

ONLINE BASED LIBRARY MANAGEMENT SYSTEM FOR EDUCATION INSTITUTIONS

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***Abstract:** The library management system (LMS) is related to the storage of information regarding the library of an educational institutes, both faculties and students can access the library through this software and this software is capable of managing Book Issues, update books, keeping track of the students and many more student can access the book online and also it has a feature of accessing the related video and pdf of the book*

Key-words:

Library, Librarian, Student, Books, Storage, Data base.

Introduction:

Library is the place with the huge collection of books. A library management system is made to have fast process transaction for searching book titles, borrowing book's, returning book's, and generating an accurate report, It is place from where the students and the faculties borrow the books for their reference purposes.[1] But the maintenance of keeping the records of issuing and borrowing is difficult if you use a normal book as a registry. To make this task easier, the library management system (LMS) will

be very useful. It helps in maintaining the information regarding the issuing and borrowing of books by the students and the faculties.

Library is an important part of the academic sector as well as some professional sectors too. What we see today is the manual library management system where process of operation is very much hectic. Students often find problems because books are limited and only few students can have the book's students need to fall in line and then ask for the related title of the book through this, some students are not able to follow their lessons, the answer for this problem is the enhancement of technology by developing the library management system. This involves the utilization or processing, accessing and retrieving the information that can electively support the process of students learning, decision making and scholastic approaches because of the organized approach and systematic management of the information, the accessibility and retrieval in the library can be easy.

Literature survey:

Prior to computerization, library tasks were performed manually and independently from one another. Selectors ordered materials with ordering

slips, cataloguers manually catalogued sources and indexed them with the card catalog system (in which all bibliographic data was kept on a single index card), fines were collected by local bailiffs, and users signed books out manually, indicating their name on clue cards which were then kept at the circulation desk. Early mechanization came in 1936, when the University of Texas began using a punch card system to manage library circulation.[1] While the punch card system allowed for more efficient tracking of loans, library services were far from being integrated, and no other library task was affected by this change.

In 1960 The next big innovation came with the advent of MARC standards, which coincided with the growth of computer technologies – library automation was born.[3] From this point onwards, libraries began experimenting with computers, and, starting in the late 1960s and continuing into the 1970s, bibliographic services utilizing new online technology and the shared MARC vocabulary entered the market; these included OCLC (1967), Research LibrariesGroup (which has since merged with OCLC), and the Washington Library Network (which became Western Library Network and is also now part of OCLC).[4]

After that in between 1970 to 1980s is the period of improvements in computer storage, as well as in telecommunications.[3] As a result of these advances, ‘turnkey systems on microcomputers,’ known more commonly as integrated library management systems (ILS) finally appeared. These systems included necessary hardware and software which allowed the connection of major circulation tasks, including circulation control and overdue notices.[4] As the technology developed, other library tasks could be accomplished through ILS as well, including acquisition, cataloguing, reservation of titles, and monitoring of serials.[5]

With the evolution of the Internet throughout the 1990s and into the 2000s, ILSs began allowing users to more actively engage with their libraries

through an OPACs and online web-based portals. Users could log into their library accounts to reserve or renew books, as well as authenticate themselves for access to library-subscribed online databases. Inevitably, during this time, the ILS market grew exponentially. By 2002, the ILS industry averaged sales of approximately US\$500 million annually, compared to just US\$50 million in 1982.[4]

By the mid to late 2000s, ILS vendors had increased not only the number of services offered but also their prices, leading to some dissatisfaction among many smaller libraries. At the same time, open source ILS was in its early stages of testing. Some libraries began turning to such open source ILSs as Koha and Evergreen. Common reasons noted were to avoid vendor lock in, avoid license fees, and participate in software development.[6] Freedom from vendors also allowed libraries to prioritize needs according to urgency, as opposed to what their vendor can offer.[7] Libraries which have moved to open source ILS have found that vendors are now more likely to provide quality service in order to continue a partnership since they no longer have the power of owning the ILS software and tying down libraries to strict contracts.[7] This has been the case with the SCLENDS consortium. Following the success of Evergreen for the Georgia PINES library consortium, the South Carolina State Library along with some local public libraries formed the SCLENDS consortium in order to share resources and to take advantage of the open source nature of the Evergreen ILS to meet their specific needs.[7] By October 2011, just 2 years after SCLENDS began operations, 13 public library systems across 15 counties had already joined the consortium, in addition to the South Carolina State Library. Librarytechnology.org does an annual survey of over 2,400 libraries and noted in 2008 2% [8] of those surveyed used open source ILS, in 2009 the number increased to 8%, [9] in 2010 12%, [10] and in 2011 11% [11] of the libraries polled had adopted open source ILSs. The following year's survey (published in April 2013) reported an

increase to 14%, stating that "open source ILS products, including Evergreen and Koha, continue to represent a significant portion of industry activity. Of the 794 contracts reported in the public and academic arena, 113, or 14 percent, were for support services for these open source systems.[12]

At present the use of cloud-based library management systems has increased drastically since the rise of cloud technology started. many modern cloud-based solutions allow automated cataloging by scanning a book's ISBN.[13]

Methodology:

In this software we create an two entities – Librarian/admin and student. There is librarian login page also student login page, student has to register to login for the first time and it has a feature of authenticating the student identity and approve to login by librarian/admin which ensures the integrity of the library. The library management system database design will contain the database design of the library management application. A database is a collection of information or data. A database contains different tables that will have a unique identity. The data will be stored in the form of rows and columns in these tables. The fields that are stored in the tables will be having different data types like integer, varchar, date/time etc

Here is the functions both student and librarian/admin can perform in this software

Student:

(1) Student can register, we will add captcha in registration, after registration student account will activated after verified by librarian.

(2) Student can login / forget password for forget password we will send email with link and using that link student can add new password.

(3) Student can update their profile / student can change password.

(4) Student can search book and student can download pdf and video if available.

(5) Student can see their taken book with details like books submission date, book issue dates etc

(6) Logout

Librarian/admin:

(1) Librarian can login

(2) Librarian can add new book details with pdf and mp4 if available then.

(3) Librarian can edit book details

(4) Librarian can delete book details

(5) Librarian can verify student details and approve student account and block student account.

(6) Librarian can issue books to students

(7) Librarian can add return books in stocks means student books return functionalities

(8) Librarian can see all books with stocks.

(9) Librarian can see that how many students have books right now.

(10) Logout.

Implementation

Software requirement:

Frontend: asp.net/c# ,bootstrap

ASP.NET is an open-source, server-side web-application framework designed for web development to produce dynamic web pages. It was developed by Microsoft to allow programmers to build dynamic web sites, applications and services.

The advantage of using ASP.NET language is that it has a Built-in Windows authentication and per-application configuration that keep your applications secured.

ASP.NET reduces the line of code needed to develop large applications.

The ASP code and HTML smoothly mix with each other to generate dynamic web pages. Bootstrap is a free and open-source front-end framework for developing websites and web applications. It contains HTML- and CSS-based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions.

Bootstrap has many benefits from scratch for every web development project, and one such reason is the huge number of resources accessible for Bootstrap.also It is an extremely easy and speedy procedure to begin with Bootstrap. Bootstrap is very adaptable too.

Backend: SQL Server.

We need a storage area to store the data generated, also a technique to fetch the data stored, SQL Servers helps in this context, and is defined as a relational database management system, or RDBMS, developed and marketed by Microsoft. Similar to other RDBMS software, SQL Server is built on top of SQL, a standard programming language for interacting with the relational databases.one of the reason to use SQL Server is-it is quick in fetching data, easy to install as it supports wizard setup and costs less.

Operating System: Windows XP/2000 or higher versions

As windows GUI is user friendly, it is very much easy to develop a web application for beginner’s, and asp.net language doesn’t support for the lower versions of Windows XP, so it is suitable to use Windows XP or higher versions.

Hardware Requirement:

Processor: Pentium Processor IV or higher

Intel Pentium Processor 4 has clock rate 3.2GHZ to 3.73GHZ and Bus Speed 400MHZ,533MHZ,800MHZ,1066MHZ which are minimum requirement to run the application. The

application will not run on the lower versions of Intel processors.

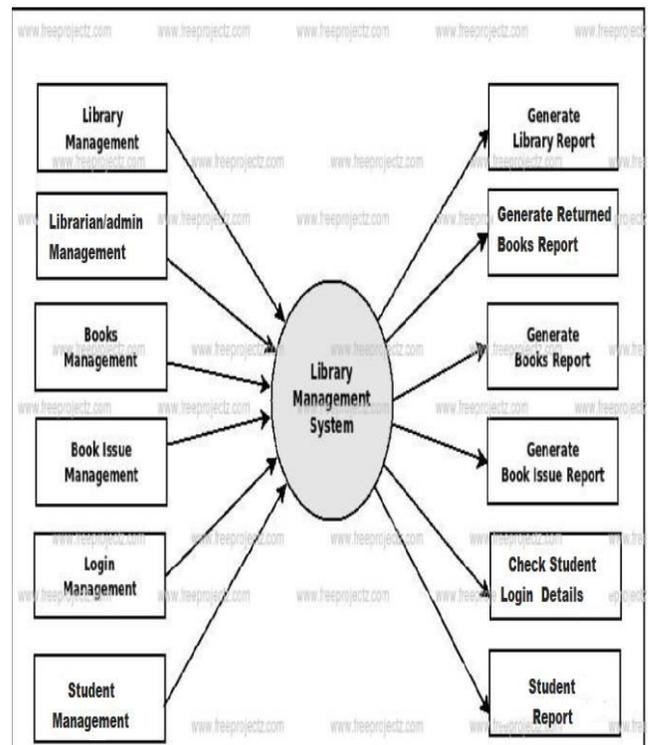
RAM: Minimum 1 GB RAM

The purpose of RAM is to provide quick read and write access to a storage device. computer uses RAM to load data because it's much quicker than running that same data directly off of a hard drive.so this application needs minimum 1GB RAM.

Hard Disk: 60 GB Hard Disk or more

Hard Disk is a a rigid nonremovable magnetic disk with a large data storage capacity.As it is discussed above, we need a storage area to store the data generated like student record, book records, librarian record etc. so it is optimum to use minimum of 60GB Hard Disk to store the data.

Block Diagram:



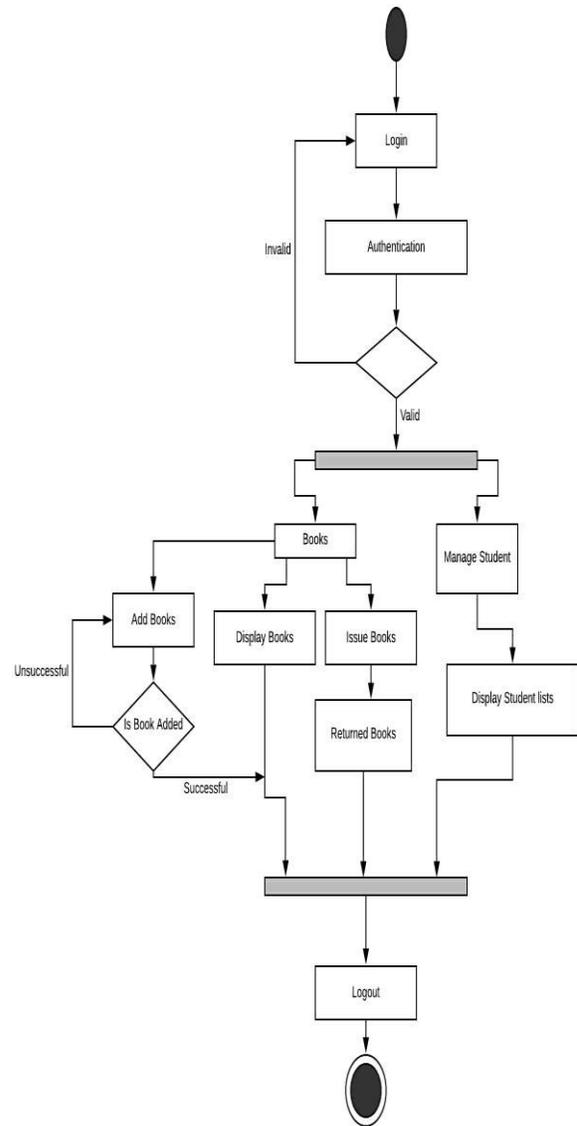
Fig[1.1]: BlockDiagram of LMS

Flow Chart of the LMS:

A flowchart is a type of diagram that represents a workflow or process. A flowchart can also be defined as a diagrammatic representation of an algorithm, a step-by-step approach to solving a task. The flowchart shows the steps as boxes of various kinds, and their order by connecting the boxes with arrows. This diagrammatic representation illustrates a solution model to a given problem. Flowcharts are used in analyzing, designing, documenting or managing a process or program in various fields.[2]

Librarian/Admin side:

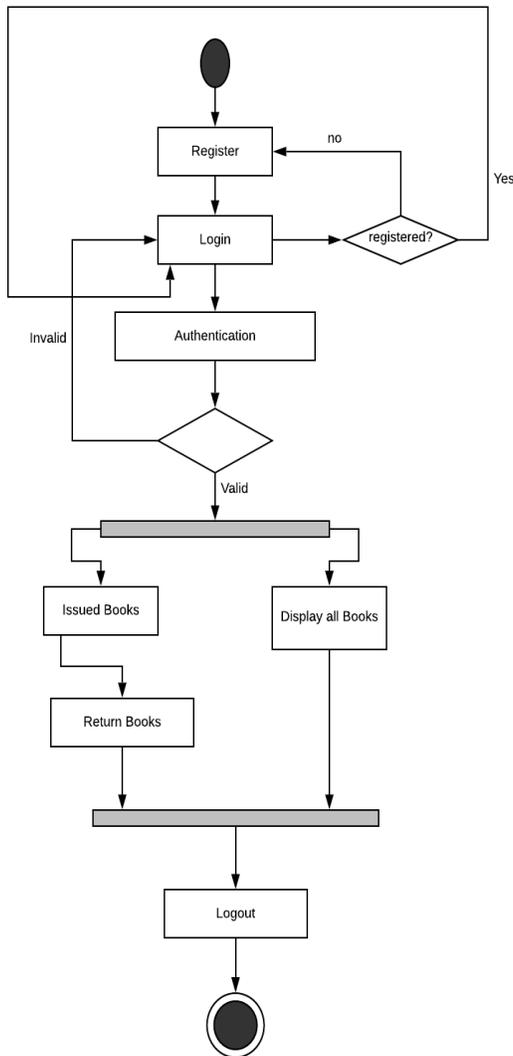
Here we discuss how workflows on librarian side. Librarian need to login, then he can add books, display books, issue book under the category books entity. Also librarian can manage the students records. Which is shown in below diagram



Fig[1.2]: Librarian/admin side flowchart

Student Side:

Here we discuss how workflows on Student side. Student need to register before login for the first time, after that he has to be approved by the librarian then only the student can be logged in. student can see all the books available in library and he can see the issued books as well as the returned book. This is shown in below diagram.



Fig[1.3]: Student side flowchart

Database Tables:

A relational database is made up of several components, of which the table is most significant. The database table is where all the data in a database is stored.

A database consists of one or more tables. Each table is made up of rows and columns. If you think of a table as a grid, the column go from left to right across the grid and each entry of data is listed down as a row. Each row in a relational is uniquely identified by a primary key. This can be by one or more sets of column values. In most scenarios it is a single column, in this software primary key is-“id”.

Every relational table has one primary key. Its purpose is to uniquely identify each row in the database. No two rows can have the same primary key value. The practical result of this is that you can select every single row by just knowing its primary key.

Data types defines the domain of the columns in the table They define whether the column or variable contains numbers, alphabets, Boolean values etc. this software have a Varchar(n) data type variable-length, non-Unicode string data. n defines the string length that ranges from 1 to 8,000. Varchar(max) stores actual length of the data stored plus 2 bytes.

Tables used for this applications is given below

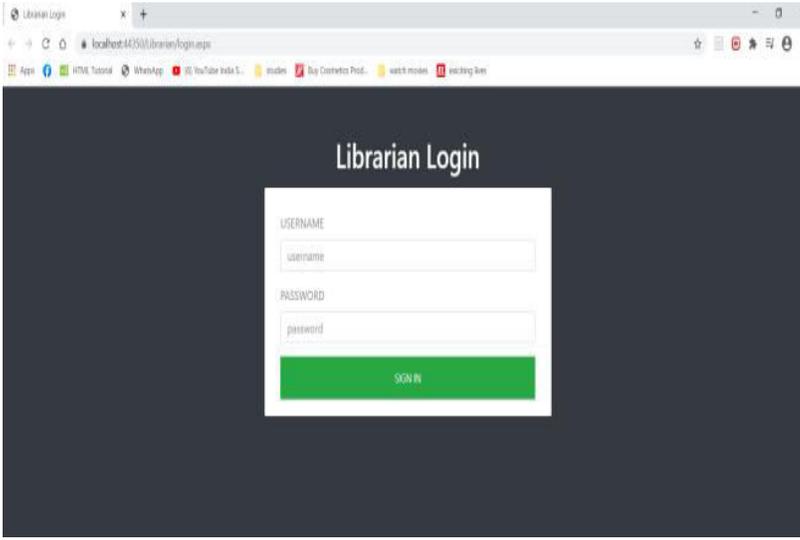
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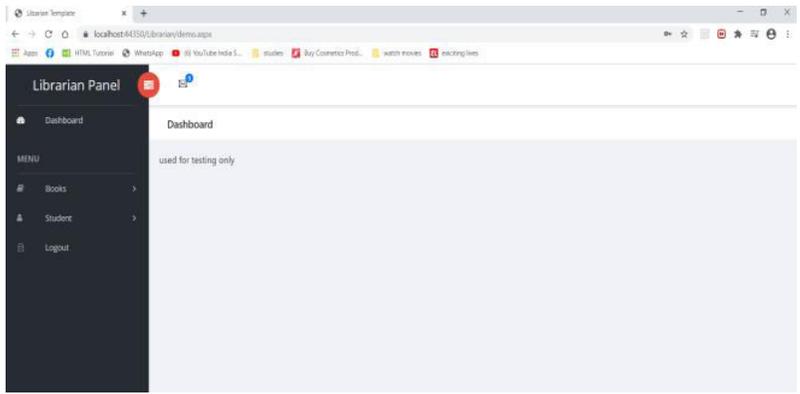
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books_issue_date	varchar(50)	<input checked="" type="checkbox"/>	
books_approx_return	varchar(50)	<input checked="" type="checkbox"/>	
student_username	varchar(50)	<input checked="" type="checkbox"/>	
is_books_return	varchar(50)	<input checked="" type="checkbox"/>	
books_returned_date	varchar(50)	<input checked="" type="checkbox"/>	
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Issued Book Detail Table

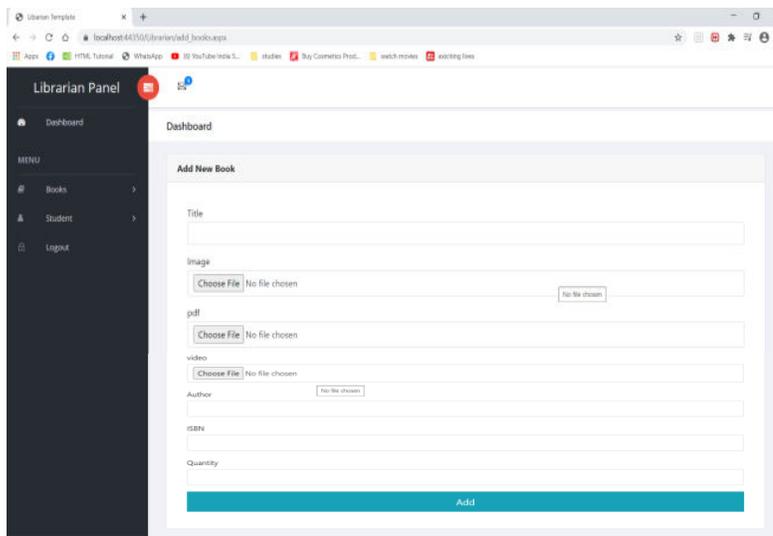
This table stores the information of the books issued to the student.

Result:

<p>Librarian /admin login Page</p>		<p>This is the page where librarian/admin can login, Username and password is created while entering his detail in librarian table, If he enters wrong username or password than an error message will appear.</p>
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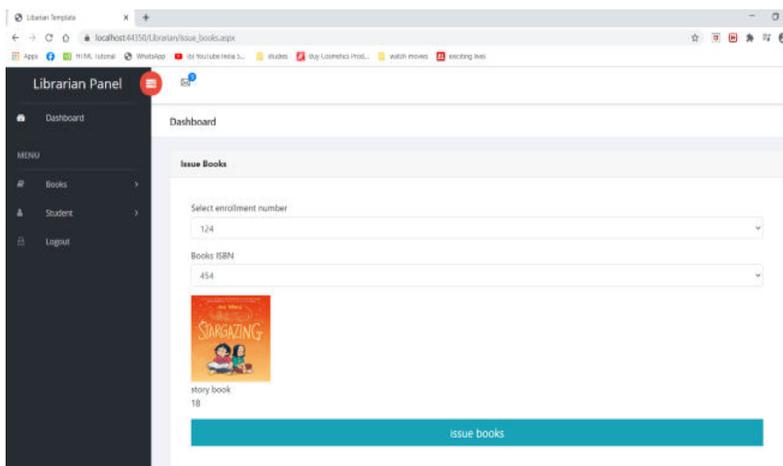
<p>Librarian /admin Panel</p>		<p>This is the page appears once the librarian/admin login, which have the options to add book, display books, display students etc.</p>
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Add Book Template



This page is for adding a new book , it has a feature of uploading a pdf , videos related to book . it is created in librarian side so only librarian/admin have a authority to add book.

Issue Book Template



This page is for issue of a book to a student. Which is created in librarian side so only librarian/admin can access this page. Every time librarian/admin issues a book, its count get decreased by 1.

Students list on librarian side Template

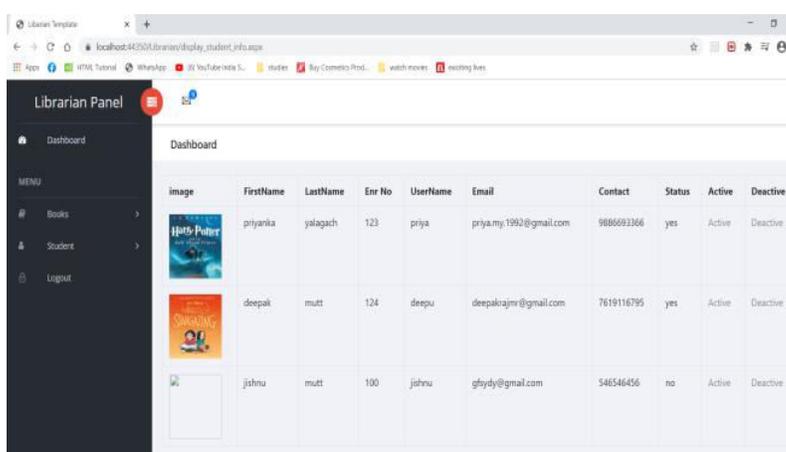
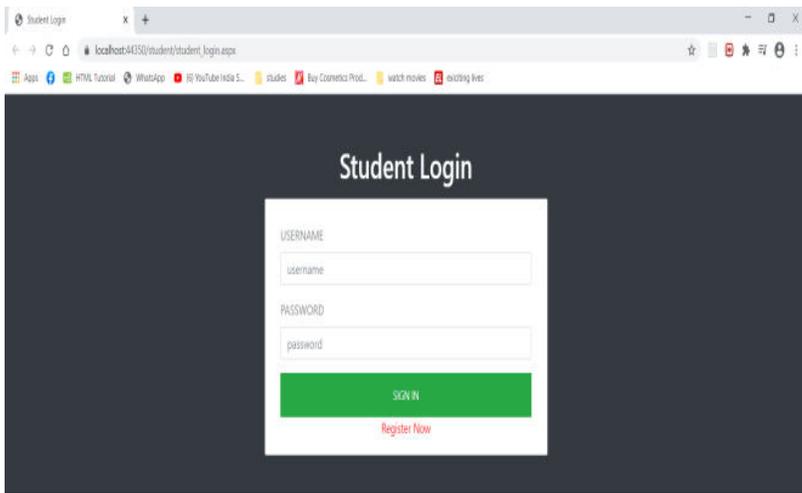
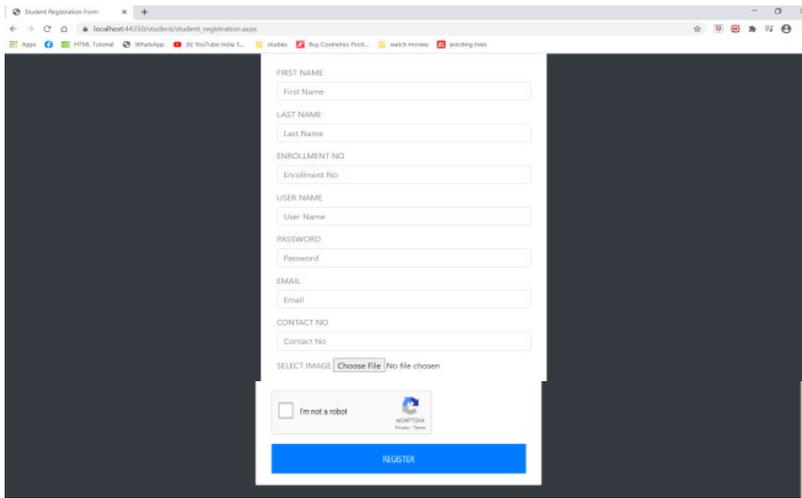
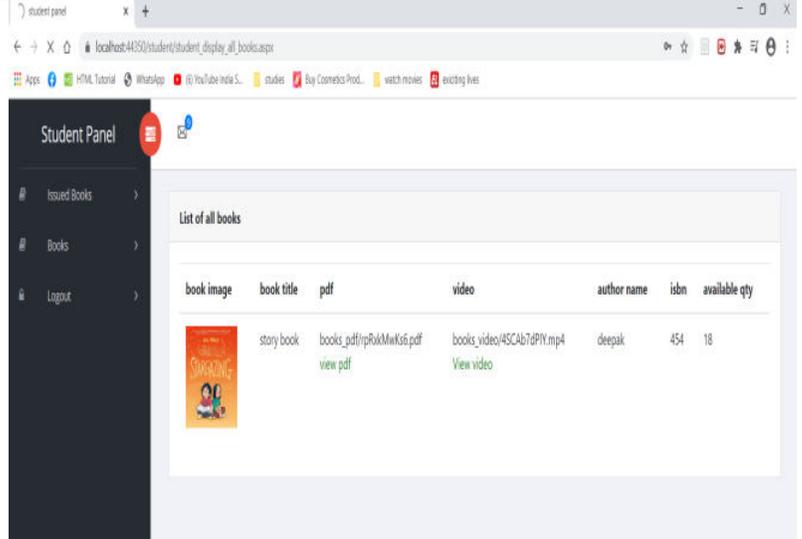


image	FirstName	LastName	Enr No	UserName	Email	Contact	Status	Active	Deactive
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	deepak	mutt	124	deepu	deepakajnr@gmail.com	7619116795	yes	Active	Deactive
	jishnu	mutt	100	jishnu	gfydy@gmail.com	546546456	no	Active	Deactive

This page displays all the students registered on this software, it has a feature of disabling and enabling the student account, once the student account is enabled by librarian/admin then only student can able to login.

<p>Student Login Page</p>		<p>This is the student login page, student can login using username and password which is entered during registration. If the student is new to this , he/she have to register and should enabled by the librarian/admin then only he/she can login.</p>														
<p>Student Register page</p>		<p>This is the student registration page. The student have to enter the details asked .</p>														
<p>Display all books on student side template</p>	 <table border="1" data-bbox="446 1514 1057 1822"> <thead> <tr> <th>book image</th> <th>book title</th> <th>pdf</th> <th>video</th> <th>author name</th> <th>isbn</th> <th>available qty</th> </tr> </thead> <tbody> <tr> <td></td> <td>story book</td> <td>books_pdf/rp0kMwK6.pdf view pdf</td> <td>books_video/4SCAb7dPIY.mp4 View video</td> <td>deepak</td> <td>454</td> <td>18</td> </tr> </tbody> </table>	book image	book title	pdf	video	author name	isbn	available qty		story book	books_pdf/rp0kMwK6.pdf view pdf	books_video/4SCAb7dPIY.mp4 View video	deepak	454	18	<p>This page displays all the available to the student . also student can view the pdf or video of the particular book if available.</p>
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Conclusion and Future work:

From a proper analysis of positive points and constraints on this concept, we can conclude that this application is a highly efficient and has user friendly GUI which is understandable for all. This application is

working properly and meeting the very basic requirement of library management. This application supports all types of web browser which can be accessible through both mobile and PC.

As a future work we can add a lot more features to this application like introducing a simple communication chat between the admin/librarian and student, also we can add a penalty system which is used when student doesn't return the book on time. also it can be implemented in other sectors with slight changes and can also make available for every people across the globe like E-Library.

References:

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