration process, which is used to maintain a record of authorized users. The second subsystem is the library management system, which is used to register new books and track their entry at the library. The third subsystem is the one that the end-user needs the most: the borrowing and returning of books. There are three Library Management System modules which are the librarian, administrators, and users.

2. LITERATURE REVIEW

Information technology is the art and science of using and understanding systems, namely computers and telecommunications, according to Essien et al. (2022). Information technology is more than just storing, retrieving, and distributing data; it also makes it easier to formulate and display raw facts in many formats, such as acoustic, numerical, and visual. During the past few decades, a lot of progress has been made in the field of information technology and its capacity to manage complicated activities has led to its sustained growth across all sectors, even as processing power continues to increase (see Figure 2). Among the industries where IT has been widely used and has been a significant driver of change is education (Ratheeswari 2018). The use of IT in libraries significantly contributes to the digitization of academic resource storage, retrieval, and distribution (Essien et al. 2022).

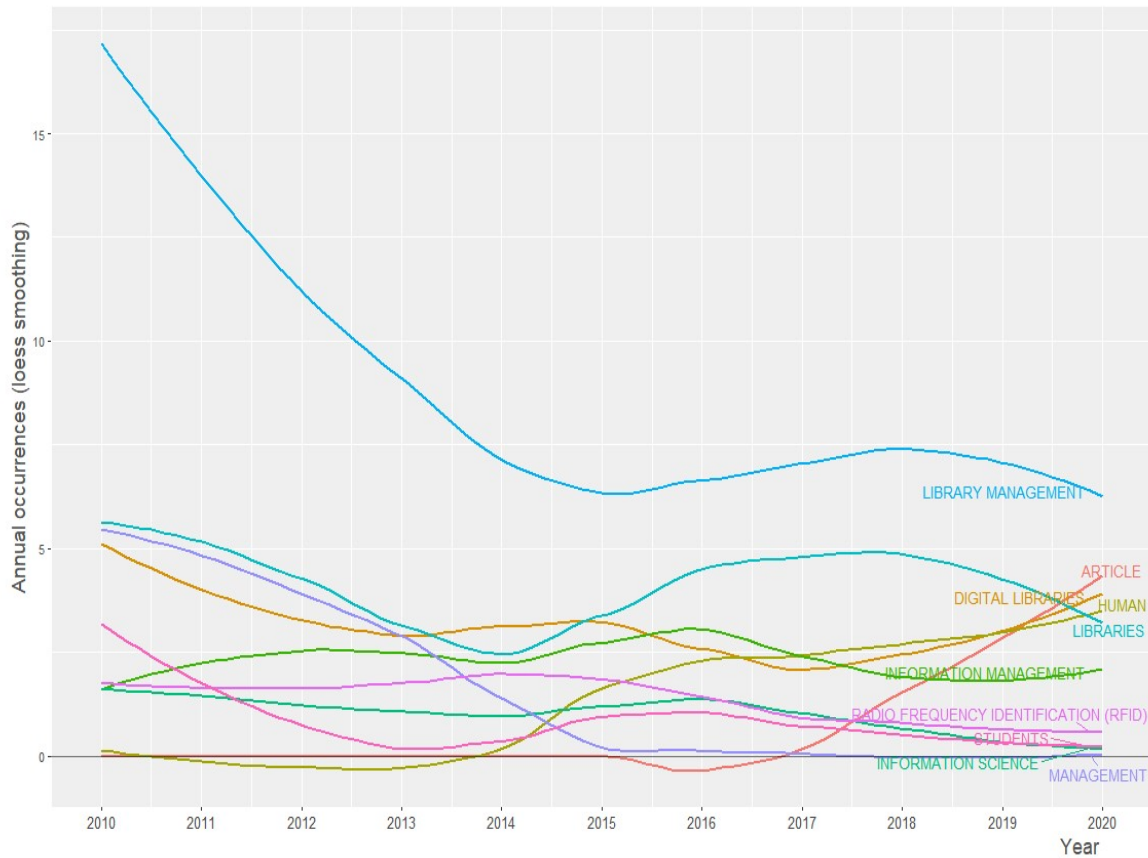


Figure 2: Analysis of year wise growth of keywords.

Source: Hypothetical growth in studies, (2024)

2.1 Evolution of Library Development in Nigeria

Libraries in Nigeria have a long history that dates back to the previous century. With the establishment of enormous infrastructures all around the nation, Nigerian libraries have expanded greatly over the years. The development has improved libraries' accessibility and availability to Nigerians, making them one of the most important informational resources. Library development in Nigeria began with the modest establishment of the Tom Jones Library in Lagos in 1910, according to Nwofor & Ilorah, (2015). However, the UNESCO Seminar on Public Library Development in Africa, which was held at the University College (now University of Ibadan) in Ibadan from July 27 to August 21, 1953, marked a significant turning point in the history of public libraries in Nigeria (Abubakar 2017). Among other things, the seminar suggested that public libraries be established in Africa (Opara 2008). According to a 2015 research by Nwofor & Ilorah, (2025), public libraries began offering extension services to rural communities in the 1940s through book boxes, mobile libraries, and libraries on boats. Public libraries in Nigeria are called State libraries, and their branches are called Divisional libraries. The Director of Library Services oversees the day-to-day operations of the State Library Boards, which manage the libraries. According to Onwuka (2016), the Ministry of Information is the Supervisory Ministry. Figure 3 illustrates the graphical representation of past studies on Library Management system.

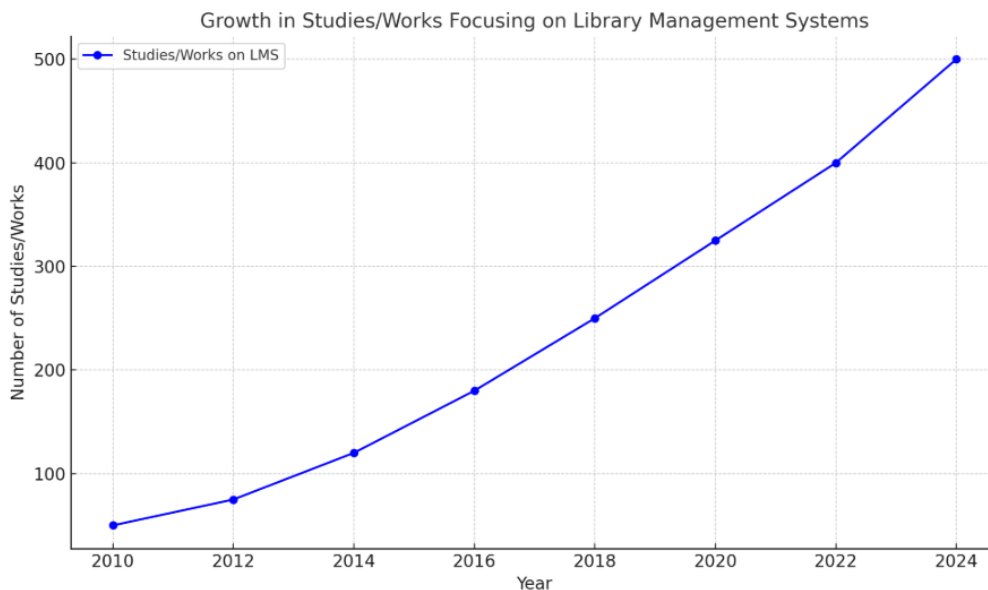


Figure 3: Growth in past studies on LMS.

Source: Hypothetical growth in studies, (2024)

Providing facilities, resources, and services in a range of media to satisfy the informational and developmental needs of individuals and groups is the main goal of Nigeria's public libraries.

The above line graph illustrates the projected increase in publications regarding Library Management Systems (LMS) between 2010 and 2024.

2.2 Academic libraries and Gaps in Existing Literature

According to Singh & Kaur, (2009), academic libraries are any physical or digital resources connected to educational institutions that aim to support faculty and student teaching, learning, and research. Academic libraries hold a special place in the history of library development in Nigeria. Above all, academic libraries, particularly inside their parent institution, greatly improve the development of curricula for different departments. According to Okiy (2012), academic libraries are primarily found in universities, colleges of education, polytechnics, and nursing schools. Nigerian academic libraries have a long history dating back to the colonial era; the University of Ibadan established them for the first time in 1948 (Ogunsola 2005).

In order to encourage the improvement of education in the nation, the number of academic institutions rose dramatically shortly after independence. The Nsukka Library at the University of Nigeria, which bears Azikiwe's name in recognition of his 1200 book donation, is one of the first academic libraries established shortly after the nation gained its freedom. As more institutions were established across the country, academic libraries proliferated, with each one establishing its own library. Both public and private academic libraries now number as many as universities. Some of the biggest libraries on the African continent are located in Nigeria. With more than 1.2 million books, Ahmadu Bello University's library is still among the biggest in Nigeria and Africa, second only to the University of Ibadan and the University of Nigeria Nsukka (Kashim Ibrahim Library 2023).

According to Emasealu, (2019), it has been determined that academic libraries in Nigeria severely undervalue the capabilities of library management software; as a result, the advancement of automation projects continues to fluctuate. There are instances of incomplete, abandoned, or non-functional automation initiatives in developing nations, despite the fact that the majority of libraries in developed economies have created fully integrated computer systems. According

to Emasealu (2019), who cited Horsfall & Fagbemi, (2015) study, Nigerian library automation is still making daily progress but is hindered by numerous obstacles. The fact that only a small portion of library services have remained partially automated due to their inability to completely exploit key elements of each automation project stage indicates that Nigerian libraries have not yet achieved full automated status.

According to a study by Kelvin & Ivwighrehweta (2013), 40% of respondents believe that the library's incapacity to automate is due to a lack of management commitment and a lack of a plan. It is evident from this that the administration of Nigeria's numerous university libraries is not making the necessary preparations for their automation. There is no network of methods and proposals for moving toward automation. In other words, they have no interest in automating library services. As a result, the services continue to be provided in a manual way, contributing to the academic libraries in Nigeria lagging behind compared to other developed countries.

Atanda (2018) noted that for any ICT implementation to occur and be successfully maintained, trained staff are necessary. The foundation of a skilled information technology workforce must be strengthened. It is insufficient for experts to come and provide expensive, cursory training before leaving without leaving some backup capacity in place. The sudden leaving of a university computing expert can lead to personnel issues, such as when an expert managing a project for the university library leaves and is not replaced, which disrupts the project's continuity. Another issue is that there may not be enough library staff to supervise and complete the automation project.

2.3 Related Works and Analysis of the Existing System

In a report published by Chen & Liu, (2009), they outlined the drawbacks of conventional library management systems. By using the MVC architecture's struts and hibernate framework, he addressed the drawback. A multilayer tier, which includes presentation, business, data persistence, and database layers, is another name for the MVC design. The system's reusability and maintainability are enhanced by these additional characteristics.

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An IOT-based smart library system implementation study was presented by Bansode et al. (2016). By utilizing RFID and IOT technologies, the primary goal is to address the challenges of tracing down the specifics of library transactions caused by a slow system, the loss of book data, and the difficulty of regularly updating the information. This technology will help both staff and students and manage and regulate all library information. Time is saved and efficiency is increased with this technique.

According to research conducted by Shasha et al. (2005), they suggested that the library management system should be upgraded to satisfy student demands. In their study, Kan et al. (2010) argue that the CD that is attached to the books is a waste of money. For data transfer, he proposed cloud computing to reduce the library's expenses.

Using an infrared sensor placed in each rack, Jadhav et al. (2017) aimed to decrease manual labor and track the location of the books.

An infrared sensor continuously detects whether a book is in the rack and logs the data in the cloud. It facilitates the user's simple access to the book.

Geetha et al. (2018) presented an Android smartphone application for a library access system. The primary goal is to give users a simple way to access their library accounts on an Android device. It saves time and gives the user the opportunity to check the library's book availability. The information is stored in a database. Sun et al. (2011) published a study about building the library's prediction model. He presented the t-test and the coefficient of simple determination as two models for process prediction. This research clarifies why lending and readership are strongly correlated. For planning the model library's development, they primarily focus on library lending.

Yang et al. (2017) described a rigorous manual technique that librarians use. He therefore used VB to introduce an LMS. Bretthauer, (2001) revealed details about open-source library software. The disadvantage of the open-source software was also noted by him. A variety of open-source tools, including journal management software, citation and knowledge software, digital library software content, and learning management systems, were given by Brave & Dahibhate, (2012).

Tripathi & Srivastava, (2012) created a library management software system to keep an eye on and regulate library transactions. As part of their research, they created a Java-based library management system that mostly handles the routine tasks of a library, such as adding new patrons, books, and information, searching for books and patrons, and providing the ability to check out and return books. An automated Library Management System was the system that these two created. The software allows users to quickly add members, add books, search for members, update and change information, and borrow and return books. The benefits of the system they created are as follows: Easy-to-use interface, quick database access, less errors, increased storage capacity, search capabilities, and more. By using computers, all of the manual challenges in running the library were resolved. The software was created for organizing and maintaining their libraries, making it user-friendly for both novice and expert users.

Albee & Chen, (2014) investigated employee attitudes and satisfaction with the open-source library. In a paper by Singh, (2014), suggested a work in which the open-source library's experience and expectations were compared.

Prabhaka et al. (2014) created a library management system with the goal of creating an automated system to oversee all the library's everyday operations. Their research led to the development of a system that has numerous capabilities that are typically absent from standard library management systems, such as the ability for teachers and users to log in. A feature of the designed system is the ability for the administrator to log in and monitor the entire system, among other things. The goals of the system that was created were to:

1. Control and performance have improved.
2. Reduce expenses.
3. Save time.

There is the option of an online notice board where librarians can give a thorough account of seminars taking place in the institution and other surrounding colleges.

Prior to the invention of the computer, libraries kept their records in a variety of ways. In the library, records are stored on shelves, and each shelf is labeled in either alphabetical or numerical order. The types of books that are available are arranged in various positions on the shelves, and they are also recorded on the library manuscript. When a book is needed, the person who requested it refers to the manuscript to determine where the book is located.

A variety of information resources are gathered by libraries. Books, journals, periodicals, maps, CDs, DVDs, audiotapes, videotapes, audiovisuals, manuscripts, e-books, audiobooks, and many more are examples of print and non-print forms that contain such information resources. (Adeniran et al. 2018; Masiye 2019). Academic libraries in Nigeria used a manual library administration system until to the early 1990s, when information technology (IT) was integrated into libraries. According to Uwaifo (2010), this system is typically seen as ineffective and prone to “errors, delays, and requires the physical and mental efforts of the library staff to manage”. Moreover, other difficulties with the manual library administration method include:

Long and needless lines at the circulation desk when registering new users; needless delays in library transactions like book issuance and return; human error, such as misfiling and documentation of library materials; a lack of space to accommodate the library's growing collections; mutilation of library materials because there aren't enough copies; an inability to remotely manage library operations; and the need for numerous workforces to perform a variety of library tasks, including shelving, shelf-reading, cataloguing, and resource classification.

The findings of the study conducted by Eze Jacintha & Uzoigwe, (2013) demonstrate that Nigerian university libraries contribute to the "education for all" concept by offering a range of services to assist university education. According to Nwezeh & Shabi, (2011), the library is in a unique position as a potential educational force, and its philosophy is centered on the idea of service and providing users with relevant materials. In order to achieve their primary goal, which is to support an institution's goals in the areas of learning, teaching, research, and service, university libraries offer a range of services (Aina 2004).

In addition to manual and traditional services, these libraries offer electronic library services that are quick and simple to use. The quick growth of information technology and the rise of networked information services have led to an in-depth study of the library and information science profession, as Etim (2004) pointed out. Electronic methods of accessing and retrieving information powered by electronic devices have clearly replaced manual methods of providing information services powered by analog data. In addition, Omekwu & Echezona, (2008) provided support for this by emphasizing that library services are available online and are not impacted by hours of operation.

2.4 Benefits of IT in Academic Libraries and the Need for the proposed system

Academic libraries can benefit significantly from the implementation of IT. The use of IT in libraries has advanced dramatically worldwide, with the goal of improving the technical services that libraries provide to the general public, according to Fagbe et al. (2015). Notably, one of the key efforts of academic libraries to guarantee the effective provision of services is the investigation of technologies that can facilitate quicker and better access to a large array of resources, given the enormous volume of material found in these establishments. According to Vijayakumar & Vijayan, (2011), one of the main applications of IT in academic libraries is library management. The use of IT is very helpful in library management, enabling the prompt completion of tasks including database construction, classification, indexing, and cataloguing. Above all, indexing and categorizing library items guarantees the availability of information resources and materials, which is difficult without IT, particularly for libraries that are located far away (Bhoi 2017).

In academic libraries, automation is yet another essential IT application, as claimed by Vijayakumar & Vijayan, (2011). IT implementation has continued to automate libraries by decreasing human intervention in library service matters, guaranteeing users' efficient access to the resources they want. Databasing in libraries and housekeeping operations are the two main areas that have experienced substantial automation. As IT has improved its automation in several critical areas, including acquisition, material circulation, serial control, and stock maintenance. In academic libraries, information technology has been used to protect and conserve data. According to Fagbe et al. (2015), IT guarantees that instructional materials can be stored and preserved for extended periods of time without sacrificing their quality or appearance. Another essential library procedure that is improved by IT deployment is circulation, which makes use of the efficiency provided by computers, library management systems, and barcode scanners. Mostly, the internet, email, and phone help with circulation procedures.

Among the essential circulation tasks that are automated by computer systems are membership registration, renewal, reservations, late reminders, and returns (Bhoi 2017). Academic material digitization offers many advantages, such as efficient access and space savings. Academic libraries also make extensive use of IT for networking (Onuoha & Obialor, 2015; Vijayakumar & Vijayan 2011). By means of networking, many libraries are linked together to improve communication and

share resources, ultimately leading to better service delivery. In academic libraries, reprographic services are another essential use of IT to improve document reproduction (Bhoi 2017). The ability to digitize documents, reproduce and photocopy educational materials affects the papers' accessibility to users worldwide. Furthermore, translating content into user-friendly languages is another essential use of IT by academic libraries (Bhoi 2017). Thus, the capacity guarantees the availability of vast amounts of materials to expand the body of knowledge of academics.

The use of IT has greatly improved service delivery in Nigerian university libraries. For example, online public access catalogues, an IT tool used by academic libraries, are widely used by students at different universities to find educational resources on shelves (Lawal-Solarin 2015).

Having seen the related works, therefore, there is a need of an integrated library system as we all know that library serve as the brain of any institution; naturally, many institutions recognize the value of the library for both the institution's development and its esteemed patrons, whom we refer to as students. An enterprise resource planning system for a library, an integrated library system, also called a library management system (Adamson et al. 2008), is used to keep track of the things that are owned, the orders that are placed, the bills that are paid, and the users who have borrowed. According to Tripathi & Srivastava, (2012), the Library Management System is a software program designed to monitor and regulate library transactions. The acquisition, cataloging, circulation, and other general library needs are supported by the library management system.

Uzomba et al. (2015) defined integrated library management software as a solution intended to improve all regular library operations in accordance with user expectations. An effective and dependable ILS improves the management, control, and accessibility of physical information resources both inside and outside of libraries, such as books, CD-ROMs, e-journals, e-books, e-databases, and repositories, among others. Additionally, it lessens the amount of time wasted when providing services to library patrons. In the same manner, it makes it easier for library employees to provide better service to library users by reducing the stress associated with a variety of operational activities, including cataloguing, acquisition, circulation, OPAC, e-resource management, and reference services. Despite the importance of ILMS, the researcher has found that libraries are not upgrading their software. As a result, the majority of private university libraries are not keeping up with the current trends of upgrading their integrated library

management software versions by paying for them. Nevertheless, the program is always being updated with new security features and other components. However, this state may be ascribed to the private universities' failure to make the necessary yearly payments to the vendors in order to adequately support the management of the software for the individual libraries.

2.5 Recommendations and Key Performance Indicators (KPIs)

In Nigerian university libraries, implementing a web-based Library Management System (LMS) can improve library operations, enhance resource access, and streamline administration. In conclusion, a switch to a computerized Library Management System (LMS) in Nigerian academic libraries is a big move toward updating library management, reducing the limitations of manual operations. With the use of a computerized LMS, academic libraries in Nigeria can ensure library records are simplified and well documented for future references.

The Key Performance Indicators (KPIs) for implementing a Learning Management System (LMS) in Nigerian academic libraries are designed to evaluate the success of this implementation. The following KPIs are considered:

1. Measure the time it takes for librarians to find and retrieve a book from the library to see if digital cataloging has improved accessibility.
2. Monitor how often books are lost or misplaced to check the accuracy of the system tracking book circulation.
3. Collect feedback from library users to measure their satisfaction with how easy the LMS is to use and its features.
4. Compare the number of books borrowed before and after the LMS implementation to assess user engagement.
5. Measure any reduction in labor or material costs due to the automation of manual tasks.

3. SYSTEM METHODOLOGY AND ANALYSIS

The use of technology to improve accessibility and efficiency has significantly changed the academic sector in recent years. The system methodology is a framework used to organize, schedule, and manage the information system development process (Hussain et al. 2024). The software development procedures are defined by software development techniques. Software Development Process Models are another name for these approaches. To guarantee software development success, each methodology follows to a set of actions specific to its type. This study focuses on the materials, methods, and procedures employed in the development of a comprehensive web-based library management system based on past experience.

3.1 Method of Identification of User and System Requirements

The system's user requirements and the procedures for gathering them are summarized in this section. Informal conversations with system users, such as librarians and admin professionals helped collect some of the things needed to build the system (Wayne 2023). Additional criteria were obtained by carefully going over relevant books, journals, and web resources as well as by analyzing current systems to fully comprehend the functionality that was anticipated from the system. The system's intended users and other significant stakeholders will be given access to the software to test once the first version was developed. Through this study, new, previously unidentified requirements were brought to light, and the system's requirements were improved. In order to guarantee usability, this exposure additionally made sure that system users were extremely familiar with the interface (Wayne 2023).

3.1.1 Requirements Analysis

Feasibility Study: To evaluate the technological, operational, and economic viability of the proposed web-based library management system, a feasibility study is carried out. Prior to the commencement of this project, the existing system was carefully investigated through observation method. It was observed that the current state of library management operation delivery often involves time-consuming and manual processes for managing the records of books and students, leading to inefficiencies and large volume of paperwork. Thus, the introduction of a web-based LMS aims to address this gap by leveraging technology to optimize the record management process.

3.1.2 User Requirement of the proposed LMS.

This section provides system users with an overview of the elicited requirements of the system in an abstract, high-level language. The functionalities that the system is meant to provide to its users are these requirements. It is highlighted below;

1. It will allow for the managing of user's records.
2. It will allow for the managing of books records.
3. It will help librarians keep track of records with the system.
4. It will reduce the manual process of record keeping and paper works.
5. It will provide institutions with a crystal-clear evaluation of borrowing books and generating of reports.

3.1.3 System Requirement

The needs that the developers of the proposed system were asked to elicit are described in depth in this section. Both functional and non-functional criteria are typically used to define a system's requirements. The systems' functional and non-functional requirements are highlighted in the sections that follows.

Functional requirements

They are the functionalities provided by the proposed software. They include;

User Login and Authorisation

- Allow admin and librarians to sign in and out seamlessly.
- Set up a system where different user roles (e.g., admin, librarian, and user) can only access certain features based on their permissions.

Management of Book Catalogue

- Provide access to add, update, delete, and view book entries such as title, author, ISBN, genre, publisher, and publication date.
- Enable the categorisation of books for easier sort and searching.

Search Features

- Create a search box for librarians to search through books using different parameters such as title, author, ISBN, and genre.

- Include filters and sorting choices for the search results.

Borrowing and Returning Books

- Enable input for users who borrow books, update borrowing information and books available in the database.
- Track due dates for borrowed books and send reminders to users as the due date gets closer.
- Update users' status in the system when the books are returned.

Transaction Records and History

- Keep track of all transactions, such as borrowing and returning books to show the books are available.
- Generate timely reports using transaction information, such as the most borrowed books, user borrowing history, and books that are overdue.

Account Management

- Allow administrators to have the ability to manage user accounts, adding new librarians or deactivating accounts when necessary.

Non-functional requirements

They are the constraints in the services rendered by the system. They include;

- i. Before allowing users to access the system, the system will authenticate them using their email addresses and passwords.
- ii. Before allowing users access to some data stored in the software, the system has to enable them.
- iii. The system should have a user-friendly interface that is simple for users to use and understand.
- iv. The system shall store all the user credentials and books details in cloud storage with only authorized access.

Software and hardware requirements

The hardware and software specifications for the suggested system were gathered with this information in mind. The sections that follow in this section highlight these needs.

- 1. Hardware Requirements** – They are the standard hardware components required of any device that would use the system. They include;

- a. A laptop or a mobile device (phone or tablet).
 - b. Internet connectivity (minimum 3G).
 - c. 1 gigabyte of R.A.M
 - d. 200MB disk space.
 - e. Single-core processor.
- 2. Software Requirements** – They are the standard software component required of any device that would use the software. They include;
- a. Window 10 Operating System.
 - b. Browser: Google chrome, Mozilla Firefox etc.
 - c. Android operating system (4.4 or higher).
 - d. IOS (iOS 9 or above).

3.2 System Design

3.2.1 System Process

This is the stage where the functionalities and requirement of the proposed system are mapped out and the steps to achieve it were stated. The processes involved in designing the system are:

- 1. Input Analysis:** The data entered into the system informs the design of the input forms. The keyboard is used to enter the data, which are then saved in the database.
- 2. Process Analysis:** After the collection of inputs, the data are processed and arranged into the relevant classifications to facilitate efficient usage and convenient retrieval. The information from the processed data is kept in the database for later use.
- 3. Output Analysis:** The system's expected output is produced based on its inputs and is shown in the database. This relates to the documentation and records produced following the processing of the data that was entered into the database. The technology can be combined with other automated monitoring programs to track the attendance of students.

Tables and Data Flow Diagrams (DFDs) are the primary tools used throughout this technique stage (see Figure 4). Only authorized users will be able to access the system admin output report according to the design.

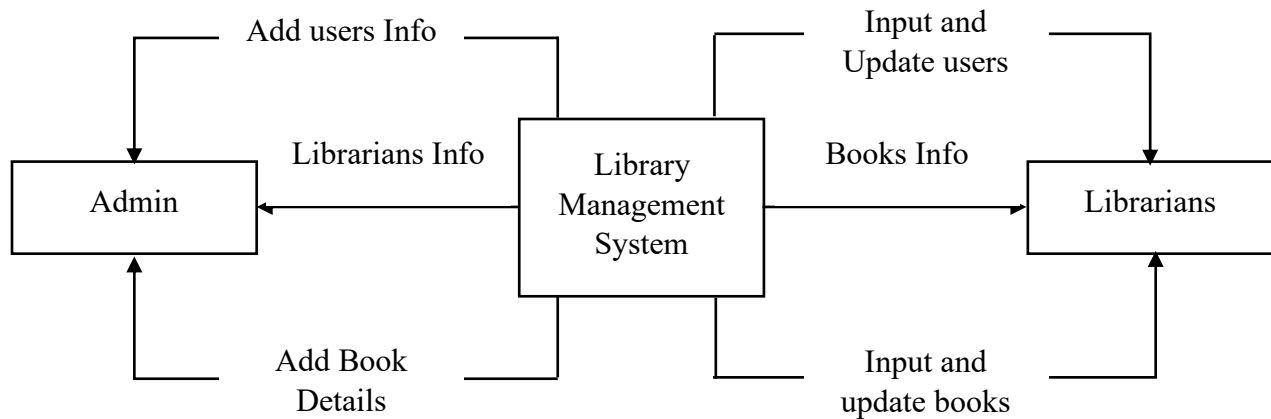


Figure 4: Design System Information Flow Diagram.

Source: Author

3.2.2 System Architecture and Development Tools

The system's architecture outlines the application's structure and how parts of it work together in a client-server setup. Programmers and software developers use software development tools to write, test, and implement application applications (Matheus 2023). Typically, developers utilize them as tools to produce additional software. Software frameworks, interpreters, compilers, and integrated development environments (IDEs) are a few examples of software tools. These tools typically assist programmers in communicating with computers and receiving data from them (codezone 2023). For example, an automated software testing tool would assist a programmer in testing a program's functionality. Software development tools include compilers, IDEs, automated testing tools, environments for running programs, and frameworks for creating application software (GeeksforGeeks 2019).

1. **Client-Side (Frontend):** This part is designed with HTML, CSS, JavaScript, and a tool like React or Vue.js. It manages user actions, sends requests to the server, and shows data that comes back from the server.
2. **Server-Side (Backend):** This part is developed using a PHP language and Node.js framework. The server handles requests from the client, runs important tasks, and interacts with the database to get or save information.
3. **Database:** A relational database (like MySQL or PostgreSQL) keeps all the data, such as book records, user details, and transaction history.

4. Interactions:

- The client interacts with the server using HTTP requests with the use of methods like GET, POST and DELETE to get, add, modify, or remove information.
- The server sends back data in JSON format, which the client then handles and shows to the user.

3.2.3 Use case diagrams

The relationship between multiple users and the system is depicted in the use case diagram. The suggested program caters to four distinct user and record types. They are the admin, librarians, users, and books. The sections of this section that follow provide descriptions of their duties.

- a. Users (student and staff): Users records are stored in the LMS database such that when the users come to borrow books, their data are taken and recorded and when they return the books back the status changes. The users use case diagram (see Figure 5).
- b. Librarians: Upon tracking and monitoring, the librarians review a list of books borrowed. The use case diagram (see Figure 6).
- c. Admin: The administrator oversees all system operations. He or she adds, modifies, and removes database data objects. Additionally, the administrator logs librarians into the system (see Figure 7).

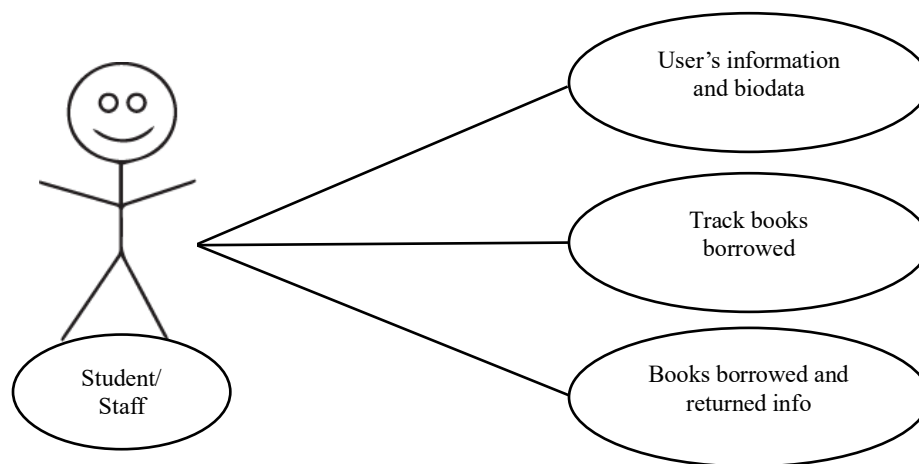


Figure 5: Use-case for users.

Source: Author

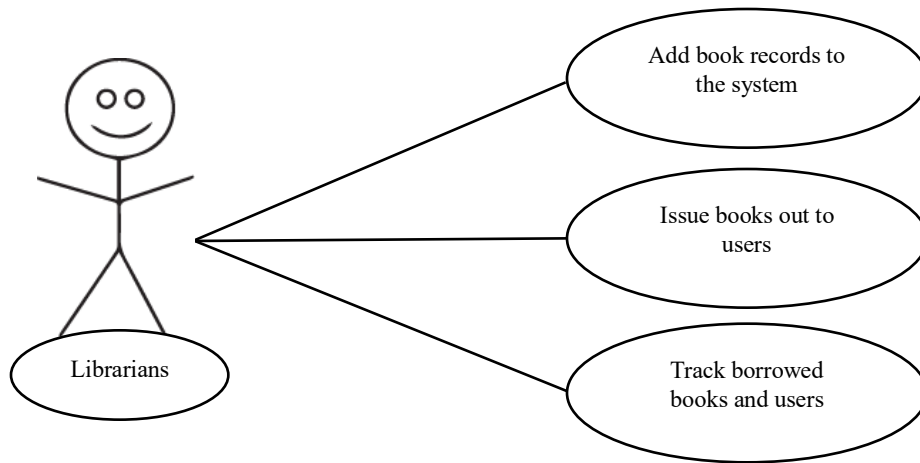


Figure 6: Use-case for librarians.

Source: Author

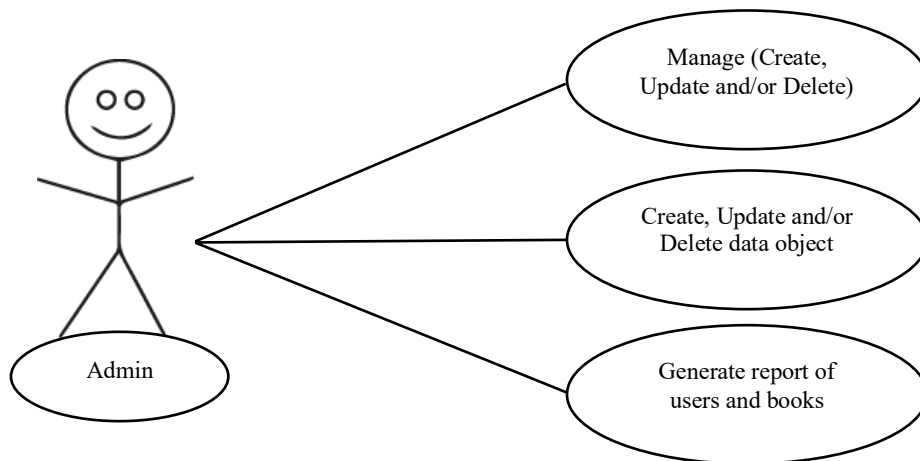


Figure 7: Use-case for Admin.

Source: Author

3.2.4 Database Design

The database design shows how the data will be organized, including the tables, relationship between them, and rules (see Figure 8). For a system that manages library activities, the database has these tables:

1. Users

- Columns: user_id, name, number, username, password, email, account status (e.g., admin, librarian, user)

- Purpose: Keeps user login details and role information to control who can access the system.

2. Books

- Columns: book_id, b_title, b_author, b_isbn_no, b_publisher, b_date, b_status, b_copies
- Purpose: Stores information about each book in the library.

3. Transactions

- Columns: transaction_id, user_id, book_id, transaction_type (borrow/return), transaction_date, due_date, return_date
- Purpose: Records when books are borrowed and returned, including due dates and return dates.

4. Audit Logs

- Columns: log_id, user_id, action, timestamp, details
- Purpose: Keeps track of system actions for security and assessment.

5. Category

- Columns: id_no, bc_code, bc_name, bc_description.

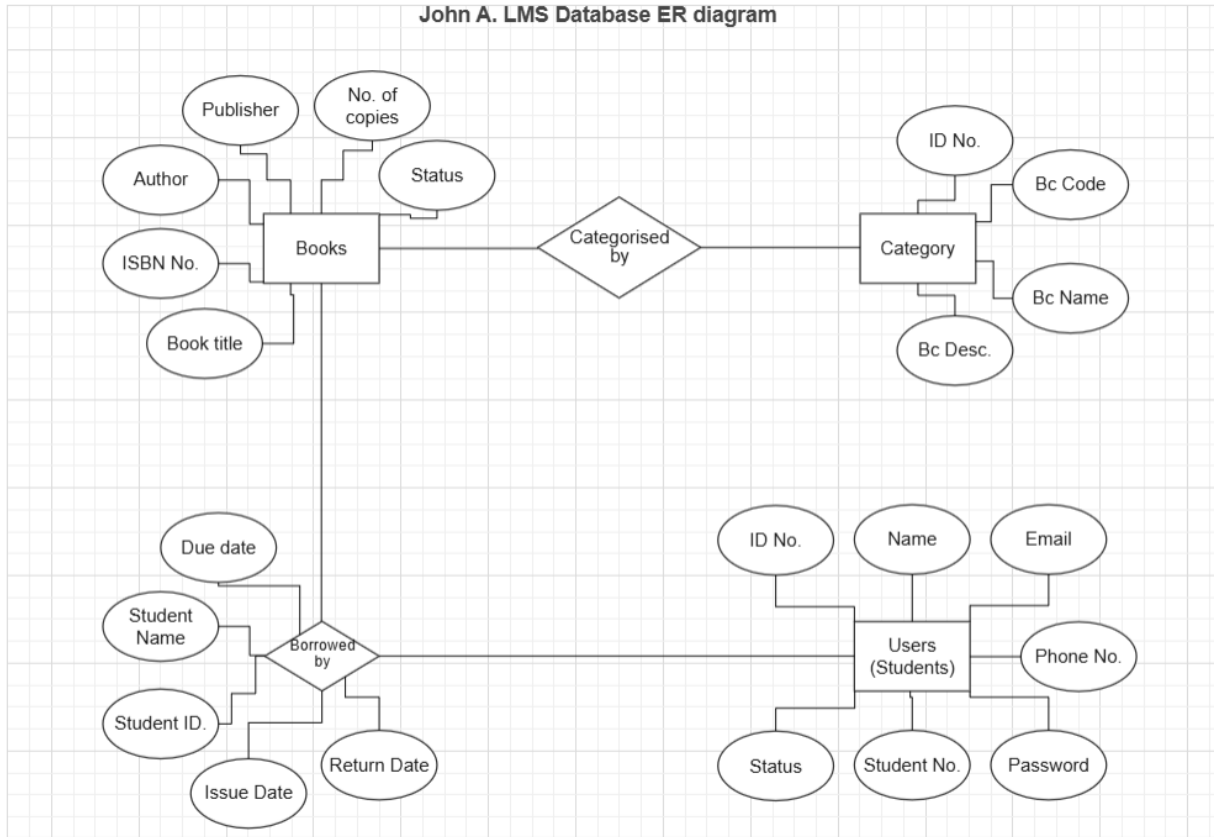


Figure 8: Database ER diagram.

Source: Author

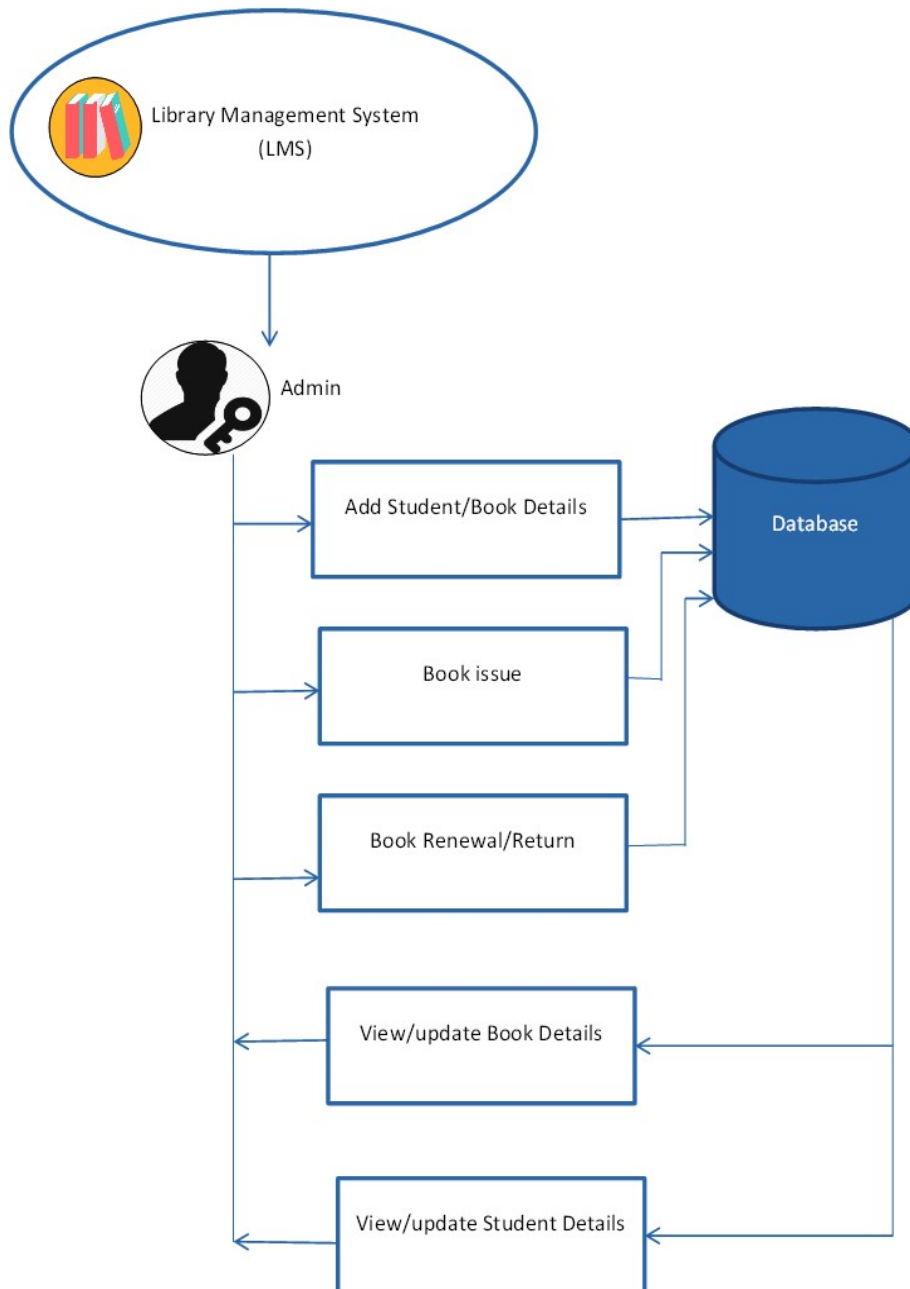


Figure 9: Block diagram of the proposed system.

Source: Author

In Figure 9, the proposed Library Management System (LMS) block diagram is displayed. The admin's activities are displayed in the admin module of the LMS. The administrator has sole authorization to access the LMS backend system. With their password and username, they can access their account.

4. SYSTEM DESIGN AND IMPLEMENTATION

4.1 System Implementation

The graphical user interface and database implementation tools are described here. Relational tables were created and then linked to the database using MySQL. Each of the interface in the system, including the home page, login page, dashboard page, user page, librarian page and admin page, was written in HTML. PHP and MySQL databases were used to process queries, create the database, write the back-end components and server-side web application logic, as well as to create the database connection. The client-server scripting client included jQuery, Ajax, Parsley.js, jQuery DataTable Plugin, and Bootstrap DatePicker Plugin.

4.2 User Interface Design

The aim of user interface (UI) design is to project possible actions that users may need to perform and make sure that the interface incorporates sections that are easy to navigate, understand, and access in order to support these functions. UI integrates concepts from information architecture, visual design, and interaction design.

4.2.1 System Homepage

A Library Management System's (LMS) System Homepage is the primary interface that users engage with when they first access the system. Figure 10 provides an overview of the features of the system and serves as a landing page for users to access different modules.

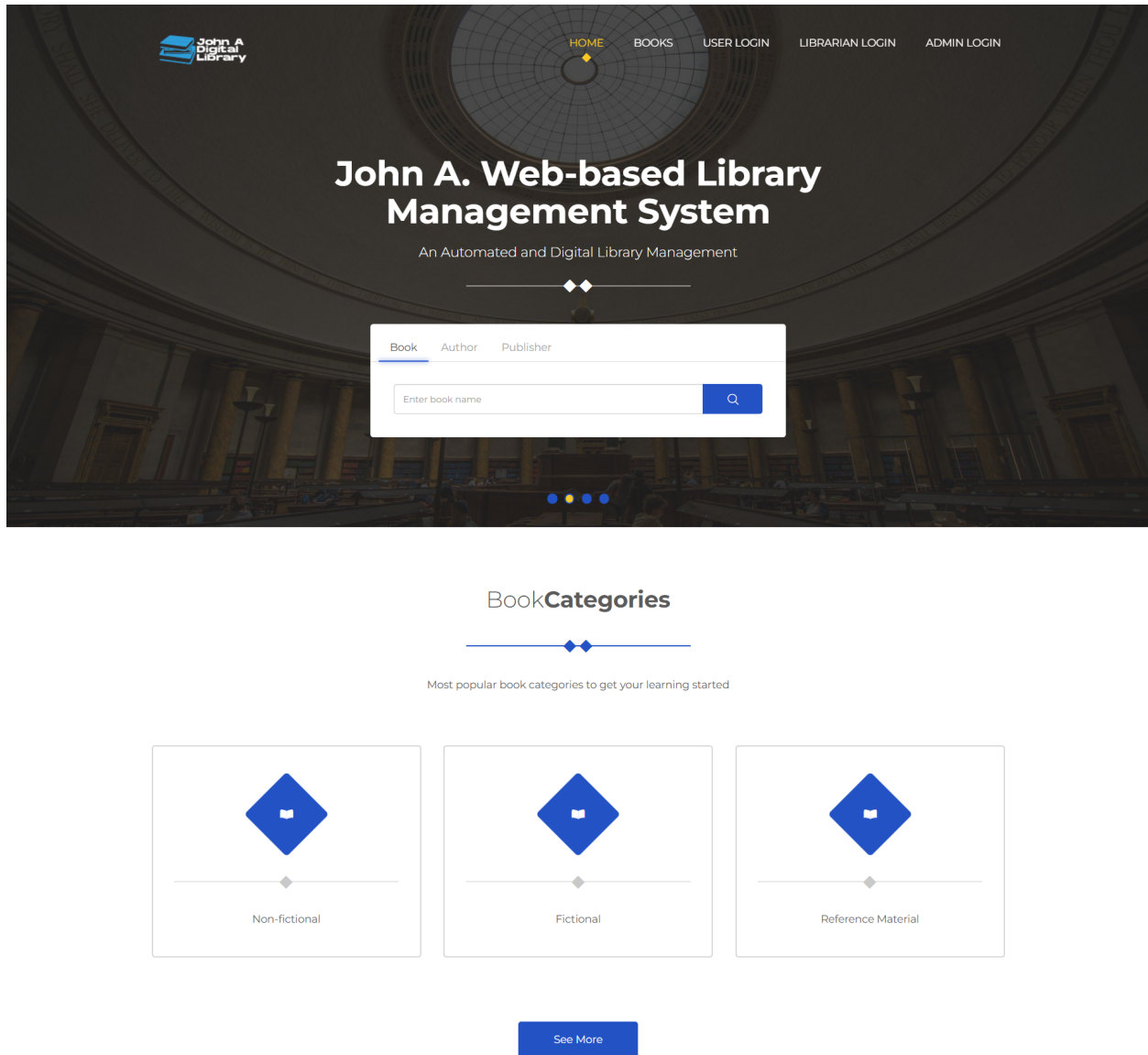


Figure 10: Block diagram of the proposed system.

Source: Author

4.2.2 System Book page

Figure 11 below, the System's Book module is designed to efficiently manage the library resources for borrowing of books. It has a search and filter section to allow students (users) to search and filter books available using Book Name, Author Name, and Publisher Name. The module also enables borrowing of books by allowing users to check book availability and initiate the borrowing process. This module improves library operations, ensuring seamless access to resources for both users and staff while maintaining accurate records of transactions.

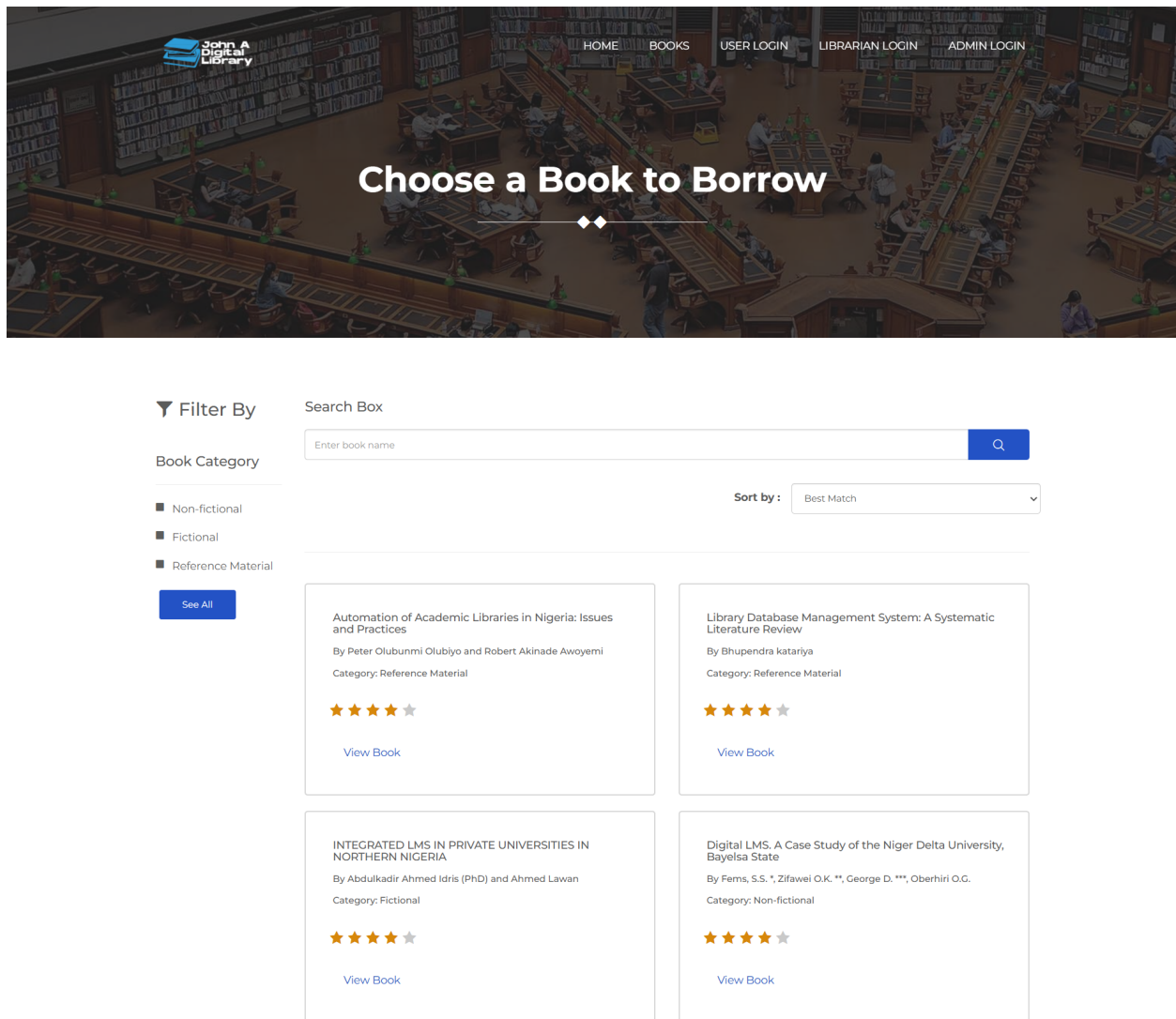


Figure 11: System Book page.

Source: Author

4.2.3 User Login page

The User Login Page provides an access for users which allows them to log in using their registered email or student number and password (see Figure 12). Upon successful login, this module enables students to manage their library operations, including borrowing history, books borrowed, and due date tracking, etc.

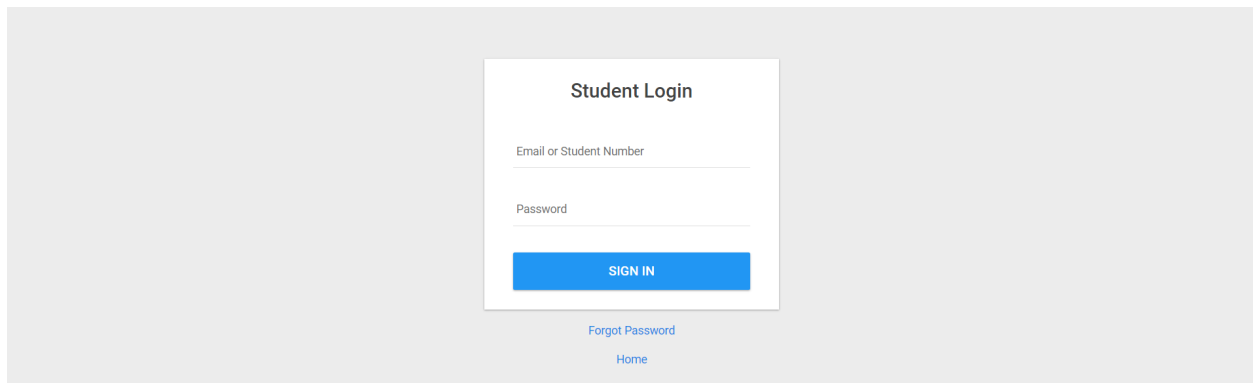


Figure 12: User Login Page

Source: Author

4.2.3 Librarian Login page

The Librarian Login Page provides an access for the librarian which allows them to log in using their registered email and password as presented (see Figure 13). Upon successful login, this module enables librarian to manage their library operations, finances, audits, including students records, book records, borrowing history, books borrowed, and due date tracking, etc.

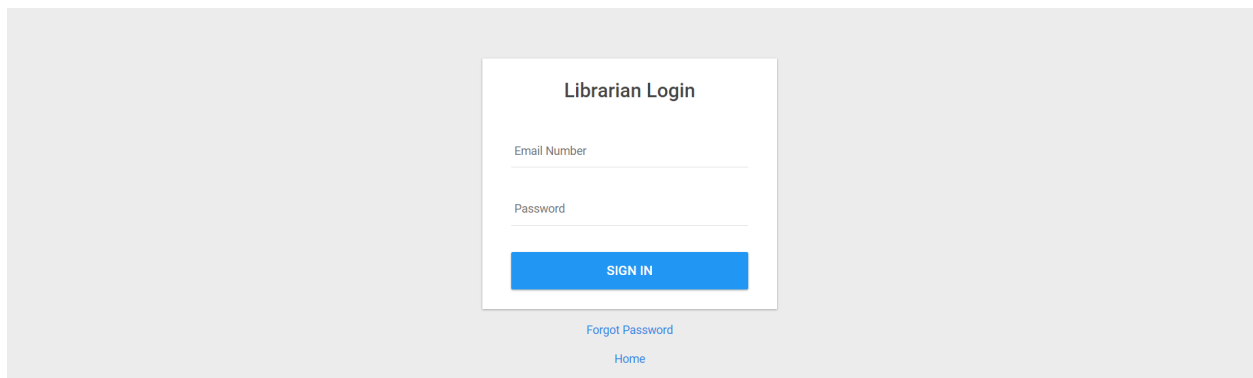


Figure 13: Librarian Login page

Source: Author

4.2.4 Admin Login page

The Admin Login Page provides an access for only the admins which allows them to log in using their unique email and password as presented (see Figure 14). Upon successful login, this module enables admin to manage their library operations, finances, audits, including students and librarians records, book inventory, borrowing history, books borrowed, and due date tracking, etc.

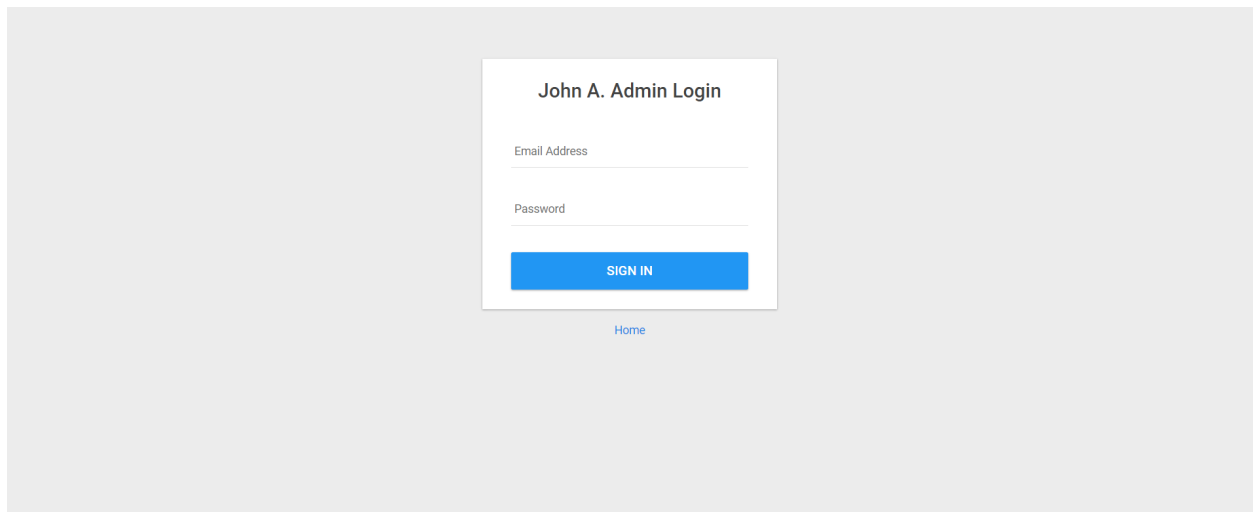


Figure 14: Admin Login page.

Source: Author

4.2.5 User Dashboard

From the Figure 15, the user dashboard provides an overview access to main features such as Library Operations - for borrowing books, Library Finances - for handling fines and payments, Subscribed Medias - for browsing available books, and Recommended Books. My Reports - shows library activity records, including borrowed books, returned items, and payment fine history for effective library management.

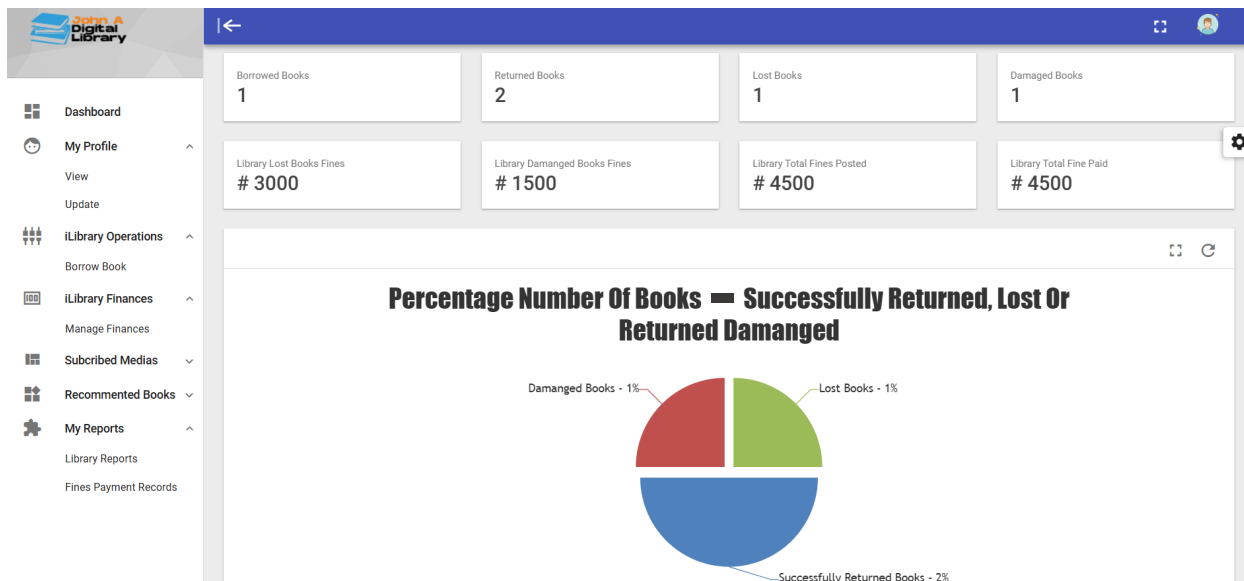


Figure 15: User Dashboard.

Source: Author

4.2.6 Books Catalog

Figure 16, this module shows the user book catalog for borrowing of books.

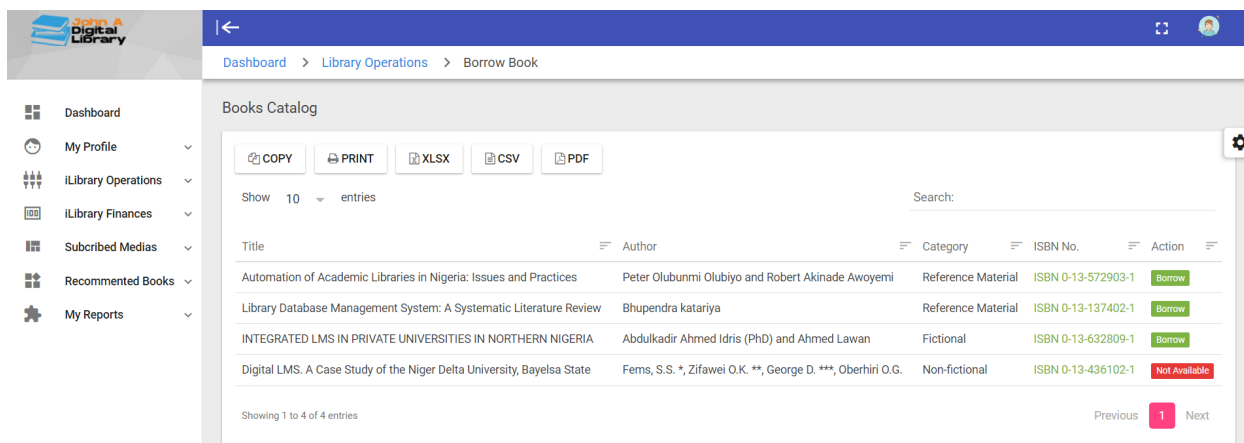


Figure 16: User Books Catalog.

Source: Author

4.2.7 Operation Record

Figure 17, this module shows the user operation records of the borrowed book status.

My Operations Records

Dashboard > Audits > My Library Operations

Dashboard My Profile iLibrary Operations iLibrary Finances Subscribed Medias Recommended Books My Reports

Operation Type Operation Timestamp Operation Checksum Operation Number Action

Damaged	03-Dec-2024	af60c364bd14ab6f6fc8310982ee22e5b17fbd16	238104	View
Returned	03-Dec-2024	6adf36b4f0dc8a7e787b4d9cb1c9ab4119cd6605	967430	View
Returned	03-Dec-2024	4cc34b0c2c03d500375bea3d83690da5c2b493ec	421708	View
Lost	03-Dec-2024	b3471bfc8ed2e115d0efa83e9c8f5ad6a7525925	071598	View
Return Pending	03-Dec-2024	b5db8325969be043f3fe75484978a3106440499d	452318	View

Showing 1 to 5 of 5 entries

Previous 1 Next

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Figure 17: Operation record.

Source: Author

4.2.8 Finance records

Figure 18, this module shows the user finance records of the borrowed book penalty status.

My Finance Records

Dashboard > Finances > Manage Finances

Dashboard My Profile iLibrary Operations iLibrary Finances Subscribed Medias Recommended Books My Reports

Penalty Type Penalty Charges Student Name Student Number Penalty Status Action

Damaged Book	# 1500	Student 001	iLib-37508	Paid	Get Receipt
Lost Book	# 3000	Student 001	iLib-37508	Paid	Get Receipt

Showing 1 to 2 of 2 entries

Previous 1 Next

Figure 18: Finance records.

Source: Author

4.2.9 User Profile page

Figure 19, this module shows the user profile section to add or update records, change password etc.

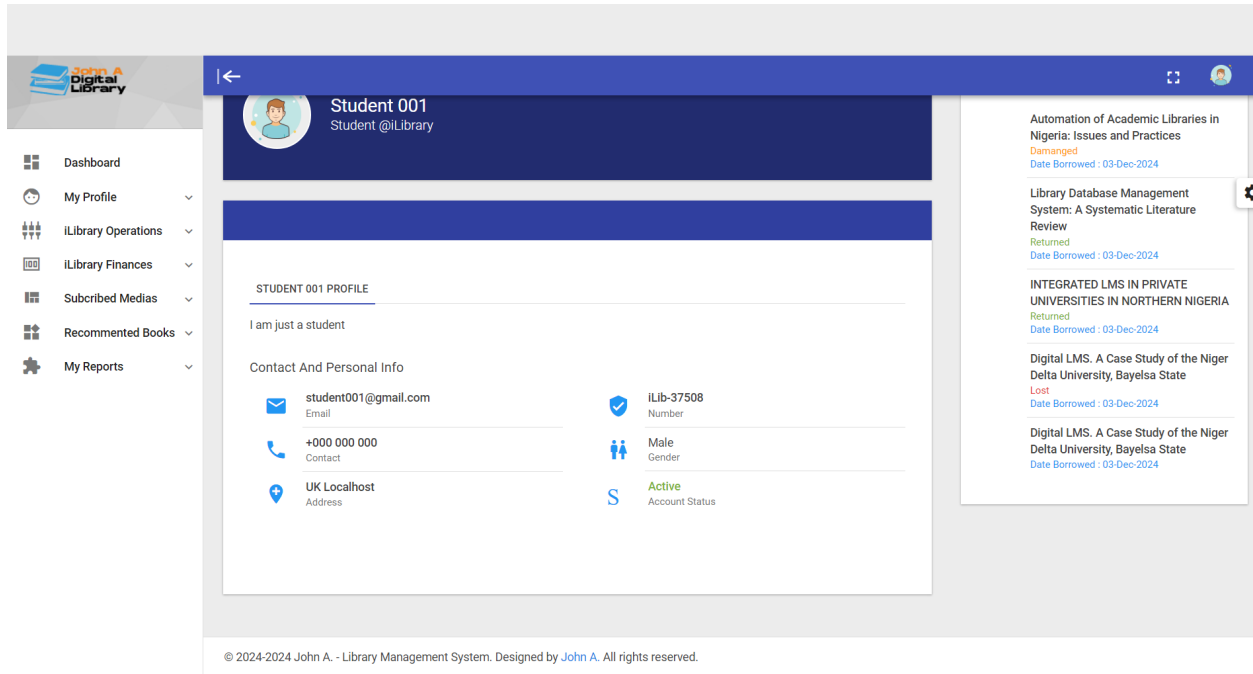


Figure 19: User profile.

Source: Author

4.2.10 Librarian Dashboard

The librarian dashboard, see Figure 20, provides an overview access to main features such as Students – for managing student records, Books Inventory – for viewing and managing of book records, Library Operations - for managing borrowed books, Library Finances - for handling fines and payments, Subscribed Medias - for adding and browsing available books, and Recommended Books. Audits – manage book categories, books records, subscription records and fines payment records for effective library management.

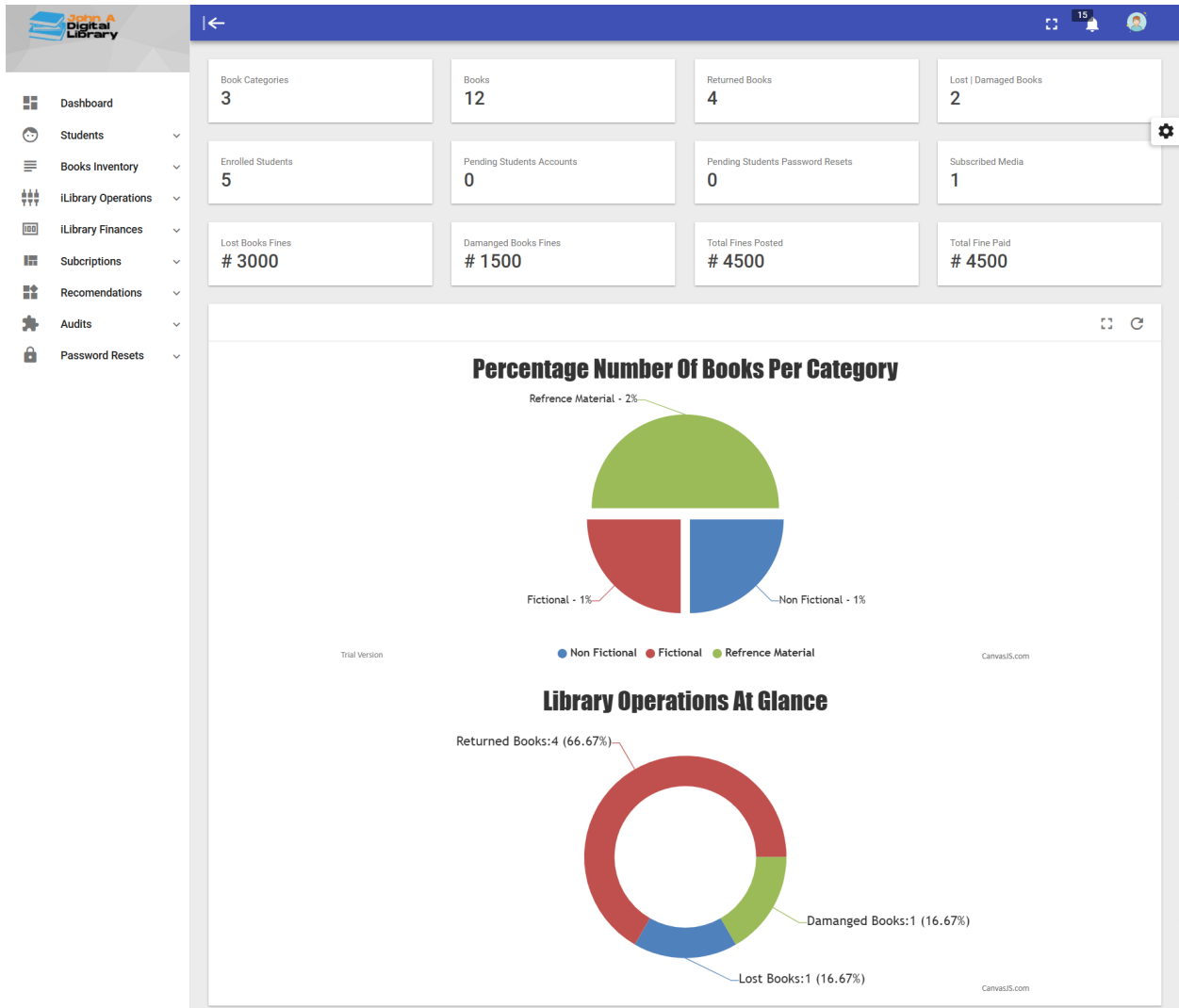


Figure 20: Librarian Dashboard

Source: Author

4.2.11 Students Accounts

Figure 21, this module shows the records of student available on the system and the status of their accounts.

Name	iLib Student No	Phone No.	Email	Address	Gender	Acc Status	Actions
Student 001	iLib-37508	+000 000 000	student001@gmail.com	UK Localhost	Male	Active	View Update
Student 002	iLib-89325	+000 000 000	student002@gmail.com	UK Localhost	Female	Active	View Update
Student 003	iLib-12487	+000 000 000	student003@gmail.com	UK Localhost	Male	Active	View Update
Student 004	iLib-59213	+000 000 000	student004@gmail.com	UK Localhost	Female	Active	View Update
Student 005	iLib-74291	+000 000 000	student005@gmail.com	UK Localhost	Male	Active	View Update

Figure 21: Students Account.

Source: Author

4.2.12 Book Catalog

Figure 22, this module shows the records of the book catalog, author, category and available copies in the library system.

Title	Author	Category	Available Copies	Action
Automation of Academic Libraries in Nigeria: Issues and Practices	Peter Olubunmi Olubiyo and Robert Akinade Awoyemi	Reference Material	3 Copies	View Update
Library Database Management System: A Systematic Literature Review	Bhupendra katariya	Reference Material	7 Copies	View Update
INTEGRATED LMS IN PRIVATE UNIVERSITIES IN NORTHERN NIGERIA	Abdulkadir Ahmed Idris (PhD) and Ahmed Lawan	Fictional	2 Copies	View Update
Digital LMS. A Case Study of the Niger Delta University, Bayelsa State	Fems, S.S. *, Zifawei O.K. **, George D. ***, Oberhiri O.G.	Non-fictional	0 Copies	View Update

Figure 22: Book Catalog

Source: Author

4.2.13 Operation Records

Figure 23, this module shows the operation records of books borrowed – it presents the operation type, timestamp and number.

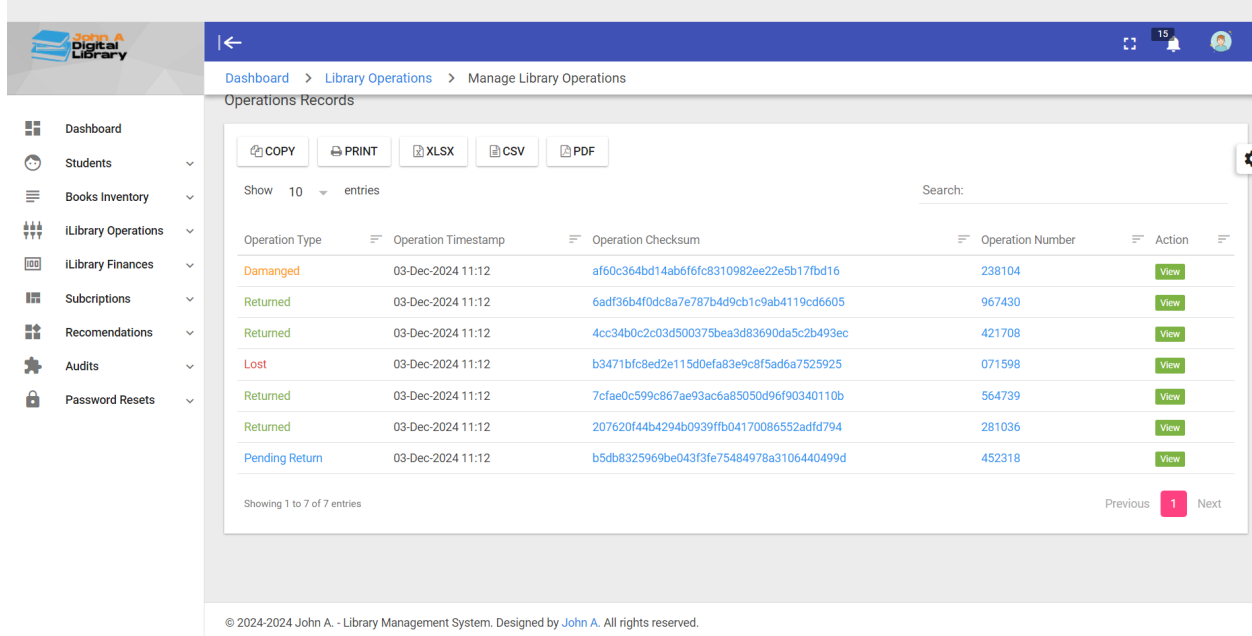


Figure 23: Operation Records.

Source: Author

4.2.14 Finance Records

Figure 24, this module shows the financial records of student name and number, penalty type, charges and status.

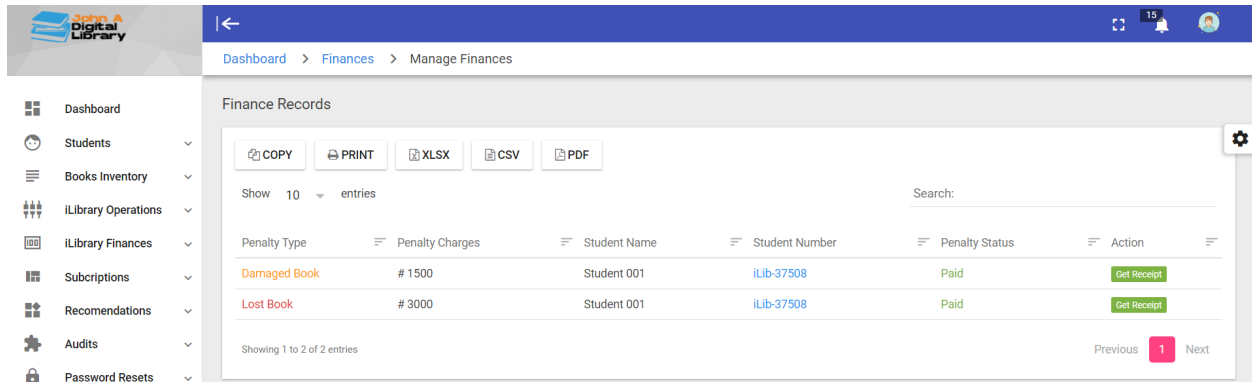


Figure 24: Finance Records

Source: Author

4.2.15 Book Categories

Figure 25, this module shows the categories of books – name and code available in the system.

Book Category Code	Book Category Name	Actions
BC-CAVGI	Non-fictional	View
BC-JVQBM	Fictional	View
BC-AHGWI	Reference Material	View

Figure 25: Book Categories.

Source: Author

4.2.15 Book Catalog

Figure 26, this module shows the books catalog – title, author, category and available copies in the system.

Title	Author	Category	Available Copies	Action
Automation of Academic Libraries in Nigeria: Issues and Practices	Peter Olunbunmi Olubiyo and Robert Akinade Awoyemi	Reference Material	3 Copies	View
Library Database Management System: A Systematic Literature Review	Bhupendra katariya	Reference Material	7 Copies	View
INTEGRATED LMS IN PRIVATE UNIVERSITIES IN NORTHERN NIGERIA	Abdulkadir Ahmed Idris (PhD) and Ahmed Lawan	Fictional	2 Copies	View
Digital LMS. A Case Study of the Niger Delta University, Bayelsa State	Fems, S.S. *, Zifawei O.K. **, George D. ***, Oberhiri O.G.	Non-fictional	0 Copies	View

Figure 26: Book Catalog.

Source: Author

4.2.15 Subscribed Media Catalog

Figure 27 shows the books catalog – title, author, category and available copies in the system.

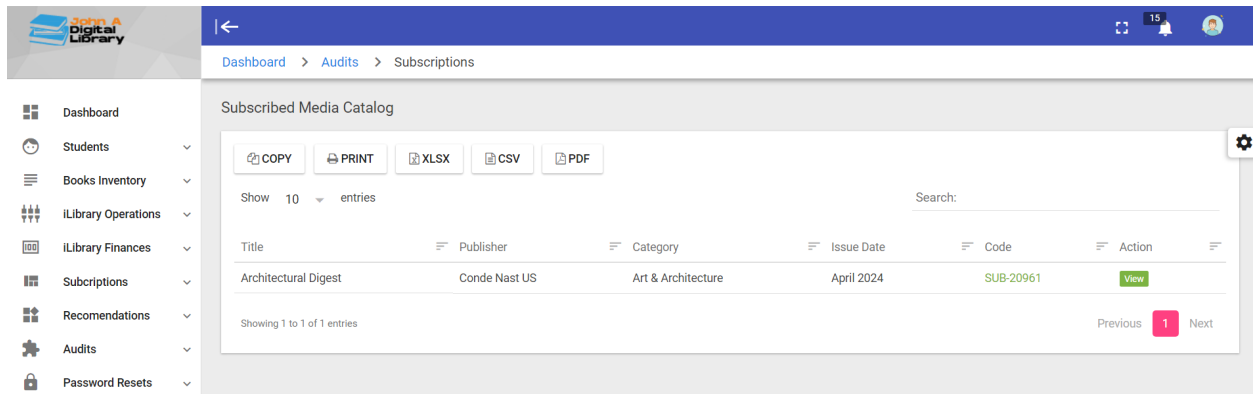


Figure 27: Subscribed Media Catalog.

Source: Author

4.2.17 Profile Setting

Figure 28 shows the personal records of the librarian.

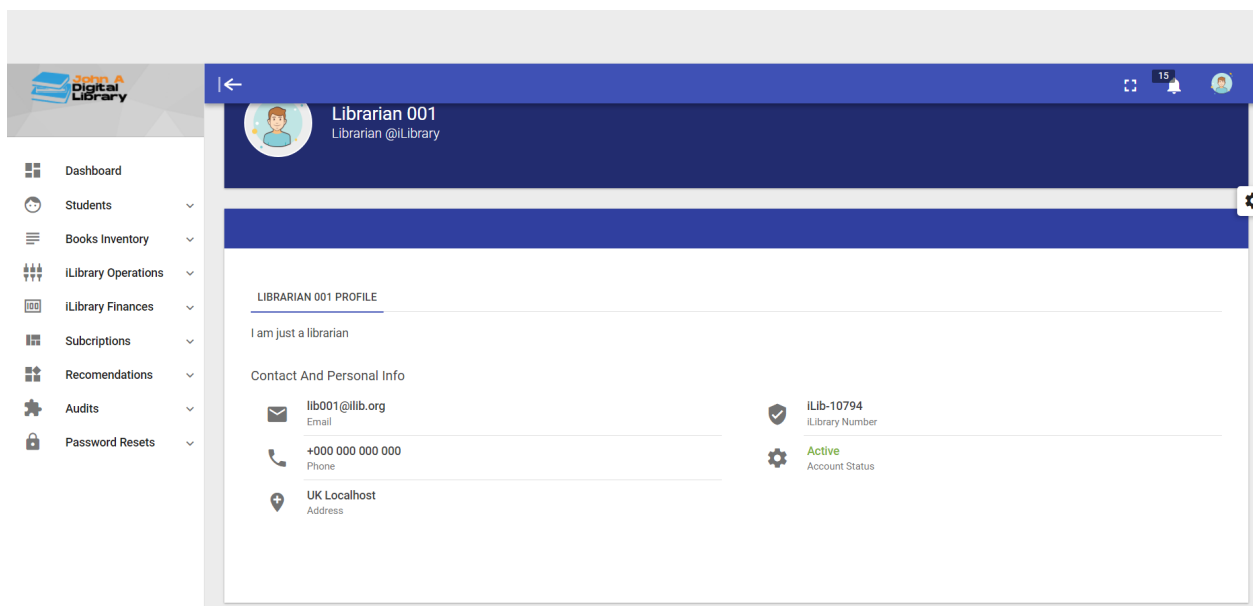


Figure 28: Librarian Profile Setting.

Source: Author

4.2.14 Admin Dashboard

The admin dashboard, see Figure 29, provides an overview access to main features such as Librarians – for adding and managing librarians’ records, Students – for managing student records, Books Inventory – for viewing and managing of book records, Library Operations - for managing borrowed books, Library Finances - for handling fines and payments, Subscribed Medias - for adding and browsing available books, Subscriptions and Recommended Books. Audits – manage book categories, books records, subscription records and fines payment records, Password Resets – to reset librarian and students passwords for effective library management.

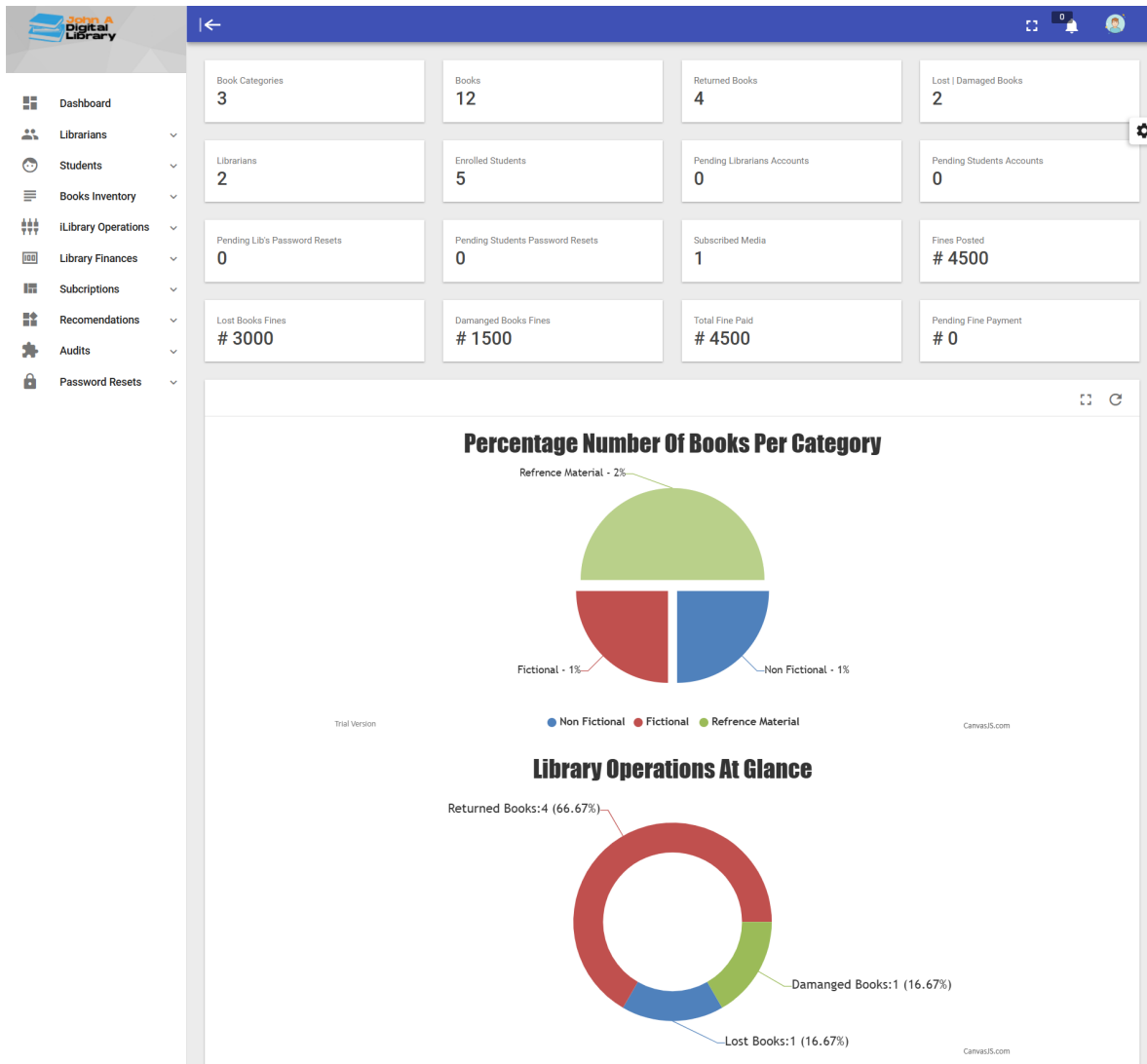


Figure 29: Admin Dashboard.

Source: Author

4.2.15 Librarian Accounts

Figure 30 shows an overview of the Librarian accounts – to add and manage.

Name	iLib Number	Phone No.	Email	Address	Acc Status	Actions
Librarian 001	iLib-10794	+000 000 000 000	lib001@iilib.org	UK Localhost	Active	View Update Delete
Librarian 002	iLib-24567	+000 000 000 000	lib002@iilib.org	UK Localhost	Active	View Update Delete

Figure 30: Librarian Accounts.

Source: Author

4.2.16 Student Accounts

Figure 31 shows an overview of the student accounts – to add and manage.

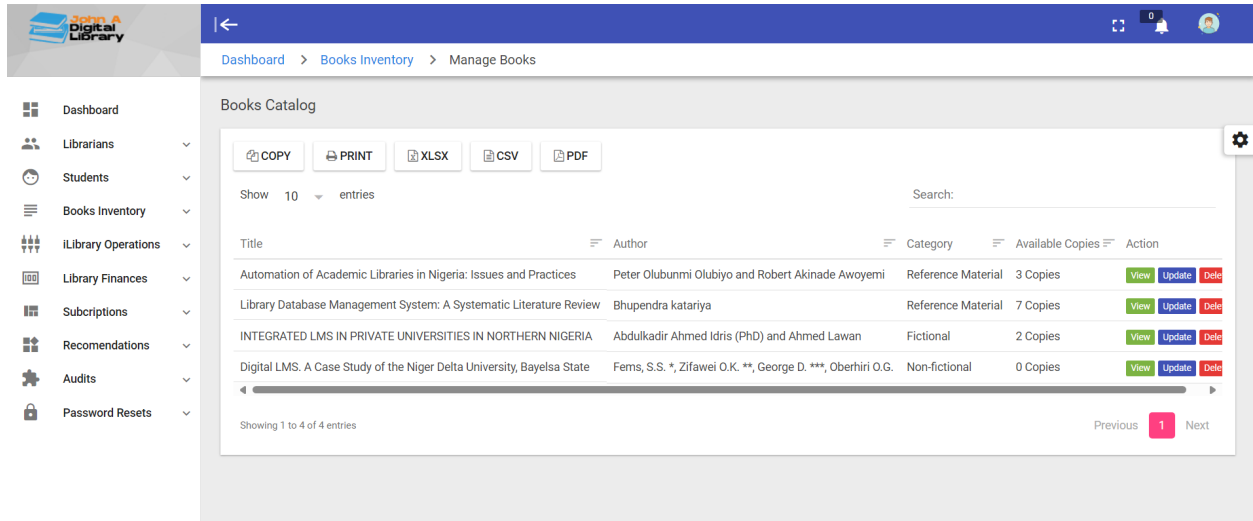
Name	iLib Student No	Phone No.	Email	Address	Gender	Acc Status	Actions
Student 001	iLib-37508	+000 000 000	student001@gmail.com	UK Localhost	Male	Active	View Update Delete
Student 002	iLib-89325	+000 000 000	student002@gmail.com	UK Localhost	Female	Active	View Update Delete
Student 003	iLib-12487	+000 000 000	student003@gmail.com	UK Localhost	Male	Active	View Update Delete
Student 004	iLib-59213	+000 000 000	student004@gmail.com	UK Localhost	Female	Active	View Update Delete
Student 005	iLib-74291	+000 000 000	student005@gmail.com	UK Localhost	Male	Active	View Update Delete

Figure 31: Student Accounts.

Source: Author

4.2.17 Books Catalog

Figure 32 shows an overview of the Book Catalog in order of title, author, category and available copies. Admin can manage, update and delete books in the catalog.



The screenshot displays the 'Books Catalog' page within the 'Manage Books' section of the 'Books Inventory' module. The interface includes a sidebar with navigation options like Dashboard, Librarians, Students, Books Inventory, iLibrary Operations, Library Finances, Subscriptions, Recommendations, Audits, and Password Resets. The main content area features a search bar, a table of book entries, and action buttons (COPY, PRINT, XLSX, CSV, PDF). The table lists books with columns for Title, Author, Category, Available Copies, and Action (View, Update, Delete). The current page shows 4 entries.

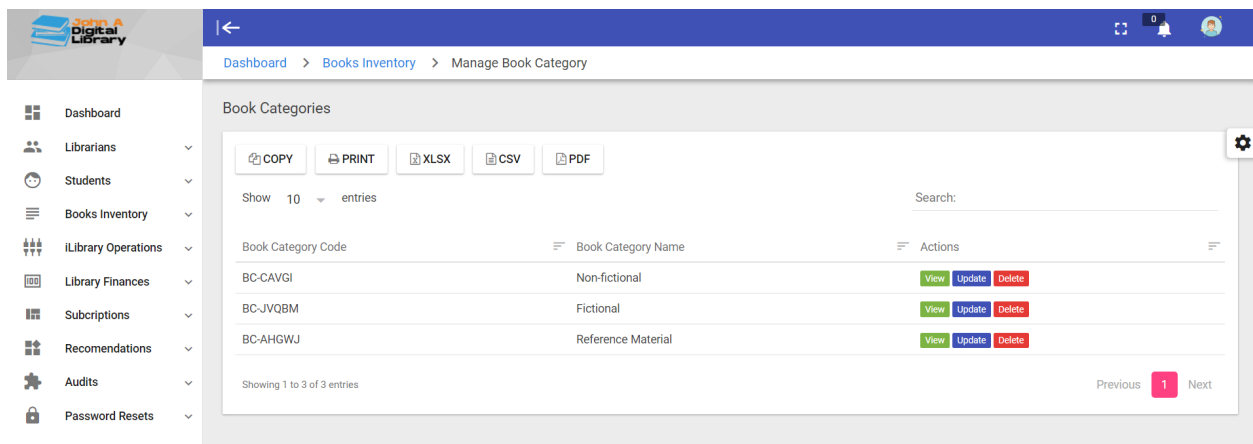
Title	Author	Category	Available Copies	Action
Automation of Academic Libraries in Nigeria: Issues and Practices	Peter Olubunmi Olubiyo and Robert Akinade Awoyemi	Reference Material	3 Copies	View Update Delete
Library Database Management System: A Systematic Literature Review	Bhupendra katariya	Reference Material	7 Copies	View Update Delete
INTEGRATED LMS IN PRIVATE UNIVERSITIES IN NORTHERN NIGERIA	Abdulkadir Ahmed Idris (PhD) and Ahmed Lawan	Fictional	2 Copies	View Update Delete
Digital LMS. A Case Study of the Niger Delta University, Bayelsa State	Fems, S.S. *, Zifawei O.K. **, George D. ***, Oberhiri O.G.	Non-fictional	0 Copies	View Update Delete

Figure 32: Books Catalog

Source: Author

4.2.18 Book Categories

Figure 33 shows an overview of the Book Categories in order of category code and name. Admin can manage, update and delete categories in the system.



The screenshot displays the 'Book Categories' page within the 'Manage Book Category' section of the 'Books Inventory' module. The interface includes a sidebar with navigation options like Dashboard, Librarians, Students, Books Inventory, iLibrary Operations, Library Finances, Subscriptions, Recommendations, Audits, and Password Resets. The main content area features a search bar, a table of book categories, and action buttons (COPY, PRINT, XLSX, CSV, PDF). The table lists categories with columns for Book Category Code, Book Category Name, and Actions (View, Update, Delete). The current page shows 3 entries.

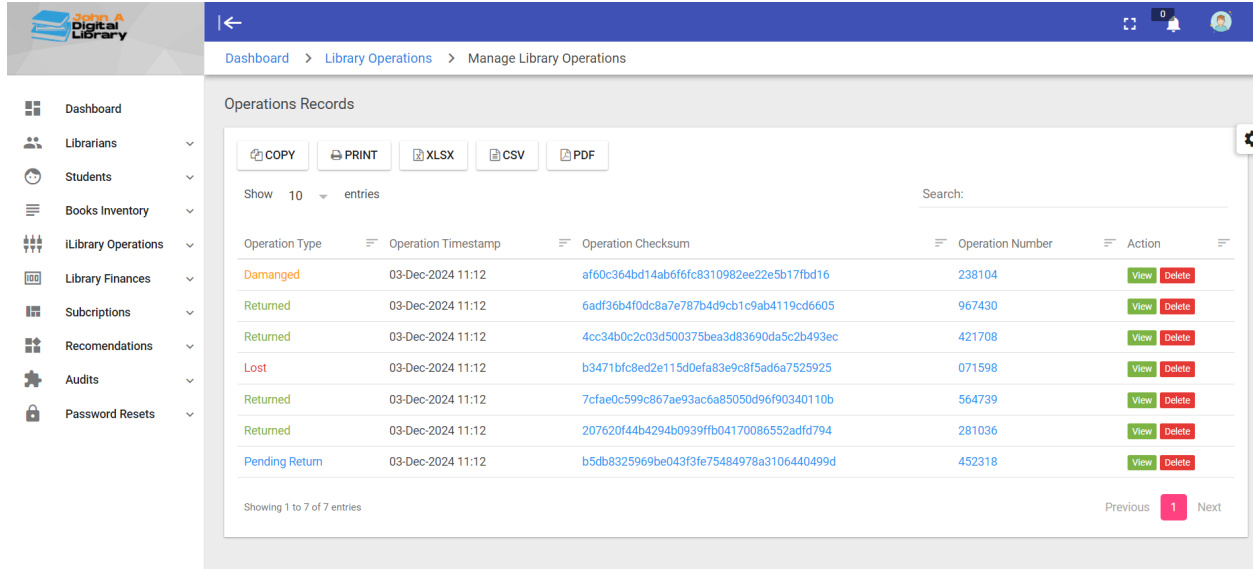
Book Category Code	Book Category Name	Actions
BC-CAVGI	Non-fictional	View Update Delete
BC-JVQBM	Fictional	View Update Delete
BC-AHGWJ	Reference Material	View Update Delete

Figure 33: Book Category

Source: Author

4.2.19 Operation Records

Figure 34 shows an overview of the Operation Records in order of operation type, timestamp and number. Admin can manage and delete book operation records in the system.



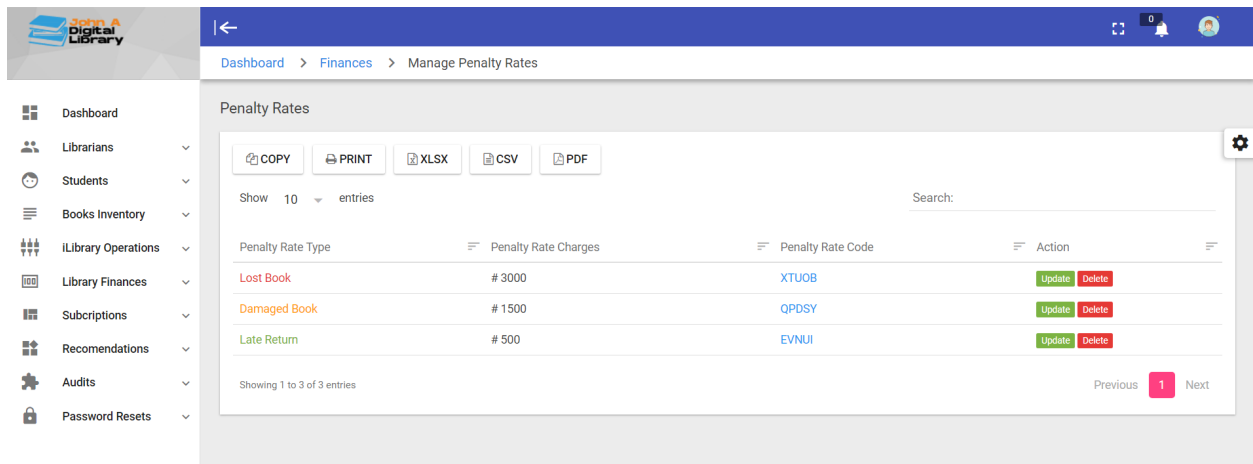
Operation Type	Operation Timestamp	Operation Checksum	Operation Number	Action
Damaged	03-Dec-2024 11:12	af60c364bd14ab6f6c8310982ee22e5b17fbd16	238104	View Delete
Returned	03-Dec-2024 11:12	6adf36b4f0dc8a7e787b4d9cb1c9ab4119cd6605	967430	View Delete
Returned	03-Dec-2024 11:12	4cc34b0c2c03d500375bea3d83690da5c2b493ec	421708	View Delete
Lost	03-Dec-2024 11:12	b3471bfc8ed2e115d0efa83e9c8f5ad6a7525925	071598	View Delete
Returned	03-Dec-2024 11:12	7cfae0c599c867ae93ac6a85050d9f90340110b	564739	View Delete
Returned	03-Dec-2024 11:12	207620f44b4294b0939ffb04170086552adfd794	281036	View Delete
Pending Return	03-Dec-2024 11:12	b5db8325969be043f3fe75484978a3106440499d	452318	View Delete

Figure 34: Library Operation Records.

Source: Author

4.2.20 Penalty Rates

Figure 35 shows an overview of the Penalty Rates in order of penalty rate type, charges and code. Admin can manage and delete penalty rate records in the system.



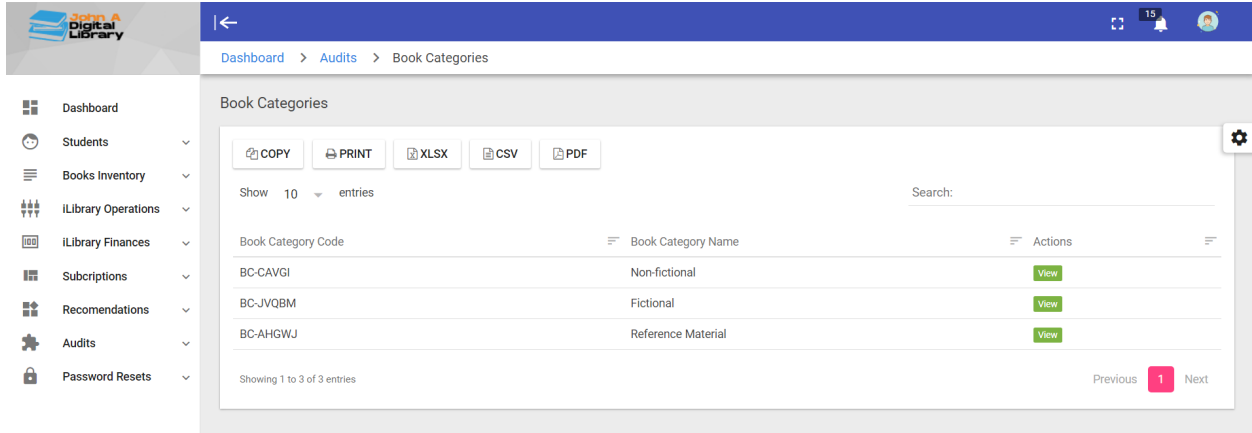
Penalty Rate Type	Penalty Rate Charges	Penalty Rate Code	Action
Lost Book	# 3000	XTUOB	Update Delete
Damaged Book	# 1500	QPDSY	Update Delete
Late Return	# 500	EVNUI	Update Delete

Figure 35: Penalty Rates

Source: Author

4.2.21 Book Categories

Figure 36 shows an overview of the Book Categories in order of book category code and name. Admin can add, manage and delete book category records in the system.



The screenshot shows the 'Book Categories' page in the system. The page has a sidebar with navigation options: Dashboard, Students, Books Inventory, iLibrary Operations, iLibrary Finances, Subscriptions, Recommendations, Audits, and Password Resets. The main content area is titled 'Book Categories' and includes a search bar, a 'Show 10 entries' dropdown, and a table with columns for 'Book Category Code', 'Book Category Name', and 'Actions'. The table lists three categories: BC-CAVGI (Non-fictional), BC-JVQBM (Fictional), and BC-AHGWJ (Reference Material). Each row has a 'View' button. At the bottom, it says 'Showing 1 to 3 of 3 entries' and has 'Previous' and 'Next' navigation buttons.

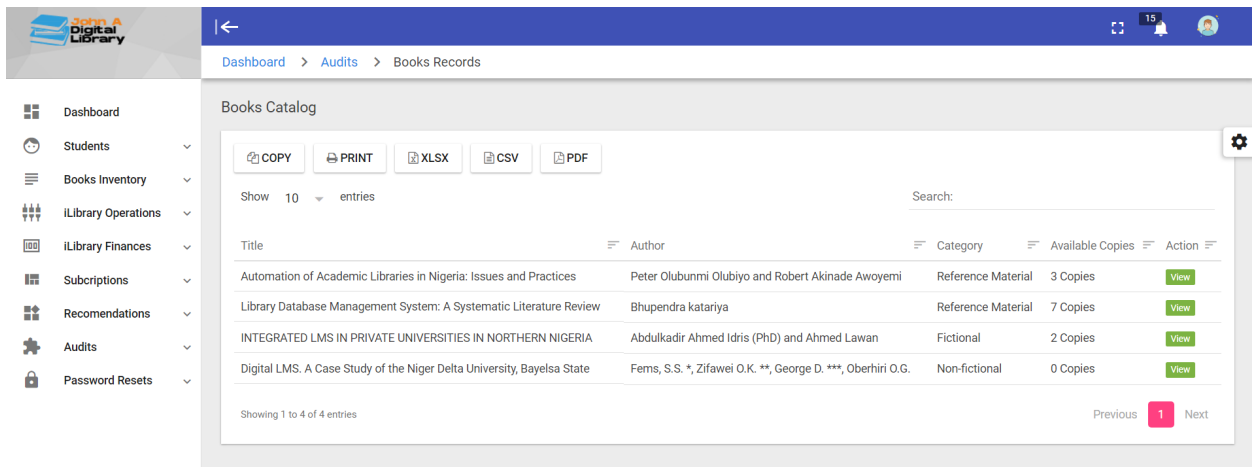
Book Category Code	Book Category Name	Actions
BC-CAVGI	Non-fictional	View
BC-JVQBM	Fictional	View
BC-AHGWJ	Reference Material	View

Figure 36: Book Categories.

Source: Author

4.2.22 Book Catalog

The modules show an overview of the Book Catalog in order of book title, author, category and available copies in Figure 37. Admin can add, manage and delete book catalog records in the system.



The screenshot shows the 'Books Catalog' page in the system. The page has a sidebar with navigation options: Dashboard, Students, Books Inventory, iLibrary Operations, iLibrary Finances, Subscriptions, Recommendations, Audits, and Password Resets. The main content area is titled 'Books Catalog' and includes a search bar, a 'Show 10 entries' dropdown, and a table with columns for 'Title', 'Author', 'Category', 'Available Copies', and 'Action'. The table lists four books: 'Automation of Academic Libraries in Nigeria: Issues and Practices' (3 Copies), 'Library Database Management System: A Systematic Literature Review' (7 Copies), 'INTEGRATED LMS IN PRIVATE UNIVERSITIES IN NORTHERN NIGERIA' (2 Copies), and 'Digital LMS. A Case Study of the Niger Delta University, Bayelsa State' (0 Copies). Each row has a 'View' button. At the bottom, it says 'Showing 1 to 4 of 4 entries' and has 'Previous' and 'Next' navigation buttons.

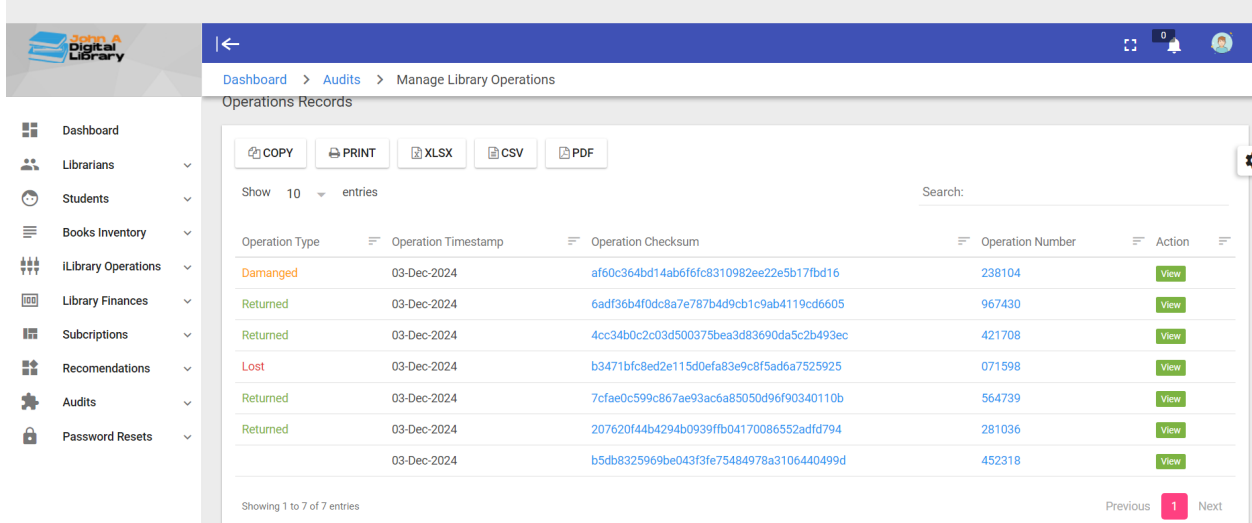
Title	Author	Category	Available Copies	Action
Automation of Academic Libraries in Nigeria: Issues and Practices	Peter Olunbunmi Olubiyo and Robert Akinade Awoyemi	Reference Material	3 Copies	View
Library Database Management System: A Systematic Literature Review	Bhupendra katariya	Reference Material	7 Copies	View
INTEGRATED LMS IN PRIVATE UNIVERSITIES IN NORTHERN NIGERIA	Abdulkadir Ahmed Idris (PhD) and Ahmed Lawan	Fictional	2 Copies	View
Digital LMS. A Case Study of the Niger Delta University, Bayelsa State	Fems, S.S. *, Zifawei O.K. **, George D. ***, Oberhiri O.G.	Non-fictional	0 Copies	View

Figure 37: Book Catalog

Source: Author

4.2.23 Operation Records

Figure 38 shows an overview of the Operation Records in order of operation type, timestamp and number. Admin can manage the operation book records in the system.



The screenshot displays the 'Manage Library Operations' interface. It features a sidebar with navigation options like Dashboard, Librarians, Students, Books Inventory, iLibrary Operations, Library Finances, Subscriptions, Recommendations, Audits, and Password Resets. The main content area shows a table of 'Operations Records' with columns for Operation Type, Operation Timestamp, Operation Checksum, Operation Number, and Action. The table lists seven entries, each with a 'View' button. Above the table are buttons for COPY, PRINT, XLSX, CSV, and PDF, and a search bar. The table shows the following data:

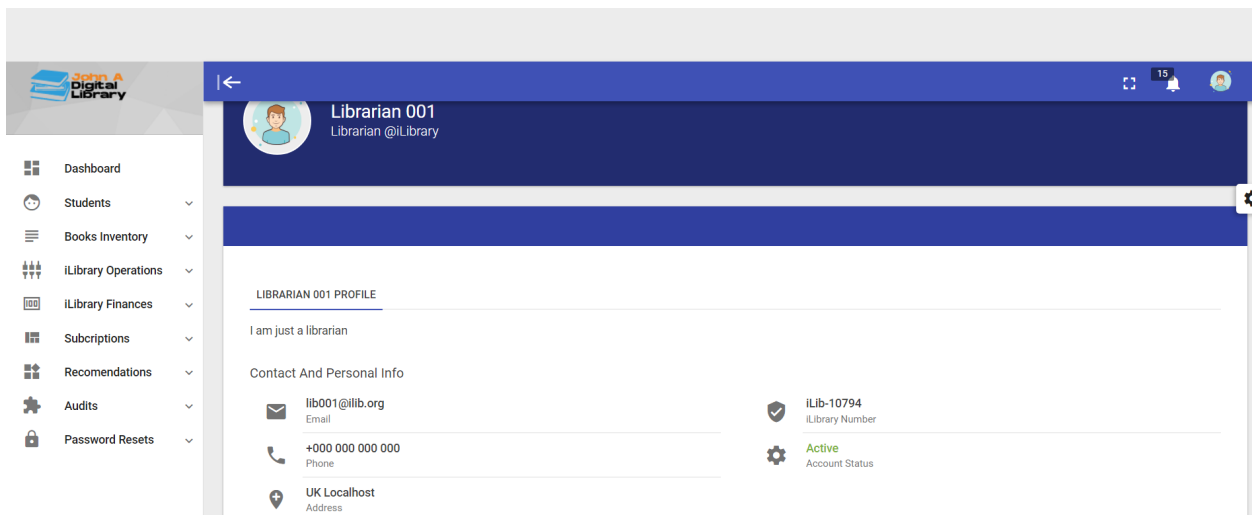
Operation Type	Operation Timestamp	Operation Checksum	Operation Number	Action
Damaged	03-Dec-2024	af60c364bd14ab6f6fc8310982ee22e5b17bd16	238104	View
Returned	03-Dec-2024	6adf36b4f0dc8a7e787b4d9cb1c9ab4119cd6605	967430	View
Returned	03-Dec-2024	4cc34b0c2c03d500375bea3d83690da5c2b493ec	421708	View
Lost	03-Dec-2024	b3471bfc8ed2e115d0efa83e9c8f5ad6a7525925	071598	View
Returned	03-Dec-2024	7cfae0c599c867ae93ac6a850d96f90340110b	564739	View
Returned	03-Dec-2024	207620f44b4294b0939ffb04170086552adf794	281036	View
	03-Dec-2024	b5db8325969be043f3fe75484978a3106440499d	452318	View

Figure 38: Library Operation Records

Source: Author

4.2.24 Profile Setting

Figure 39 shows the personal records of the admin.



The screenshot shows the 'Librarian Profile Setting' page for 'Librarian 001'. The page includes a header with the user's name and email, and a main section titled 'LIBRARIAN 001 PROFILE'. The profile information is organized into two columns:

Field	Value
Name	Librarian 001
Email	lib001@iilib.org
Phone	+000 000 000 000
Address	UK Localhost
Library Number	iLib-10794
Account Status	Active

Figure 39: Librarian Profile Setting.

Source: Author

4.3 System Documentation

There is currently no documentation provided for this system. However, this system is flexible, user friendly and training the students, librarians and admin that will use the system will also enhance proper operation of the system.

4.4 System Maintenance and Evaluation

The system has been designed to be fault-tolerant which ensures an effective and reliable functionality when invalid data is received. In order to achieve fault tolerance, it makes use of the following methods:

- 1. Handling of Errors:** When incorrect data is received, the system is set up to display an error message and is case-sensitive. It enables users to re-select or re-enter their responses instead of the system crashing. This function reduces the possibility of system failures and guarantees a perfect user experience.
- 2. Control of Access:** Only authorized users, such as administrators, librarians, and students can have access the system; they must log in with unique login details. This ensures system security and prevents unauthorized access.
- 3. Validation of Data:** All inputs are validated by the system to make sure they adhere to the required formats and specifications. For example, to reduce the possibility of errors in the system, fields like username, email addresses, passwords, and numerical data are verified for format accuracy.
- 4. Logging Audits:** It allows proper documentation of user activities and system occurrences to ensure accountability and helps in debugging. When it comes to identifying unauthorized access attempts or detecting system failures, audit logs are very useful.

4.5 Source Code

All created source codes are attached in Appendix 1. The source code is for the design of a Library Management System. The software is made to effectively handle user registrations, book inventory levels, borrowing, and returns. PHP is the programming language used, while JavaScript is used for web-based implementation. The system has features for user identification, cataloging of books, managing borrowing and return operations, computing fines for overdue records, and creating reports to track library operations. It uses MySQL, a database for safely storing data. The interface makes it simple for users and librarians to navigate, ensuring seamless

operations. The system improves library operations effectiveness and real-time book availability tracking.

5. CONCLUSION

5.1 Summary

The aim of this study was to create a Library Management System (LMS) that would address the problems with Nigeria's manual library operations management system. The research investigated the several kinds of libraries, their purposes, and the need of automation in public and academic libraries. Issues including file loss, damage, difficulty identifying records, storage intake, and high operating costs were found in the research. In response, the research suggested an LMS that automates a number of library operations, such as transaction management, book cataloging, user registration, borrowing, and returning.

The functional and non-functional needs of the system were described in the research, ensuring that the proposed LMS offers an efficient, useful, and easy platform for managing library resources. Additionally, it described the system architecture, which included the use of relational databases (MySQL) for effective data storage and retrieval, front-end technologies (HTML, CSS, JavaScript, React), and back-end technologies (PHP, Node.js). The proposed approach intends to increase accessibility for both administrators and users, minimize time and manual paperwork and improve operational efficiency.

The research described the functional and non-functional criteria for the system, ensuring that the suggested LMS offers a safe, effective, and intuitive platform for library resource management. Additionally, it explained the system architecture, which included the usage of relational databases (MySQL) for effective data storage and retrieval, front-end technologies (HTML, CSS, JavaScript, React), and back-end technologies (PHP, Node.js). The proposed approach intends to increase accessibility for both administrators and users, minimize time and money, and improve operational efficiency. Therefore, a Web-based Library Management System has been developed to manage all library activities in in order to promote technology-driven education. With regard to educational institutions like Nigerian libraries, the Web-based Library Management System is a beneficial tool for library management. It improves user experience and streamlines processes with its wide range of features.

5.2 Future Work

Web-based Library Management System (LMS) has the prospects for the future works having potential for development and improvements (geeksforgeeks, 2024). The following are some possible future project scopes:

1. **E-learning Integration:** Integrate e-learning features so that users may access tutorials, instructional materials, and multimedia content straight from the learning management system.
2. **Mobile Applications:** To provide a more streamlined and personalized user experience on smartphones and tablets, create specialized mobile applications for the iOS and Android platforms.
3. **Integration of Sophisticated Technologies:** Explore how cutting-edge technologies like machine learning (ML) and artificial intelligence (AI) may be used to provide predictive analytics, user behavior analysis, and intelligent book suggestions.
4. **Blockchain Integration:** Examine how blockchain technology may be used to handle user data, transactions, and digital rights in a transparent and safe manner.

5.3 Conclusion

It is clear from the findings that Nigerian libraries' manual management system is outdated, ineffective, and prone to mistakes. The use of a computerized LMS will greatly enhance user operation, book monitoring, and record-keeping. The software will simplify processes like book borrowing and return, reduce the administrative workload, and improve library resource accessibility. The study effectively created an LMS framework that took into consideration both system and user needs. Libraries in Nigeria may improve service delivery and user experience through the use of modern technology to move from a paper-based system to a computerized one.

This thesis shows how the library management system is an effective, reliable, and functional library management system based on extensive analysis and evaluation of the system's design. It functions effectively and satisfies the minimal requirements that was initially established for it. It also project that the new system will improve staff and student effectiveness when using the library system. The librarian can add, edit, and remove student and information on books from the database in the Library Management system. Each student has a unique ID that allows them to request out any book from the library. The librarian can verify user credentials, fine

payment records, and book details using the ID. The LMS increases system efficiency and decreases employee work.

5.4 Recommendation

The following recommendations have been put forth to ensure the LMS's successful implementation and long-term functionality:

- 1. Libraries' use of the LMS:** To increase efficiency and save operating expenses, libraries in Nigeria—especially public and university libraries—should incorporate the LMS.
- 2. Building Capacity and Training:** To guarantee seamless operations and optimize the benefits of automation, librarians and library employees should get training on how to use the LMS efficiently.
- 3. Frequent Updates and System Maintenance:** To guarantee continuing operation, the LMS should be updated on a regular basis to add new features, enhance security, and fix any new bugs.
- 4. Data backup and cloud storage:** To avoid data loss in the event of system failures, the system should provide frequent data backups and a cloud storage option.

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APPENDIX

Source of index file

```
<?php require_once('sudo/assets/config/config.php'); ?>
<!doctype html><html class="no-js" lang="zxx"><head><meta charset="utf-8"><meta http-equiv="x-ua-compatible"
content="ie=edge"><title>Home - Library Management System</title> <meta name="description" content=""><meta name="viewport"
content="width=device-width, initial-scale=1">
<!-- Place favicon.ico in the root directory -->
<link rel="apple-touch-icon" href="images/apple-touch-icon.png"><link rel="shortcut icon" type="image/ico" href="images/favicon.png" />
<!-- Plugin-CSS -->
<link rel="stylesheet" href="css/bootstrap.min.css"><link rel="stylesheet" href="css/owl.carousel.min.css"><link rel="stylesheet"
href="css/icofont.css"><link rel="stylesheet" href="css/animate.css"><link rel="stylesheet" href="css/cardslider.css"><link rel="stylesheet"
href="css/responsiveslides.css">
<!-- Main-Stylesheets -->
<link rel="stylesheet" href="css/normalize.css"><link rel="stylesheet" href="css/override.css"><link rel="stylesheet"
href="css/theme.css"><link rel="stylesheet" href="style.css"><link rel="stylesheet" href="css/responsive.css"><script src="js/vendor/modernizr-
2.8.3.min.js"></script>
</head><body data-spy="scroll" data-target="#mainmenu" data-offset="50"><header class="relative" id="sc1">
<!-- Header-background-markup -->
<div class="header-bg relative home-slide"> <div class="item"></div><div
class="item">  </div><div class="item"> </div><div class="item"> </div></div>
<!-- Mainmenu-markup-start -->
<div class="mainmenu-area navbar-fixed-top" data-spy="affix" data-offset-top="10"><nav class="navbar"><div class="container"><div
class="navbar-header"><div class="space-10"></div><button type="button" class="navbar-toggle" data-toggle="collapse" data-
target="#mainmenu"><span class="icon-bar"></span><span class="icon-bar"></span><span class="icon-bar"></span></button>
<!-- Logo--> <a href="#sc1" class="navbar-left show"></a><div class="space-
10"></div></div>
<!-- Toggle-button--><!--Mainmenu list-->
<div class="navbar-right in fade" id="mainmenu">\
<ul class="nav navbar-nav nav-white text-uppercase"><li
class="active"> <a href="#sc1">Home</a> </li><li> <a href="books.php">Books</a> </li><li> <a href="lib_user/pages_std_index.php">User
Login</a> </li><li> <a href="staff/pages_staff_index.php">Librarian Login</a> </li><li> <a href="sudo/pages_sudo_index.php">Admin
Login</a> </li></ul></div></nav></div><div class="space-100"></div>
<!-- Mainmenu-markup-end --><!-- Header-jumbotron -->
<div class="space-100"></div><div class="header-text"><div class="container"><div class="row wow fadeInUp"><div class="col-xs-12 col-
sm-10 col-sm-offset-1 text-center"><div class="jumbotron"><h1 class="text-white">John A. Web-based Library Management System</h1><p
class="text-white">An Automated and Digital Library Management</div><div class="title-bar white"><ul class="list-inline list-unstyled"><li><i
class="icofont icofont-square"></i></li><li><i class="icofont icofont-square"></i></li></ul></div><div class="space-40"></div></div>
<div class="row wow fadeInUp" data-wow-delay="0.5s"><div class="col-xs-12 col-sm-8 col-sm-offset-2 col-md-6 col-md-offset-3 "><div
class="panel"><div class="panel-heading"><ul class="nav nav-tabs"><li class="active"><a data-toggle="tab" href="#book">Book</a></li><li><a
data-toggle="tab" href="#author">Author</a></li><li><a data-toggle="tab" href="#publisher">Publisher</a></li></ul></div>
<div class="panel-body"><div class="tab-content"><div class="tab-pane fade in active" id="book"><form
action="books.php"><div class="input-group"><input type="text" class="form-control" placeholder="Enter book name"><div class="input-group-
btn"><button type="submit" class="btn btn-primary"><i class="icofont icofont-search-alt-2"></i></button></div></div></form></div>
<div class="tab-pane fade" id="author"><form action="#"><div class="input-group"><input type="text" class="form-control"
placeholder="Enter author name"><div class="input-group-btn"><button type="submit" class="btn btn-primary"><i class="icofont icofont-
search-alt-2"></i></button></div></div></form></div><div class="tab-pane fade" id="publisher">
<form action="#"><div class="input-group"><input type="text" class="form-control" placeholder="Enter publisher
name"><div class="input-group-btn"><button type="submit" class="btn btn-primary"><i class="icofont icofont-search-
alt-2"></i></button></div></div></form></div></div></div></div></div></div></div><div class="space-100"></div>
<!-- Header-jumbotron-end -->
</header><section> <div class="space-80"></div><div class="container"><div class="row"><div class="col-xs-12 col-sm-8 col-sm-offset-2 col-
md-6 col-md-offset-3 text-center"><h2>Book<strong>Categories</strong></h2><div class="space-20"></div><div class="title-bar blue"><ul
class="list-inline list-unstyled"><li><i class="icofont icofont-square"></i></li><li><i class="icofont icofont-square"></i></li></ul></div><div
class="space-30"></div><p>Most popular book categories to get your learning started</p></div></div><div class="space-60"></div><div
class="row text-center">
<!-- Show Book Categories-->
<?php
//Fetch all book categories
$ret="SELECT * FROM il_BookCategories";
$stmt= $mysqli->prepare($ret) ;
$stmt->execute() ;//ok
$res=$stmt->get_result();
while($row=$res->fetch_object()) {
```

```

?>
    <div class="justify col-xs-12 col-sm-6 col-md-4 wow fadeInLeft" data-wow-delay="0.1s"><div class="category-item well blue text-center"><div class="category_icon"><i class="icofont icofont-book"></i></div><div class="space-20"></div><div class="title-bar"><ul class="list-inline list-unstyled"><li><i class="icofont icofont-square"></i></li></ul></div><div class="space-20"></div><a href="books.php"><?php echo $row->bc_name;?></a></div></div>
    <?php }?>
    <!--End book categories -->
    </div><div class="space-60"></div><div class="row"><div class="col-xs-12 text-center"><a href="books.php" class="btn btn-primary">See More</a></div></div><div class="space-80"></div></div></section>
<!--Footer-->
<?php require_once('partials/footer.php');?>
<!-- Vendor-JS -->
<script src="js/vendor/jquery-1.12.4.min.js"></script><script src="js/vendor/bootstrap.min.js"></script>
<!-- Plugin-JS -->
<script src="js/owl.carousel.min.js"></script><script src="js/responsiveslides.min.js"></script><script src="js/jquery.cardslider.min.js"></script><script src="js/pagination.js"></script><script src="js/scrollUp.min.js"></script><script src="js/wow.min.js"></script><script src="js/plugins.js"></script>
<!-- Active-JS -->
<script src="js/main.js"></script></body></html>

```

Source of books file

```

<?php require_once('sudo/assets/config/config.php'); ?>
<!doctype html><html class="no-js" lang="zxx"><head>
    <meta charset="utf-8"><meta http-equiv="x-ua-compatible" content="ie=edge"><title>Books - LMS</title><meta name="description" content=""><meta name="viewport" content="width=device-width, initial-scale=1">
    <!-- Place favicon.ico in the root directory -->
    <link rel="apple-touch-icon" href="images/apple-touch-icon.png"><link rel="shortcut icon" type="image/ico" href="images/favicon.png" />
    <!-- Plugin-CSS -->
    <link rel="stylesheet" href="css/bootstrap.min.css"><link rel="stylesheet" href="css/owl.carousel.min.css"><link rel="stylesheet" href="css/icofont.css"><link rel="stylesheet" href="css/animate.css"><link rel="stylesheet" href="css/cardslider.css"><link rel="stylesheet" href="css/responsiveslides.css">
    <!-- Main-Stylesheets -->
    <link rel="stylesheet" href="css/normalize.css"><link rel="stylesheet" href="css/override.css"><link rel="stylesheet" href="css/theme.css"><link rel="stylesheet" href="style.css"><link rel="stylesheet" href="css/responsive.css"><script src="js/vendor/modernizr-2.8.3.min.js"></script>
</head><body data-spy="scroll" data-target="#mainmenu" data-offset="50"><header class="relative" id="sc1">
    <!-- Header-background-markup -->
    <div class="overlay-bg relative"></div>
    <!-- Mainmenu-markup-start -->
    <div class="mainmenu-area navbar-fixed-top" data-spy="affix" data-offset-top="10"><nav class="navbar"><div class="container"><div class="navbar-header"><div class="space-10"></div> <button type="button" class="navbar-toggle" data-toggle="collapse" data-target="#mainmenu"><span class="icon-bar"></span><span class="icon-bar"></span><span class="icon-bar"></span></button>
        <!-- Logo-->
        <a href="#sc1" class="navbar-left show"></a><div class="space-10"></div></div>
        <!-- Toggle-button-->
        <!-- Mainmenu list-->
        <div class="navbar-right in fade" id="mainmenu"><ul class="nav navbar-nav nav-white text-uppercase"><li><a href="index.php">Home</a></li><li><a href="books.php">Books</a></li><li><a href="lib_user/pages_std_index.php">User Login</a></li><li><a href="staff/pages_staff_index.php">Librarian Login</a></li><li><a href="sudo/pages_sudo_index.php">Admin Login</a></li></ul></div></div></nav></div><div class="space-100"></div>
    <!-- Mainmenu-markup-end -->
    <!-- Header-jumbotron -->
    <div class="space-100"></div><div class="header-text"><div class="container"><div class="row wow fadeInUp"><div class="col-xs-12 col-sm-10 col-sm-offset-1 text-center"><div class="jumbotron"><h1 class="text-white">Choose a Book to Borrow</h1></div><div class="title-bar white"><ul class="list-inline list-unstyled"><li><i class="icofont icofont-square"></i></li><li><i class="icofont icofont-square"></i></li></ul></div><div class="space-40"></div></div></div><div class="space-100"></div>
    <!-- Header-jumbotron-end -->
</header>
<section>
    <div class="space-80"></div><div class="container"><div class="row"><div class="col-xs-12 col-md-10 pull-right"><h4>Search Box</h4><div class="space-5"></div> <form action="books.php"><div class="input-group"><input type="text" class="form-control" placeholder="Enter book name"><div class="input-group-btn"><button type="submit" class="btn btn-primary"><i class="icofont icofont-search-alt-2"></i></button></div></div></form>

```

```

<div class="space-30"></div><div class="row"><div class="pull-right col-xs-12 col-sm-7 col-md-6"><form class="form-horizontal"><div
class="form-group"><label class="control-label col-xs-4" for="sort">Sort by : </label><div class="col-xs-8"><div class="form-group"><select
name="sort" id="sort" class="form-control"><option value="">Best Match</option><option value="">Best Book</option><option
value="">Latest Book</option><option value="">Old Book</option></select></div></div></form></div></div><hr><div class="space-
20"></div><div class="row">
  <!--Books-->
  <?php
    $ret="SELECT * FROM iL_Books";
    $stmt= $mysqli->prepare($ret) ;
    $stmt->execute() ;//ok
    $res=$stmt->get_result();
    while($row=$res->fetch_object()) {
      /*
      if($row->b_coverimage == '') {
        $cover_image = "<img src='sudo/assets/img/books/Image12.jpg' class='media-object' alt='Book Image'>";
      } else {
        $cover_image = "<img src='sudo/assets/img/books/$row->b_coverimage' class='media-object' alt='Book Image'>";
      }
      */
    }
  ?>
  <div class="col-xs-12 col-md-6"><div class="category-item well yellow"><div class="media"><div class="media-left"></div><div
class="media-body"> <h5><?php echo $row->b_title;?></h5><h6>By <?php echo $row->b_author;?></h6><h6>Category: <?php echo $row-
>bc_name;?></h6><div class="space-10"></div>
    <ul class="list-inline list-unstyled rating-star"><li class="active"><i class="icofont icofont-star"></i></li><li
class="active"><i class="icofont icofont-star"></i></li><li class="active"><i class="icofont icofont-star"></i></li><li class="active"><i
class="icofont icofont-star"></i></li><li class="active"><i class="icofont icofont-star"></i></li><li class="active"><i
class="icofont icofont-star"></i></li></ul><div class="space-10"></div><a
href="book.php?book_id=<?php echo $row->b_id;?>" class="text-primary">View Book</a></div></div></div></div>
  <?php }?>
  <!--Book-->
</div><div class="space-60"></div></div>
<!-- Sidebar-Start -->
<div class="col-xs-12 col-md-2"><aside><h3><i class="icofont icofont-filter"></i> Filter By</h3><div class="space-30"></div><div
class="sigle-sidebar"><h4>Book Category</h4><hr><ul class="list-unstyled menu-tip">
  <?php
    //Fetch all book categories
    $ret="SELECT * FROM iL_BookCategories";
    $stmt= $mysqli->prepare($ret) ;
    $stmt->execute() ;//ok
    $res=$stmt->get_result();
    while($row=$res->fetch_object())
    {
  ?>
    <li><a href="#"><?php echo $row->bc_name;?></a></li><?php }?></ul><a href="#" class="btn btn-primary btn-xs">See
All</a></div><div class="space-20"></div></aside></div>
  <!-- Sidebar-End -->
</div><div class="space-80"></div></section>
<!--Footer-->
<?php require_once('partials/footer.php');?>
<!-- Footer-Area-End -->
<!-- Vendor-JS -->
<script src="js/vendor/jquery-1.12.4.min.js"></script><script src="js/vendor/bootstrap.min.js"></script>
<!-- Plugin-JS -->
<script src="js/owl.carousel.min.js"></script><script src="js/responsiveslides.min.js"></script><script
src="js/jquery.cardslider.min.js"></script><script src="js/pagination.js"></script><script src="js/scrollUp.min.js"></script><script
src="js/wow.min.js"></script><script src="js/plugins.js"></script>
<!-- Active-JS -->
<script src="js/main.js"></script></body></html>

```

Source of student dashboard

```

<?php
  /* *Handle Student DASHBOARD page logic */
  session_start();
  include('assets/config/config.php');

```

```

include('assets/config/checklogin.php');
check_login();
/*
Statics logic
1.Books
  1.0 : Number of all Borrowed Books no matter what category and returned
  1.1 : Number of all Lost Books no matter what category
  1.2 : Number of Damanged Books
  1.3 : Number of borrowed book but havent returned
2.Misc
  2.0 : Total amount of fine owed(For either loosing or damanging a book)
  2.1 : Total amount of fine already paid(For either losing a book or damanging it)
  2.2 : Total amount of fine owed for loosing a book
  2.3 : Total amount of fine for returing a damamnged book
Charts
1. Books
  1.0 : Number Of Books borrowed per book category
  1.1 : My fine record either by lost book or damanged book.
*/ //1.Books //1.3 : Number of all Borrowed Books no matter what category but aint returned
$id = $_SESSION['s_id'];
$result = "SELECT count(*) FROM iL_LibraryOperations WHERE lo_type = 'Borrow' AND lo_status = " AND s_id = ? ";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($borrowed_books);
$stmt->fetch();
$stmt->close();
//1.1 : Number of all Lost Books no matter what category
$result = "SELECT count(*) FROM iL_LibraryOperations WHERE lo_status = 'Lost' AND s_id = ? ";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($lost_books);
$stmt->fetch();
$stmt->close();
//1.2 : Number of all Damanged no matter what category
$result = "SELECT count(*) FROM iL_LibraryOperations WHERE lo_status = 'Damanged' AND s_id = ? ";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($damanged_books);
$stmt->fetch();
$stmt->close();
//1.0 : Number of all Borrowed Books no matter what category and returned
$result = "SELECT count(*) FROM iL_LibraryOperations WHERE lo_status = 'Returned' AND s_id = ? ";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($Returned);
$stmt->fetch();
$stmt->close();
//$damanged_and_lost_books = $lost_books + $damanged_books;
//2.1 : Number of all amount paid by students as a fine of loosing any book
$result = "SELECT SUM(f_amt) FROM iL_Fines WHERE f_type = 'Lost Book' AND s_id = ?";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($lostBookfines);
$stmt->fetch();
$stmt->close();
//2.2 : Number of all amount paid by students as a fine of damaging any book
$result = "SELECT SUM(f_amt) FROM iL_Fines WHERE f_type = 'Damaged Book' AND s_id = ? ";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($damangedBookfines);

```

```

$stmt->fetch();
$stmt->close();
//2.3 : Number of all amount paid by students as a fine of damaging any book
$result = "SELECT SUM(f_amt) FROM iL_Fines WHERE f_status = 'Paid' AND s_id =? ";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($paidFine);
$stmt->fetch();
$stmt->close();
$totalFine = $lostBookfines + $damangedBookfines;
/* The following block of codes implements Books Charts -->Books Category Will be HardCoded so my bad<-- */ //1.0.1 : Number Of Books
which have returned successfully
$result = "SELECT COUNT(*) FROM iL_LibraryOperations WHERE lo_status = 'Returned' AND s_id =? ";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($returned_successfully);
$stmt->fetch();
$stmt->close();
//1.0.2 : Number Of Books which have returned but are damaged
$result = "SELECT COUNT(*) FROM iL_LibraryOperations WHERE lo_status = 'Damanged' AND s_id =? ";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($returned_damaged);
$stmt->fetch();
$stmt->close();
//1.0.3 : Number Of Books which are lost
$result = "SELECT COUNT(*) FROM iL_LibraryOperations WHERE lo_status = 'Lost' AND s_id =? ";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($lost);
$stmt->fetch();
$stmt->close();
//1.1.0 : Number of Borrowed Books Per Books in Non-fiction Category ->Piechart or Donought Chart
$result = "SELECT COUNT(*) FROM iL_LibraryOperations WHERE bc_name = 'Non-fictional' AND lo_type = 'Borrow' AND s_id = ? ";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($borrowed_non_fiction);
$stmt->fetch();
$stmt->close();
//1.1.1 : Number of Borrowed Books Per Books in fiction Category ->Piechart or Donought Chart
$result = "SELECT COUNT(*) FROM iL_LibraryOperations WHERE bc_name = 'Fictional' AND lo_type = 'Borrow' AND s_id = ? ";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($borrowed_fiction);
$stmt->fetch();
$stmt->close();
//1.1.2 : Number of Borrowed Books Per Books in References Category ->Piechart or Donought Chart
$result = "SELECT COUNT(*) FROM iL_LibraryOperations WHERE bc_name = 'Reference Material' AND lo_type = 'Borrow' AND s_id = ? ";
$stmt = $mysqli->prepare($result);
$stmt->bind_param('i', $id);
$stmt->execute();
$stmt->bind_result($borrowed_references);
$stmt->fetch();
$stmt->close();
?>
<!doctype html>
<!--[if IE 9]> <html class="lte-ie9" lang="en"> <![endif]-->
<!--[if gt IE 9]><!--> <html lang="en"> <!--<![endif]-->
<?php include("assets/inc/head.php"); ?>
<body class="disable_transitions sidebar_main_open sidebar_main_swipe">

```

```

<!-- main header -->
<?php include("assets/inc/nav.php"); ?>
<!-- main header end -->
<!-- main sidebar -->
<?php include("assets/inc/sidebar.php"); ?>
<!-- main sidebar end -->
<div id="page_content"><div id="page_content_inner">
  <!-- 1. Books-->
  <div class="uk-grid uk-grid-width-large-1-4 uk-grid-width-medium-1-2 uk-grid-medium uk-sortable sortable-handler hierarchical_show"
data-uk-sortable data-uk-grid-margin><div class="md-card"><div class="md-card-content"><div class="uk-float-right uk-margin-top uk-
margin-small-right"></div><span class="uk-text-muted uk-text-small">Borrowed Books</span> <h2 class="uk-margin-remove"><span
class="countUpMe">0</span><noscript><?php echo $borrowed_books;?></noscript></span></h2></div></div></div><div class="md-card"><div
class="md-card-content"> <div class="uk-float-right uk-margin-top uk-margin-small-right"></div><span class="uk-text-muted uk-text-
small">Returned Books</span><h2 class="uk-margin-remove"><span class="countUpMe">0</span><noscript><?php echo
$returned_books;?></noscript></span></h2></div></div></div><div class="md-card"><div class="md-card-content"><div class="uk-float-right uk-margin-top uk-margin-small-right"></div><span
class="uk-text-muted uk-text-small">Lost Books</span> <h2 class="uk-margin-remove"><span class="countUpMe">0</span><noscript><?php echo
$lost_books;?></noscript></span></h2></div></div></div><div class="md-card"><div class="md-card-content"><div class="uk-float-right
uk-margin-top uk-margin-small-right"></div><span class="uk-text-muted uk-text-small">Damaged Books</span><h2 class="uk-margin-
remove"><?php echo $damanged_books;?></h2></div></div></div></div>
  <!-- 2. Fines-->
  <div class="uk-grid uk-grid-width-large-1-4 uk-grid-width-medium-1-2 uk-grid-medium uk-sortable sortable-handler hierarchical_show"
data-uk-sortable data-uk-grid-margin><div class="md-card"><div class="md-card-content"><div class="uk-float-right uk-margin-top uk-
margin-small-right"></div><span class="uk-text-muted uk-text-small">Library Lost Books Fines</span><h2 class="uk-margin-remove"># <?php
echo $lostBookfines;?></h2></div></div></div>
  <div class="md-card"><div class="md-card-content"><div class="uk-float-right uk-margin-top uk-margin-small-right"></div><span
class="uk-text-muted uk-text-small">Library Damanged Books Fines</span><h2 class="uk-margin-remove"># <?php echo
$damangedBookfines;?></h2></div></div></div>
  <div class="md-card"><div class="md-card-content"><div class="uk-float-right uk-margin-top uk-margin-small-right"></div><span
class="uk-text-muted uk-text-small">Library Total Fines Posted</span><h2 class="uk-margin-remove"># <?php echo
$totalFine;?></h2></div></div></div>
  <div class="md-card"><div class="md-card-content"><div class="uk-float-right uk-margin-top uk-margin-small-right"></div><span
class="uk-text-muted uk-text-small">Library Total Fine Paid</span><h2 class="uk-margin-remove"># <?php echo
$paidFine;?></h2></div></div></div>
  <!-- Pie Charts-->
  <div class="uk-grid"><div class="uk-width-1-1"> <div class="md-card"><div class="md-card-toolbar"> <div class="md-card-toolbar-
actions"><i class="md-icon material-icons md-card-fullscreen-activate">&#xE5D0;</i><!-- <i class="md-icon material-icons" id="print"
onclick="printContent('Print_Content');">&#xE8ad;</i><i class="md-icon material-icons">&#xE5D5;</i></div></div><div class="md-card-
content"><div class="mGraph-wrapper"><div id="PieChart" class="mGraph" style="height: 400px; max-width: 900px; margin: 0px
auto;"></div></div></div>
  <div id="Print_Content" class="md-card-content"><div class="mGraph-wrapper"><div id="BooksBorrowedPerCategory"
class="mGraph" style="height: 400px; max-width: 900px; margin: 0px auto;"></div></div><div class="md-card-fullscreen-content"><div
class="uk-overflow-container"><table class="uk-table uk-table-no-border uk-text-nowrap"><thead><tr><th>Book Title</th><th>Date
Borrowed</th><th>Book Status</th><th>Book Category</th><th>ISBN No.</th></tr></thead><tbody>
  <?php
  $ret="SELECT * FROM iL_LibraryOperations WHERE s_id = ?";
  $stmt= $mysqli->prepare($ret) ;
  $stmt->bind_param('i', $id);
  $stmt->execute() ;//ok
  $res=$stmt->get_result();
  while($row=$res->fetch_object())
  {
    //trim timestamp to DD-MM-YYYY
    $dateBorrowed= $row->created_at;
    //add .success .warning .danger classes to book status
    if($row->lo_status == 'Returned')
    {
      $bookstatus = "<td class='uk-text-success'>$row->lo_status</td>";
    }
    elseif($row->lo_status == 'Damanged')
    {
      $bookstatus = "<td class='uk-text-warning'>$row->lo_status</td>";
    }
    elseif($row->lo_status == 'Lost')
    {
      $bookstatus = "<td class='uk-text-danger'>$row->lo_status</td>";
    }
  }

```

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        }
        else
        {
            $bookstatus = "<td class='uk-text-primary'>Pending Return</td>";
        }
    ?>
    <tr><td><?php echo $row->b_title;?></td><td><?php echo date ("d-M-Y h:m", strtotime($dateBorrowed));?></td>
<?php echo $bookstatus;?> <td><?php echo $row->bc_name;?></td><td class="uk-text-primary"><?php echo $row->b_isbn_no;?></td></tr>
<?php }?> </tbody></table></div></div></div></div></div></div></div>
<!--Footer-->
<?php require_once('assets/inc/footer.php');?>
<!--Footer-->
<!-- google web fonts -->
<script>
    WebFontConfig = {
        google: {
            families: [
                'Source+Code+Pro:400,700:latin',
                'Roboto:400,300,500,700,400italic:latin'
            ]
        }
    };
    (function() {
        var wf = document.createElement('script');
        wf.src = ('https:' == document.location.protocol ? 'https' : 'http') +
            '://ajax.googleapis.com/ajax/libs/webfont/1/webfont.js';
        wf.type = 'text/javascript';
        wf.async = 'true';
        var s = document.getElementsByTagName('script')[0];
        s.parentNode.insertBefore(wf, s);
    })();
</script>
<!--Load Canvas JS -->
<script src="assets/js/canvasjs.min.js"></script>
<!--Load Few Charts-->
<script>
    window.onload = function () {
        var Piechart = new CanvasJS.Chart("PieChart", {
            exportEnabled: false,
            animationEnabled: true,
            title:{
                text: "Percentage Number Of Books Ive Successfully Returned, Lost Or Returned Damanged"
            },
            legend:{
                cursor: "pointer",
                itemclick: explodePie
            },
            data: [{
                type: "pie",
                showInLegend: true,
                toolTipContent: "{name}: <strong>{y}%</strong>",
                indexLabel: "{name} - {y}%",
                dataPoints: [
                    { y: <?php echo $returned_successfully;?>, name: "Successfully Returned Books", exploded: true },
                    { y:<?php echo $returned_damanged;?>, name: "Damanged Books", exploded: true },
                    { y: <?php echo $lost;?>, name: "Lost Books", exploded: true }
                ]
            }]
        });
        var chart = new CanvasJS.Chart("BooksBorrowedPerCategory", {
            animationEnabled: true,
            title:{
                text: "My Book Borrowing Trend Per Book Category",
                //horizontalAlign: "centre"
            },
            data: [{

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```

    type: "doughnut",
    startAngle: 60,
    //innerRadius: 60,
    indexLabelFontSize: 17,
    indexLabel: "{label}:{y} (#percent%)",
    tooltipContent: "{label} - #percent%",
    dataPoints: [
      { y:<?php echo $borrowed_non_fiction;?>, label: "Non Fictional", exploded: true },
      { y:<?php echo $borrowed_fiction;?>, label: "Fictional", exploded: true },
      { y:<?php echo $borrowed_references;?>, label: "Refrence Material", exploded: true }
    ]
  })
}
chart.render();
Piechart.render();
}
function explodePie (e) {
  if(typeof (e.dataSeries.dataPoints[e.dataPointIndex].exploded) === "undefined" || !e.dataSeries.dataPoints[e.dataPointIndex].exploded) {
    e.dataSeries.dataPoints[e.dataPointIndex].exploded = true;
  } else {
    e.dataSeries.dataPoints[e.dataPointIndex].exploded = false;
  }
  e.chart.render();
}
</script>
<!-- common functions -->
<script src="assets/js/common.min.js"></script>
<!-- uikit functions -->
<script src="assets/js/uikit_custom.min.js"></script>
<!-- altair common functions/helpers -->
<script src="assets/js/altair_admin_common.min.js"></script>
<!-- page specific plugins -->
<!-- d3 -->
<script src="bower_components/d3/d3.min.js"></script>
<!-- metrics graphics (charts) -->
<script src="bower_components/metrics-graphics/dist/metricsgraphics.min.js"></script>
<!-- chartist (charts) -->
<script src="bower_components/chartist/dist/chartist.min.js"></script><script src="bower_components/maplace-
js/dist/maplace.min.js"></script>
<!-- peity (small charts) -->
<script src="bower_components/peity/jquery.peity.min.js"></script>
<!-- easy-pie-chart (circular statistics) -->
<script src="bower_components/jquery.easy-pie-chart/dist/jquery.easypiechart.min.js"></script>
<!-- countUp -->
<script src="bower_components/countUp.js/dist/countUp.min.js"></script>
<!-- handlebars.js -->
<script src="bower_components/handlebars/handlebars.min.js"></script><script
src="assets/js/custom/handlebars_helpers.min.js"></script>
<!-- CLNDR -->
<script src="bower_components/clndr/clndr.min.js"></script>
<!-- dashbord functions -->
<script src="assets/js/pages/dashboard.min.js"></script><script>
$(function() {
  if(isHighDensity()) {
    $.getScript( "assets/js/custom/dense.min.js", function(data) {
      // enable hires images
      altair_helpers.retina_images();
    });
  }
  if(Modernizr.touch) {
    // fastClick (touch devices)
    FastClick.attach(document.body);
  }
});
$window.load(function() {
  altair_helpers.ie_fix();

```

```

});
</script>
<div id="style_switcher"><div id="style_switcher_toggle"><i class="material-icons">&#xE8B8;</i></div><div class="uk-margin-medium-bottom"><h4 class="heading_c uk-margin-bottom">Colors</h4><ul class="switcher_app_themes" id="theme_switcher"><li class="app_style_default active_theme" data-app-theme=""><span class="app_color_main"></span><span class="app_color_accent"></span></li><li class="switcher_theme_a" data-app-theme="app_theme_a"><span class="app_color_main"></span><span class="app_color_accent"></span></li><li class="switcher_theme_b" data-app-theme="app_theme_b"><span class="app_color_main"></span><span class="app_color_accent"></span></li><li class="switcher_theme_c" data-app-theme="app_theme_c"><span class="app_color_main"></span><span class="app_color_accent"></span></li><li class="switcher_theme_d" data-app-theme="app_theme_d"><span class="app_color_main"></span><span class="app_color_accent"></span></li><li class="switcher_theme_e" data-app-theme="app_theme_e"><span class="app_color_main"></span><span class="app_color_accent"></span></li><li class="switcher_theme_f" data-app-theme="app_theme_f"><span class="app_color_main"></span><span class="app_color_accent"></span></li><li class="switcher_theme_g" data-app-theme="app_theme_g"><span class="app_color_main"></span><span class="app_color_accent"></span></li><li class="switcher_theme_h" data-app-theme="app_theme_h"><span class="app_color_main"></span><span class="app_color_accent"></span></li><li class="switcher_theme_i" data-app-theme="app_theme_i"><span class="app_color_main"></span><span class="app_color_accent"></span></li><li class="switcher_theme_dark" data-app-theme="app_theme_dark"><span class="app_color_main"></span><span class="app_color_accent"></span></li></ul></div>
<div class="uk-visible-large uk-margin-medium-bottom"><h4 class="heading_c">Sidebar</h4><p><input type="checkbox" name="style_sidebar_mini" id="style_sidebar_mini" data-md-icheck /><label for="style_sidebar_mini" class="inline-label">Mini Sidebar</label></p><p><input type="checkbox" name="style_sidebar_slim" id="style_sidebar_slim" data-md-icheck /><label for="style_sidebar_slim" class="inline-label">Slim Sidebar</label></p></div>
<div class="uk-visible-large uk-margin-medium-bottom"><h4 class="heading_c">Layout</h4><p><input type="checkbox" name="style_layout_boxed" id="style_layout_boxed" data-md-icheck /><label for="style_layout_boxed" class="inline-label">Boxed layout</label></p></div>
<div class="uk-visible-large"><h4 class="heading_c">Main menu accordion</h4><p><input type="checkbox" name="accordion_mode_main_menu" id="accordion_mode_main_menu" data-md-icheck /><label for="accordion_mode_main_menu" class="inline-label">Accordion mode</label></p></div></div>
<script>
$(function() {
    var $switcher = $('#style_switcher'),
        $switcher_toggle = $('#style_switcher_toggle'),
        $theme_switcher = $('#theme_switcher'),
        $mini_sidebar_toggle = $('#style_sidebar_mini'),
        $slim_sidebar_toggle = $('#style_sidebar_slim'),
        $boxed_layout_toggle = $('#style_layout_boxed'),
        $accordion_mode_toggle = $('#accordion_mode_main_menu'),
        $html = $('html'),
        $body = $('body');
    $switcher_toggle.click(function(e) {
        e.preventDefault();
        $switcher.toggleClass('switcher_active');
    });
    $theme_switcher.children('li').click(function(e) {
        e.preventDefault();
        var $this = $(this),
            this_theme = $this.attr('data-app-theme');
        $theme_switcher.children('li').removeClass('active_theme');
        $this.addClass('active_theme');
        $html
            .removeClass('app_theme_a app_theme_b app_theme_c app_theme_d app_theme_e app_theme_f app_theme_g app_theme_h app_theme_i app_theme_dark')
            .addClass(this_theme);
        if(this_theme == '') {
            localStorage.removeItem('altair_theme');
            $('#kendoCSS').attr('href', 'bower_components/kendo-ui/styles/kendo.material.min.css');
        } else {
            localStorage.setItem('altair_theme', this_theme);
            if(this_theme == 'app_theme_dark') {
                $('#kendoCSS').attr('href', 'bower_components/kendo-ui/styles/kendo.materialblack.min.css');
            } else {
                $('#kendoCSS').attr('href', 'bower_components/kendo-ui/styles/kendo.material.min.css');
            }
        }
    }
}
)

```

```

});
// hide style switcher
$document.on('click keyup', function(e) {
  if( $switcher.hasClass('switcher_active') ) {
    if (
      (!$(e.target).closest($switcher).length)
      || ( e.keyCode == 27 )
    ) {
      $switcher.removeClass('switcher_active');
    }
  }
});
// get theme from local storage
if(localStorage.getItem("altair_theme") !== null) {
  $theme_switcher.children('li[data-app-theme='+localStorage.getItem("altair_theme")+']').click();
}
// change input's state to checked if mini sidebar is active
if((localStorage.getItem("altair_sidebar_mini") !== null && localStorage.getItem("altair_sidebar_mini") == '1') ||
$body.hasClass('sidebar_mini')) {
  $mini_sidebar_toggle.iCheck('check');
}
$mini_sidebar_toggle
.on('ifChecked', function(event){
  $switcher.removeClass('switcher_active');
  localStorage.setItem("altair_sidebar_mini", '1');
  localStorage.removeItem('altair_sidebar_slim');
  location.reload(true);
})
.on('ifUnchecked', function(event){
  $switcher.removeClass('switcher_active');
  localStorage.removeItem('altair_sidebar_mini');
  location.reload(true);
});
// change input's state to checked if mini sidebar is active
if((localStorage.getItem("altair_sidebar_slim") !== null && localStorage.getItem("altair_sidebar_slim") == '1') ||
$body.hasClass('sidebar_slim')) {
  $slim_sidebar_toggle.iCheck('check');
}
$slim_sidebar_toggle
.on('ifChecked', function(event){
  $switcher.removeClass('switcher_active');
  localStorage.setItem("altair_sidebar_slim", '1');
  localStorage.removeItem('altair_sidebar_mini');
  location.reload(true);
})
.on('ifUnchecked', function(event){
  $switcher.removeClass('switcher_active');
  localStorage.removeItem('altair_sidebar_slim');
  location.reload(true);
});
// toggle boxed layout
if((localStorage.getItem("altair_layout") !== null && localStorage.getItem("altair_layout") == 'boxed') || $body.hasClass('boxed_layout'))
{
  $boxed_layout_toggle.iCheck('check');
  $body.addClass('boxed_layout');
  $(window).resize();
}
$boxed_layout_toggle
.on('ifChecked', function(event){
  $switcher.removeClass('switcher_active');
  localStorage.setItem("altair_layout", 'boxed');
  location.reload(true);
})
.on('ifUnchecked', function(event){
  $switcher.removeClass('switcher_active');
  localStorage.removeItem('altair_layout');
}

```

```

        location.reload(true);
    });
    // main menu accordion mode
    if($sidebar_main.hasClass('accordion_mode')) {
        $accordion_mode_toggle.iCheck('check');
    }
    $accordion_mode_toggle
        .on('ifChecked', function(){
            $sidebar_main.addClass('accordion_mode');
        })
        .on('ifUnchecked', function(){
            $sidebar_main.removeClass('accordion_mode');
        });
    });
</script>
<!-- page specific plugins -->
<!-- datatables -->
<script src="bower_components/datatables/media/js/jquery.dataTables.min.js"></script>
<!-- datatables buttons -->
<script src="bower_components/datatables-buttons/js/dataTables.buttons.js"></script><script
src="assets/js/custom/datatables/buttons.uikit.js"></script><script src="bower_components/jszip/dist/jszip.min.js"></script><script
src="bower_components/pdfmake/build/pdfmake.min.js"></script><script
src="bower_components/pdfmake/build/vfs_fonts.js"></script><script src="bower_components/datatables-
buttons/js/buttons.colVis.js"></script><script src="bower_components/datatables-buttons/js/buttons.html5.js"></script><script
src="bower_components/datatables-buttons/js/buttons.print.js"></script>
<!-- datatables custom integration -->
<script src="assets/js/custom/datatables/datatables.uikit.min.js"></script>
<!-- datatables functions -->
<script src="assets/js/pages/plugins_datatables.min.js"></script></body></html>

```