

# Real time implementation of library management System

**Author's Name**

Varnit Gupta  
Department of  
Information  
Technology

Raj Kumar Goel  
Institute of  
Technology,  
Ghaziabad 201003,  
India E-mail Id: -  
[varnitgupta16@gmail.com](mailto:varnitgupta16@gmail.com)

**Author's Name**

Prakhar Gupta  
Department of  
Information  
Technology

Raj Kumar Goel  
Institute of  
Technology,  
Ghaziabad 201003,  
India, E-mail Id: -  
[prakhargupta8055@gmail.com](mailto:prakhargupta8055@gmail.com)

**Author's Name**

Gaurav Kumar Singh  
Department of  
Information  
Technology

Raj Kumar Goel  
Institute of  
Technology,  
Ghaziabad 201003,  
India, E-mail Id: -  
[gauravrajput846@gmail.com](mailto:gauravrajput846@gmail.com)

**Author's Name**

Mrs. Ritu Agarwal  
(Associate Professor)  
Department of  
Information  
Technology

Raj Kumar Goel  
Institute of  
Technology,  
Ghaziabad 201003,  
India, E-mail Id: -  
[ritu7fit@rkgit.edu.in](mailto:ritu7fit@rkgit.edu.in)

### **Abstract**

With the advent of technology, it is becoming increasingly important to make all systems more user-friendly. The Library Management System (LMS) is a technology for managing libraries. Traditional libraries will be transformed into digital libraries. The classic library's Students/users must hunt for books, which is a time-consuming task with no guarantee of success.

Keeping track of issues/fines in a database. Work is progressing slowly overall. A quick report is impossible to produce. The librarians have a set amount of time to work. Arranging and categorizing books in bookstores. They must also check and double-check. With its fine, keep track of the lend/borrow book's details. Working is a tedious procedure. simultaneously in several industries The LMS will make it easier for librarians to work. The LMS enables librarians to deal with all issues at the same time. The users require not waiting in a big line to return or borrow a book from the library The A single PC has all of the info. The librarians must evaluate the system and make recommendations. provide a line in it The librarian can locate the book in the library using LMS. bookshelves. The LMS is built with basic functionality like librarian access. Add, view, amend, and delete books and student information. When he or she enters the They can change any data in the database using the system. The entire model has been created. The SQL server, on the other hand, is used as a database. Only the authorized person has access to the LMS system, and they must log in using their user id and password. As previously stated, the LMS is designed to be user-friendly, allowing the administrator to set up the system without the need for specialist assistance. The SQL database stores and retrieves all data, making it extremely secure. As a result, our technology offers its novel approach to the establishment of a digital library.

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### **1. Introduction**

A library is a place with a large collection of books and resources that can be accessed by the public. It serves as the institutions' brain. It facilitates the spread of knowledge and spiritual civilization among pupils. The abundance of books and research papers entice students to expand their knowledge in all areas. It encourages kids to express themselves in a unique way. This understanding allows the student to obtain superior academic and personal skill development results. The necessity for establishing a technique to enhance the traditional library setup to a digital one is driven by technological advancements. The library's efficiency is hampered by numerous tiresome processes. It, for example, constantly requires physical assistance to complete. A library is a place with a large collection of books and resources that can be accessed by the public. It serves as the institutions' brain. It facilitates the spread of knowledge and spiritual civilization among pupils. The abundance of books and research papers entice students to expand their knowledge in all areas. It encourages kids to express themselves in a unique way. This understanding allows the student to obtain superior academic and personal skill development results. The necessity for establishing a technique to enhance the traditional library setup to a digital one is driven by technological advancements. The library's efficiency is hampered by numerous tiresome processes. It, for example, constantly requires physical assistance to complete. They need to double-check the punishments on the books. As a result, it causes boredom among the employees. As a result of the slow development of the course, the students become bored. the personnel We presented the Library Management System to bring the library into the modern era (LMS). It's an automatic system that lowers the temperature. With a single click, staff/librarians can reduce their workload. It will plan, organize, and manage. The library task was oriented. The LMS enables the librarian to add, view, delete, and update information. details taken from the library's collection We are now integrating all of the library data into SQL. server. First, the librarian must enter student and book information into the system. database. He or she can then use the Library to see, delete, or edit those details. System of management As a result, the user has unlimited access to the library. Without any ambiguity, the librarians can aid the data. Each piece of information is retrieved from the repository If he or she accesses any user information, it displays username, id, and book information. specifics of the penalty They don't need to write it down for future reference. By modifying They can adjust the parameter in the data. Despite their efforts to complete the guidebook, The automatic system can make a librarian feel at ease. It also includes features such as a librarian who can keep track of library records and a student's history of penalties and difficulties. It keeps track of the number of books in the library and the number of books that have been issued. This allows librarians and students to provide more flexible services. Because the LMS has a user-friendly design, anyone with a basic understanding of computers may use it. Because the system is adaptable and user-configurable, it can be used in a variety of organizations. With the Admin module, we represent the LMS. The LMS was created

in. Net Technology is regarded as one of the most promising technologies in the IT industry. It will be displayed on your computer's desktop as a result of the integration of all modules.

Digital libraries are becoming increasingly popular and are becoming one of the most important operations of any organization. Digital libraries, digital chronicles, institutional repositories, and digital repositories have all benefited from the rapid growth of figuring systems, databases, and open mindfulness.

We have never had options like these with traditional libraries or even the internet. Universities have been able to construct electronic digital repositories because to the open source and limited programming methodology.

Librarians have more responsibility in today's fast-paced organized environment. Librarians must be able to handle both print and digital media. Dealing with digital media, like dealing with technology, necessitates more current information. During the year 1998, the open source trend hit libraries, and libraries began to adopt these OSS tools for diverse library projects. OSS tools are assisting libraries in overcoming the problem of excessive spending allotments for purchasing business agreements. A lot of study is being done on how to use open source applications in libraries. Recently, the number of uses available for libraries to automate library inventories, MARC editors, digitization labor processes, and board programming has increased dramatically.

The data is saved and safeguarded in the database, as previously stated. The relevant data is correctly saved and maintained. It allows the user to design their own database according to their needs. The program that allows access to the database manipulate it. a connection between databases The database administration system (DBMS) receives the command from the administrator and adjusts the settings accordingly. database information This instruction may be used to load, retrieve, or alter existing data. database. It is preferable to utilize a centralized database management system, which allows various users to access the database in a regulated manner from different locations. The system can assign a view mode for each user based on the DBMS scheme, such as certain people can see just some data while authorized users can see all data in the database. It provides logical as well as physical data independence. Open database connectivity (ODBC) is an application programming interface that allows a client-side programmed to communicate with a server-side database management system.

### **1.1 SQL Database**

SQL stands for Standard Query Language, and it is a language for communicating with databases. SQL statements are used to run queries against the database and obtain information from it. We can make a new database, table, and stored procedure, as well as update, delete, and add data to the table. We may also view the data and give the view, procedure, and table permissions.

### **1.2 XAMPP Server**

XAMPP is an acronym that stands for Cross-Platform, Apache, MySQL, PHP, and Perl, with the Ps standing for PHP and Perl, respectively. It's an open-source web solutions package that includes Apache distribution for a variety of servers and command-line executables, as well as Apache server, MariaDB, PHP, and Perl modules. Before publishing a website or client to the main server, XAMPP allows a local host or server to test it on computers and laptops. It is a platform that provides a suitable environment for testing and verifying the functionality of projects based on Apache, Perl, MySQL, and PHP using the host's system. Perl is a computer language for web development that is among these technologies. PHP is a backend scripting language, while MariaDB is MySQL's most often used database. The following is a full description of these components.

As previously said, XAMPP is used to represent the classification of solutions for various technologies. It provides a platform for testing applications using various technologies via a personal server. Each of the key components of XAMPP is represented by an abbreviated form of each alphabet. This bundle of software includes the Apache web server, MariaDB database management system, and PHP and Perl scripting/programming languages. X stands for cross-platform, which indicates it can run on a variety of operating systems like Windows, Linux, and macOS.

### **1.3 Localhost**

You try to contact another computer on the internet when you call an IP address on your computer, but when you call the IP address 127.0.0.1, you are connecting with the local host. Your own computer is always localhost. When you call the local host, your computer is talking to itself. The local host is not often directly identified by your computer. Localhost has a distinct IP address on your private network, such as 192.168.0.1 (in most circumstances),

than the one you use on the internet. The internet service provider normally assigns this dynamically (ISP). Localhost is a server that runs on your personal computer.

This term is commonly used in relation to networks. Localhost is not only the virtual server's name, but also its domain name. .localhost is a top-level domain reserved for documentation and testing, similar to.example,.test, or. Invalid. A loopback is initiated when accessing the domain. If you use a browser to view "http://localhost," the request will not be transmitted to the internet via the router. Instead, it will remain in your own system. The IP address of localhost is 127.0.0.1. This refers to your personal server.

## **2. Related Work**

Shasha et al[1] conducted study on library management systems in order to improve management in order to meet student demand. Honghai et al[2] proposed a study in which he argues that investing in a CD that is tied to the books is a waste of money. He offered cloud computing for data transfer to save the library money.

Bao et al [3] presented a study on building the library's prediction model. He introduced the co-efficient of simple determination and the t-test as two models for predicting the process. This research explains the substantial correlation between lending and readership. They primarily focus on library lending when planning the model library's structure. Eraxiang and colleagues [4] published a study in which they The disadvantages of traditional library management systems were emphasized. He supplied

a workaround for the problem using struts and the hibernate framework in MVC

architecture. The MVC design is sometimes known as a multilayer tier since it has multiple presentation layers. There are options for business, data persistence, and database layer. These added features help.

the system's maintainability and reusability Zheng et al [5] published a study that was based on The Library Management System uses UML. The LMS is built and modelled using UML because of its broad application potential. Following the analysis of simple LMS, a case diagram and an analysis diagram are constructed. A article on flexible class usage was proposed by Hitchense et al [6]. He suggested that classes be reused for similar situations. Yang et al [7] described a time-consuming manual technique used by librarians. As a result, he used VB to introduce an LMS. Brethauer et al [8] made public information about open-source library software. He also discussed the disadvantages of open-source software. Various open-source software such as LMS, digital library software content, citation and knowledge, and journal management software were presented by Brave et al [9]. etc.. Staff satisfaction and attitudes regarding the open-source library were investigated by Albee et al [10]. Singh et al [11] proposed a report in which the open-source library's expectations and experience are compared. Huang et al [12] proposed a paper on SQL database learning. It will allow students to check whether or not the SQL statement is working.

We offered an LMS in.Net technology that librarians may readily access to improve the design and progress of the library management system. It solves the shortcomings of current approaches. The technology is highly secure and gives users with an effective outcome. The remainder of the document is shown below. The design of the proposed system is briefly described in Section 3. Explain the system's conclusion in section four.

## **3.Methodology**

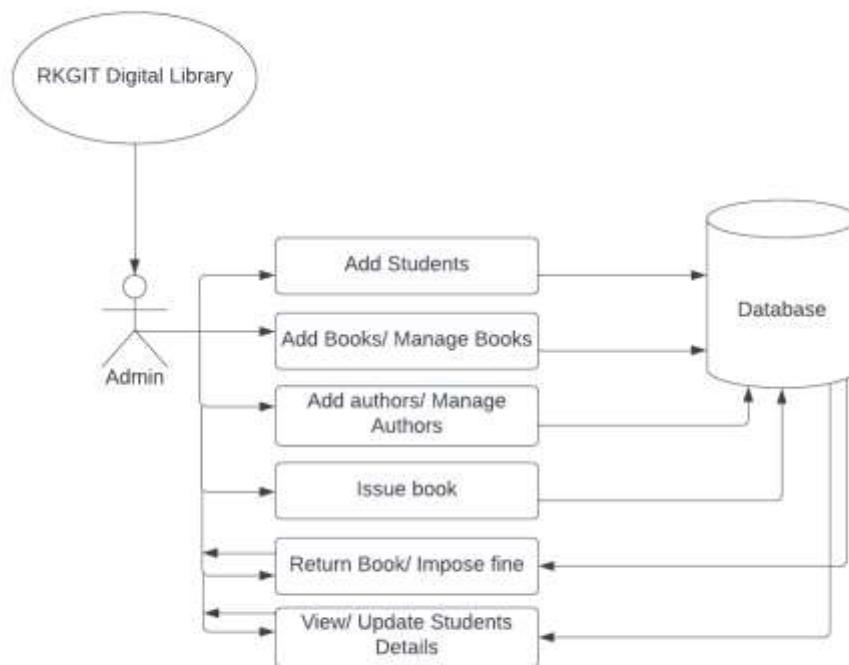


Fig 3.1: Block Diagram of Proposed system

The basic diagram of the suggested Library Management system was shown in Figure 3.1. (LMS). The LMS has an Admin module that displays the admin's functions. The administrator is the only individual who has access to the LMS system. He or she can log in to the LMS system using their user's name and password. When an admin and user logs in, the system loads and displays the home page, where he or she must enter the Id and password shown in Figure 3.2 and Figure 3.3

The screenshot shows a web-based login interface for the "RKGIT Digital Library". At the top, there is a navigation bar with links for "ADMIN LOGIN", "USER SIGNUP", and "USER LOGIN". Below the navigation bar, the title "ADMIN LOGIN FORM" is displayed. The main area contains a "LOGIN FORM" section with two input fields: "Enter Username:" and "PASSWORD:". The "Enter Username:" field contains the value "admin", and the "PASSWORD:" field contains the value ".....". Below these fields is a blue "LOGIN" button.

Fig. 3.2: Admin login page

The screenshot shows the 'USER LOGIN FORM' section of the application. It features a light blue header bar with the text 'USER LOGIN FORM'. Below this is a form with fields for 'Email/Username' (containing 'shreyasgupta99@gmail.com'), 'Password' (containing '1234567890'), and 'Forgot Password?'. A blue button at the bottom right of the form says 'Login'.

Fig 3.3: User Login page

The screenshot shows the 'USER-SIGNUP' section of the application. It features a pink header bar with the text 'USER-SIGNUP'. Below this is a form with fields for 'Email/Username', 'Mobile Number', 'Email', 'Enter Password', 'Confirm Password', and a red 'Register Now' button.

Fig 3.4 User Signup Form

He or she can access/modify the data in the system after logging in. The administrator can add students and book details, issue and return books, view and change book information, and view and update student information. In LMS, while adding the student's details we enroll the register number, name, date of birth, blood group, email id, mobile number, and gender, etc. Similarly, to add a new book we enroll the book id, author name, copies, prices etc. Which is depicted in fig 3.5

The screenshot shows the 'ADD BOOK' section of the application. It features a red header bar with the text 'ADD BOOK'. Below this is a form with fields for 'Book Name', 'Copies', 'Category', 'Author', 'Date of Birth', 'ISBN Number', and a note about ISBN. At the bottom is a blue 'Add Book' button.

Fig 3.5: Adding new book

Admin can read, change, and delete data added by others. The admin can view and search any book in the LMS using the search option, as shown in fig 3.6.

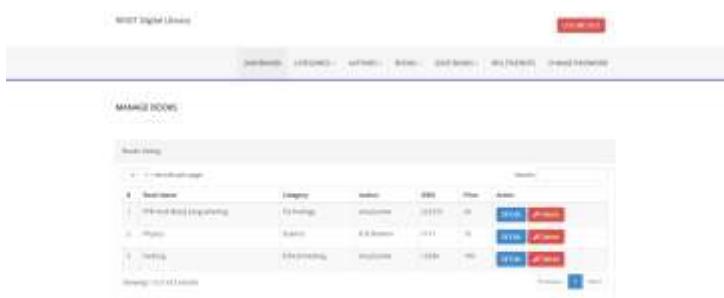


Fig 3.6: Manage books details

The library management system was built using .Net for the front end and SQL for the back end. Because the information will be in a notebook that can be rewritten, users can illegally change the date of the record in the current system. These drawbacks are The LMS system overcomes these obstacles. This system will help librarians work more efficiently, quick and effective. The LMS will be updated with all of the information. So, they can double-check everything. It contains information on the book. For librarians, the old system's awkwardness is eliminated. They were given a user-friendly environment by the LMS. As a result, the system improves the to the next level of library management. As a result, the library achieves rapid progress, resulting in a large number of patrons entering the library. The librarian must monitor and maintain the database appropriately in order to notice the missing book.

#### **4.Future Scope**

Many more features, such as online lectures video tutorials, online assignment submission, and a feature of group chat where students can discuss various engineering issues, can be added to this project in the future, making it more interactive, user friendly, and a project that meets each user's needs in the best way possible. We can add faculty module in the project in which faculty have more access than users but less access than the admin. Faculty can issue book for themselves but fine can not be imposed on the faculty until he/she resigns.

We can also add notification feature by which faculty and users get notified about the new books. Users get notified about the fine imposed on them for not returning the book.

#### **5. Discussion**

Throughout the world, digital libraries have evolved in phases and in a systematic manner. Nonetheless, they have posed new issues for librarians and information specialists. The presence of well-established digital libraries in industrialized countries has aided in the development of projects in India. The standards, technology, and dynamics guidelines are quite specific and can serve as a compass for new digital library efforts.

Because librarians and information professionals are well aware of the benefits of digital libraries over traditional libraries, it is a proactive decision to design and develop digital libraries to meet the needs of their parent organizations and users in order to provide effective and efficient services. The question is how to build digital libraries in a cost-effective and simple manner. A short review of the available literature reveals that several digital libraries have sprung up in recent years. Because the majority of them are highly localised, just two that are well-known and often used are mentioned here.

##### **5.1 National Science Digital Library (NSDL)**

The National Science Digital Library, which was initially opened in 2002, is an online site that focuses on open educational resources in digital form. It is mostly financed by the National Science Foundation and focuses on STEM (Science, Technology, Engineering, and Mathematics) education. More than a million online STEM resources are available through this digital library. High-quality online educational tools for teaching and learning are emphasised. NSDL is managed by a group of principle investigators and personnel that includes researchers, content suppliers, developers, librarians, teachers, and students. NSDL features a simple user interface that makes it

simple to use. If the text of the resources is publicly available on the Internet, NSDL conducts searches using NSDL metadata records and the text of the resources.

NSDL contains photos, video, audio, animations, software, games, lesson plans, tutorials, activities, and more, as well as user assistance and a variety of technical tools and services, metadata and collection creation and administration services, and a search and browse facility. NSDL contains images, video, audio, animations, software, games, lesson plans, tutorials, and activities, among other things, and offers user support as well as a variety of technical tools and services, such as metadata and collection creation and management, as well as a search and browse facility.

## **5.2 International Children's Digital Library (ICDL)**

In November 2002, The International Children's Digital Library (ICDL) was financed as a research project by the National Science Foundation, the Institute of Museum and Library Services, and Microsoft Research. The collection's main goal is to help youngsters comprehend the world around them by providing resources in the native languages. Around 10,000 items in at least 100 languages are scheduled to be added to the ICDL collection.

The ICDL has a unique feature in that it excludes books that were "Born Digital." Only published physical books that have been converted to digital format are included. The ICDL was built by an interdisciplinary research team at the University of Maryland, which included computer scientists, librarians, educational technologists, classroom teachers, children, and others, in collaboration with the Internet Archive. Cooperative inquiry was used to design and evaluate computer interface technologies that facilitate finding, browsing, reading, and sharing books in electronic form by involving children and adults.

## **6. Conclusion**

The traditional library's obstacles and concerns are highlighted, and the libraries are promoted to have easy access. The librarian can add, amend, and delete student and book information in the Library Management system. Students get a unique ID that allows them to access any book in the library. The librarian can use the ID to Check the user information, fine payment information, and book information. The LMS makes the system more efficient by reducing labor work. We intend to improve the LMS in the future by combining it with a local area network (LAN), which will increase the system's efficiency.

Digital libraries are the outcome of centuries of library evolution. They are a huge step forward in terms of information services for greater collaboration and production. Although the future is unknown, intuitions do occur.

It is only natural for libraries to give their users with equal access to the digital data stream. It is critical for libraries to select the best digital platform for their users and institutional objectives.

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