PROGRESSIVE PROJECT REPORT

LIBRARY MANAGEMENT SYSTEM

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ABSTRACT

The Library Management System is an application for assisting a librarian in managing a book library in university. The system would provide basic set of features to add/update members, add/update books, and manage check in specifications for the **systems** based on the client's statement of need.

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INTRODUCTION

1.1 OBJECTIVE

Library management system is a project which aims in developing a computerized system to maintain all the daily work of library. This project has many features which are generally not available in normal library management systems like facility of user login and a facility of teacher's login. It also has a facility of admin login through which the admin can monitor the whole system.

Overall this project of ours is being developed to help the students as well as staff of library to maintain the library in the best way possible and also reduce the human efforts.

INTRODUCTION ABOUT DOMAIN

The Project aims and objectives that will be achieved after completion of this project are discussed in this subchapter. The aims and objectives are as follows.

- Online book issue
- Student login page where student can find book issued by him/her and date of return.
- A teacher login page where teacher can add any events being organized in the college
- Register of book taken students name and details

1.2 PROJECT DESCRIPTION

Library management system is an application which refers to library systems which are generally small or medium in size. It is used by librarian to manage the library using a computerized system where he/she can record various transactions like issue of books, return of books, addition of new books, addition of new students etc.

All these modules are able to help librarian to manage the library with more convenience and in a more efficient way as compared to library systems which are not compute.

SYSTEM ANALYSIS

2.1 EXISTING SYSTEM

Library Management system is a computerized system which helps user (librarian) to manage the library daily activity in electronic format. It reduces the risk of paper work such as file lost, file damaged and time consuming. It can help user to manage the transaction or record more effectively and time saving.

DISADVANTAGES OF THE EXISTING SYSTEM

The problem occurred before having computerized system includes:

1. File lost
2. File damaged
3. Difficult to search record
4. Space consuming
5. Cost consuming

2.2 PROPOSED SYSTEM

After implementing computerized system:

1. Save cost
2. Save time
3. No more paper works
4. Less space uses and etc.

Feasibility Study

Preliminary investigation examines project feasibility, the likelihood the system will be Useful to the organization. The main objective of the feasibility study is to test the Technical Operational and Economical feasibility for adding new modules and debugging old running system. All system is feasible if they are unlimited resources and infinite time. There are aspects

In the feasibility study portion of the preliminary investigation:

- Technical Feasibility
- Operation Feasibility
- Economic Feasibility

Software Development Environment

The whole projects are divided in two parts

1. Front End
2. Back End

4.1) Front End:

The front end is designed using of html, css, and java script

- **HTML: -** HTML stands for HYPER TEXT MARKUP LANGUAGE, which is most widely used language on web to develop web pages. HTML refers to the way in which Web pages (HTML documents) are linked together. Thus, the link available on a web page is called Hypertext.

HTML was created by Berners-Lee in late 1991 but "HTML 2.0" was the first standard HTML specification which was published in 1995. HTML 4.01 was a major version of HTML and it was published in late 1999. Though HTML4.01 version is widely used but currently we are having HTML-5 version which is an extension to HTML 4.01, and this version was published in 2012.

As its name suggests, HTML is a Mark-up Language which means you use HTML to simply "mark-up" a text document with tags that tells a web browser how to structure it to display.

Originally, HTML was develop with the intent of defining the structure of documents like heading, paragraph, lists, and so forth to facilitate the sharing of scientific information between researchers. Now, HTML is being widely used to format web pages with the help of different tags available in HTML.

- **CSS**: - Cascading Style Sheet is a style sheet language used for describing the presentation of a document written in a markup language Although most often used to set the visual style of web page and user interfaces written in HTML and XHTML, the language can be applied to any XML document, including plain XML, SVG and XUL, and is applicable to rendering in speech, or on other media. Along with HTML and JavaScript, CSS is a cornerstone technology used by most websites to create visually

engaging webpages, user interfaces for web applications, and user interfaces for many mobile applications.

CSS has a simple syntax and uses a number of English keywords to specify the names of various style properties .A style sheet consists of a list of rules. Each rule or rule-set consists of one or more selectors, and a declaration block.

- **Java Script:** - JavaScript is a lightweight, interpreted programming language. It is designed for creating network-centric applications. It is complimentary to and integrated with Java. JavaScript is very easy to implement because it is integrated with HTML. It is open and cross-platform.

JavaScript is a high-level, dynamic, untapped, and interpreted programming language. It has been standardized in the ECMA Script language specification. Alongside HTML and CSS, it is one of the three core technologies of World Wide Web content production; the majority of websites employ it and it is supported by all modern Web browsers without plug-ins. JavaScript is prototype-based with first-class functions, making it a multi-paradigm language, supporting object-oriented, imperative, and functional programming styles. It has an API for working with text, arrays, dates and regular expressions, but does not include any I/O, such as networking, storage, or graphics facilities, relying for these upon the host environment in which it is embedded.

Despite some naming, syntactic, and standard library similarities, JavaScript and Java are otherwise unrelated and have very different semantics. The syntax of JavaScript is actually derived from C, while the semantics and design are influenced by the self and Scheme programming languages.

JavaScript is also used in environments that are not Web-based, such as PDF documents, site-specific browsers, and desktop widgets. Newer and faster JavaScript virtual machines (VMs) and platforms built upon them have also increased the popularity of JavaScript for server-side Web applications. On the client side, JavaScript has been traditionally implemented as an interpreted language, but more browsers that are recent perform just-in-time compilation. It is also used in game development, the creation of desktop and mobile applications, and server-side network programming with runtime environments such as Node.js.

4.2) Back End:

- **MYSQL:-**The back end is designed using MySQL which is used to design the**.** Databases MySQL is an open source RDBMS that relies on SQL for processing the data in database. MySQL provides APIs for the languages like C, C++, Eiffel, JAVA, Perl, PHP and Python. MySQL is most commonly used for web applications and for embedded applications and has become a popular alternative to proprietary database system because of its speed and reliability. MySQL can run on UNIX, Windows and Mac OS

MySQL is the most popular Open Source Relational SQL database management system. MySQL is one of the best RDBMS being used for developing web based software applications. MySQL is an open source relational database management system (RDBMS) based on Structured Query Language (SQL). MySQL runs on virtually all platforms, including Linux, UNIX, and Windows. Although it can be used in a wide range of applications, MySQL is most often associated with web-based applications and online publishing and is an important component of an enterprise stack called LAMP.

- **Node.Js:-**Node.js is a server-side platform built on Google Chrome's JavaScript Engine (V8 Engine). Node.js was developed by Ryan Dahl in 2009 and its latest version is v0.10.36. The definition of Node.js.

Node.js is a platform built on Chrome's JavaScript runtime for easily building fast and scalable network applications. Node.js uses an event-driven, non-blocking I/O model that makes it lightweight and efficient, perfect for data-intensive real-time applications that run across distributed devices.

Node.js is an open source, cross-platform runtime environment for developing server-side and networking applications. Node.js applications are written in JavaScript, and can be run within the Node.js runtime on OS X, Microsoft Windows, and Linux.

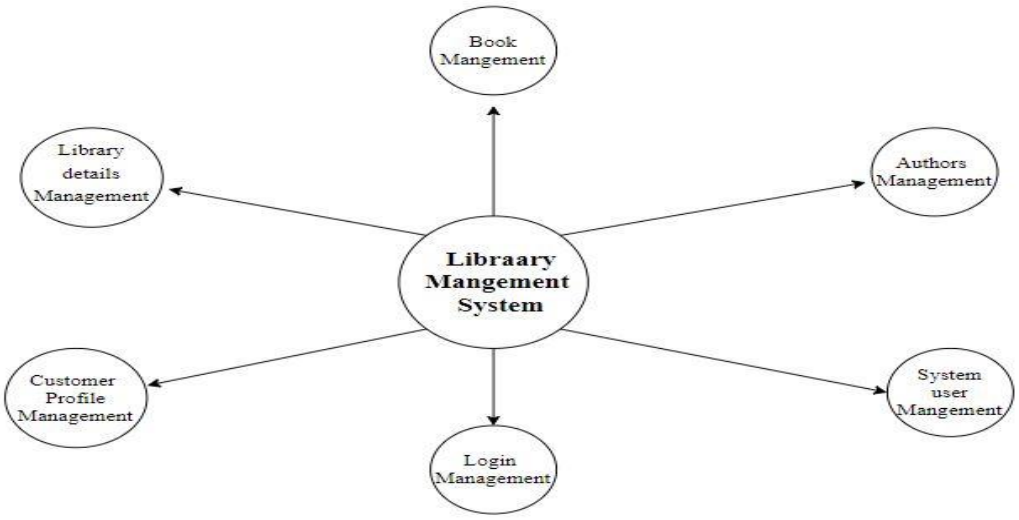
SYSTEM DESIGN

DATA FLOW DIAGRAM

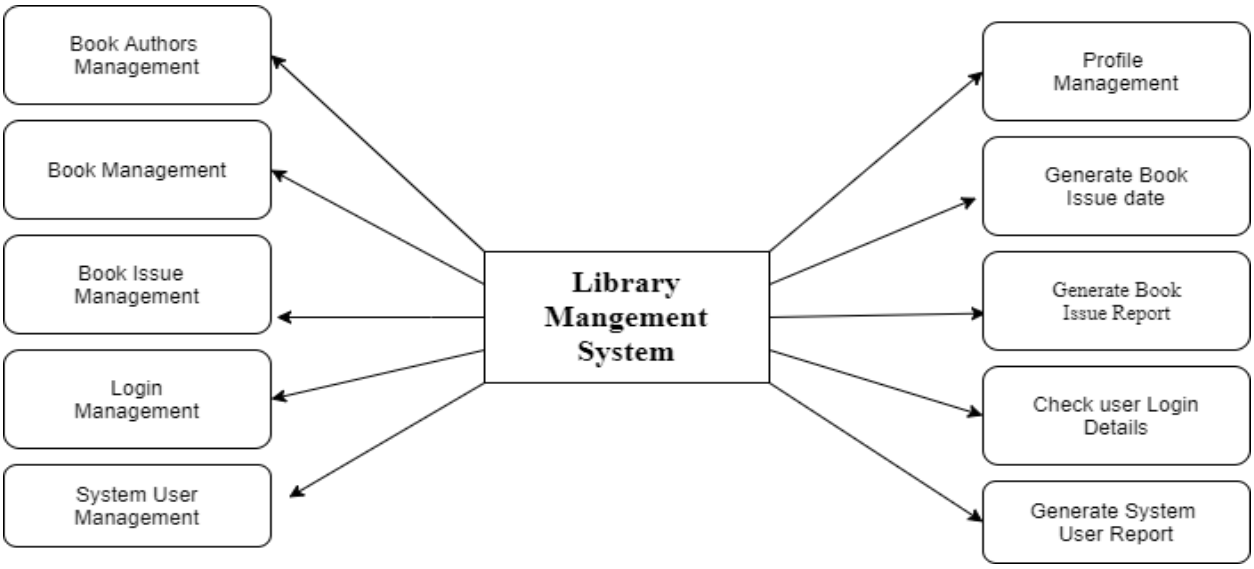
What is a data flow diagram (DFD)?

A picture is worth a thousand words. A Data Flow Diagram (DFD) is a traditional way to visualize the information flows within a system. A neat and clear DFD can depict a good amount of the system requirements graphically. It can be manual, automated, or a combination of both.

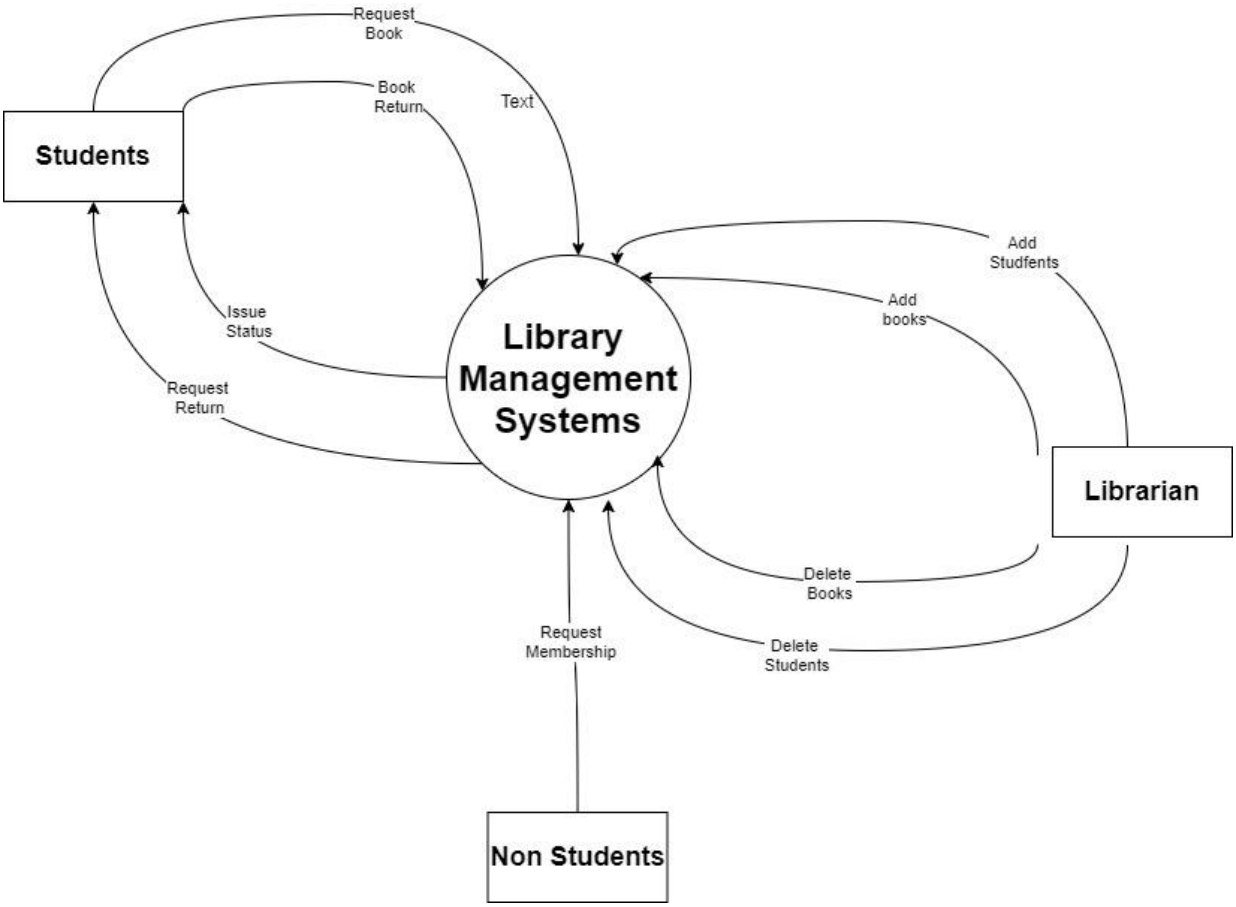
5.1) **DFD Level-01**:



5.2) DFD Level-02:



5.3) DFD Level-03:



SYSTEM REQUIREMENTS

This section describes the software and hardware requirements of the system

6.1) Software Requirements

- Operating system- windows 7/windows 10
- Database-MySQL
- Development tools- notepad/notepad ++ or Sublime text.
- Programming language- Html, css, and java script
- Xampp as databases

6.2) Hardware Requirements

- Operating system of 32/64 bits
- Intel core i3/i5/i7 processors
- 1Gb Ram

MODULE DESCRIPTION

7.1) About:

Library in India has grown at an incredible place and the Library can get more Students through online. Thus through this project a basic software is developed to fulfill the purpose. The software modules have broadened the scope of work by providing various functionalities and all these features enable the software to become user-friendly and reliable.

7.2) Services:

In this module we have mentioned the services provided by the Students and the management.

TESTING

Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. In fact, testing is the one step in the software engineering process that could be viewed as destructive rather than constructive. A strategy for software testing integrates software test case design methods into a well-Planned series of steps that result in the successful construction of software. Testing is the set of Activities that can be planned in advance and conducted systematically. The underlying motivation of program testing is to affirm software quality with methods that can economically And effectively apply to both strategic to both large and small-scale systems.

Future Enhancement

There is a future scope of this facility that many more features such as online lectures video tutorials can be added by teachers as well as online assignments submission facility, a feature of group chats where students can discuss various issues of engineering can be added to this project thus making it more interactive more user friendly and project which fulfills each users need in the best way possible.

Conclusion

This website provides a computerized version of library management system which will benefit the student as well as the staff of the library.

It makes entire process online where student can search books; staff can generate reports and do book transactions.

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APPENDICES

Database Tables

1. **Books:**

S.no	Column Names	Data types	constraint	References
1	Book_id	Int(100)	Primary key	
2	User_id	int(100)	Default null	
3	Genere	Varchar(300)	Not null	
4	Title	Varchar(300)	Not null	
5	Author	Varchar(300)	Not null	
6	Publisher	Varchar(300)	Not null	
7	Editions	int(100)	Not null	
8	Isbn	Varchar(300)	Not null	
9	Pages	int(100)	Not null	
10	Date_issued	date	Default null	

2. **Book_resquests:**

S.no	Column Names	Data types	constraint	References
1	Request_id	Int(100)	Primary key	
2	User_id	Int(100)	Not null	
3	Genere	Varchar(300)	Not null	
4	Title	Varchar(300)	Not null	
5	Author	Varchar(300)	Not null	
6	Editions	Int(100)	Not null	
7	Isbn	Varchar(300)	Not null	
8	date	date	Default null	

3. **Issue_date:**

S.no	Column Names	Data types	constraint	References
1	Issue_id	Int(10)	Primary key	
2	Book_id	Int(10)	Not null	
3	User_id	Int(10)	Not null	
4	date	date	Default null	

4. Users:

S.no	Column Names	Data types	constraint	References
1	User_id	Int(100)	Primary key	
2	Name	Varchar(300)	Not null	
3	Phone	Int(10)	Not null	
4	Email	Varchar(300)	Not null	
5	Is_admin	Tinyint(1)	Not null	
6	Password	Varchar(300)	Not null	
7	Address	Varchar(300)	Not null	
8	gender	Varchar(300)	Not null	

SAMPLE SOURCE CODE

```
/* create a database with the of libary_mangement_system  */
/* create table name 'books'*/
CREATE TABLE `books` (
  `book_id` int(100) NOT NULL,
  `user_id` int(100) DEFAULT NULL,
  `genre` varchar(300) NOT NULL,
  `title` varchar(300) NOT NULL,
  `author` varchar(300) NOT NULL,
  `publisher` varchar(300) NOT NULL,
  `edition` int(100) NOT NULL,
  `isbn` varchar(100) NOT NULL,
  `pages` int(100) NOT NULL,
  `date_issued` date DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

/* insert the data in table*/
INSERT INTO `books` (`book_id`, `user_id`, `genre`, `title`, `author`, `publisher`, `edition`, `isbn`, `pages`, `date_issued`) VALUES
(1, 5, 'Horror', 'Zombie Day', 'Kazi Nazrul Islam', 'Nazrul Publications', 3, 'jfklsgsdlg5qw7q87w', 800, '2018-07-10'),
(3, 4, 'Adventure', 'A Song of Ice & Fire', 'George R. R. Martin', 'Game of Thrones', 8, 'has23dadh123427', 1200, '2018-07-11'),
(4, 5, 'Adventure', 'Harry Potter & The Half Blood Prince', 'J.K Rowling', 'Rowling''s Publications', 1, '31ghf1jk24kjb3l4l1gjh', 667, '2018-07-10'),
(5, 2, 'Adventure', 'Harry Potter & The Deadly Hallows', 'J.K Rowling', 'Rowling''s Publications', 2, 'agsh32gqkj12bkl134', 798, '2018-07-10'),
(7, 0, 'Mystery', 'The Mysterious Affair at Styles', 'Agatha Christie', 'Agatha Publications', 2, '4zgdhdv2dfh81v31sdgj', 669, '0000-00-00'),
(10, 0, 'Modern Literature', 'In Search of Lost Time', 'Marcel Proust', 'NY Publishers', 8, '2j3nsd235habh3dfkj', 4215, '2018-07-11');
```

```
/* create a table name 'book_request' */

CREATE TABLE `books_request` (
  `request_id` int(10) NOT NULL,
  `user_id` int(10) NOT NULL,
  `genre` varchar(300) NOT NULL,
  `title` varchar(300) NOT NULL,
  `author` varchar(300) NOT NULL,
  `edition` int(10) NOT NULL,
  `isbn` varchar(100) NOT NULL,
  `date` date NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

/* insert the data */

INSERT INTO `books_request` (`request_id`, `user_id`, `genre`, `title`, `author`, `edition`, `isbn`, `date`) VALUES
(1, 2, 'Mystery', 'Murder on the Orient Express', 'Agatha Christie', 3, '12gf3gj1jhr3jklj1ugjkb', '2019-07-10'),
(2, 5, 'Mystery', 'The Mysterious Affair at Styles', 'Agatha Christie', 3, '4zgdhdv2dfh81v31sdgj', '2019-07-10'),
(3, 4, 'Mystery', 'The Mysterious Affair at Styles', 'Agatha Christie', 3, '4zgdhdv2dfh81v31sdgj', '2019-07-10');

/* create a table name 'issue_date'*/

CREATE TABLE `issue_date` (
  `issue_id` int(10) NOT NULL,
  `book_id` int(10) NOT NULL,
  `user_id` int(10) NOT NULL,
```

```
  `date` date NOT NULL
) ENGINE=InnoDB  DEFAULT CHARSET=latin1;

/* insert the data */
INSERT INTO `issue_date` (`issue_id`,  `book_id`,  `user_id`,  `date`) VALUES
(1, 1, 2, '2020-07-10'),
(2, 5, 2, '2020-07-10'),
(3, 3, 2, '2020-07-10'),
(4, 4, 5, '2019-07-10'),
(5, 1, 2, '2019-07-10'),
(6, 5, 5, '2019-07-10'),
(7, 1, 5, '2019-07-10'),
(8, 4, 5, '2019-07-10'),
(9, 3, 5, '2019-07-10'),
(10, 5, 5, '2019-07-10'),
(11, 3, 5, '2019-07-10'),
(12, 3, 5, '20120-07-10'),
(13, 3, 5, '2020-07-10'),
(14, 3, 5, '2020-07-10'),
(15, 3, 4, '2020-07-10'),
(16, 1, 5, '2019-07-10'),
(17, 3, 5, '2019-07-10'),
(18, 5, 2, '2019-07-10'),
(19, 3, 4, '2019-07-11'),
(20, 7, 4, '2019-07-11'),
(21, 7, 5, '2020-07-11'),
(22, 3, 4, '2019-07-11');
```

App.js

```
var express = require('express');
```

```
var expressSession = require('express-session');
var bodyParser = require('body-parser');
var app = express();
var port = 3000;

var signup  = require('./controllers/signup');
var login  = require('./controllers/login');
var logout  = require('./controllers/logout');

var admin = require('./controllers/admin');



var customer = require('./controllers/customer');
app.set('view engine', 'ejs');

app.use(bodyParser.urlencoded({extended:  false}));
app.use(expressSession({secret: 'my top secret pass', resave: false, saveUninitialized:  true}));
app.use('/css', express.static(__dirname + '/css'));
app.use('/images', express.static(__dirname + '/images'));

app.use('*', function(req,  res, next){

if(req.originalUrl  == '/login'  || req.originalUrl  == '/signup')
        {
next();
        }
else
        {
                if(!req.session.admin  && !req.session.customer)
{
res.redirect('/login');
```

```
return;
}
next();
        }
});

app.use('/login', login);
app.use('/signup', signup);
app.use('/logout', logout);

app.use('/admin', admin);
app.use('/customer', customer);



app.listen(port, ()=>{
   console.log(`Server running on port ${port}`);
});
```

Admin.js

```
var express = require('express');
var router = express.Router();
var userModel = require.main.require('./models/userModel');
var bookModel = require.main.require('./models/bookModel');
var validationRules = require.main.require('./validation_rules/rules');
var asyncValidator = require('async-validator-2');

router.get('/home', (req, res)=> {
   // var users = "";
 userModel.getAll((users)=> {
 if(!users){
  res.send("Invalid");
```

```
 }
else {
 bookModel.getAll((books)=>  {
if(!books){
res.send("Invalid");
}
else {
bookModel.getAllBorrowedBooks((borrowed)=>  {
 if(!borrowed){
res.send("invalid");
}
else {
 bookModel.totalBorrowed30((mostBorrowed)=>  {
if(!mostBorrowed){
 res.send("not  valid");
}
 else {
bookModel.mostRequestedBook((mostRequested)=>  {
if(!mostRequested){
res.render("nothing  here");
}
else {
bookModel.mostBorrowedBook((mostBorrowedBook)=>  {
 if(!mostBorrowedBook){
 res.send("no borrowed  books");
}
else {
 res.render('admin/home',  {usr:  users.length,  bk:  books.length,  brwd:  borrowed.length,  mb:
mostBorrowed.length,  mrb: mostRequested, mbb: mostBorrowedBook});
}
 });
```

```
}
});
}
});
 }
});
 }
});
}
});



});

router.get('/profile',  (req, res)=> {
var admin = userModel.getUser(req.session.admin,  (result)=> {
if(!result){
 res.send("invalid!");
}
else {
 console.log(result);
res.render('admin/profile',  {res: result});
        }
    });
});

router.get('/profile/edit',  (req, res)=> {
    var admin = userModel.getUser(req.session.admin,  (result)=> {
        if(!result){
            res.send("invalid");
        }
```

```
        else {
            console.log(result);
            res.render('admin/profile-edit',  {res: result, errs: []});
        }
    });
});

router.post('/profile/edit',  (req, res)=> {
    var rules = validationRules.users.update;
    var validator  = new asyncValidator(rules);
    var data = {
      user_id: req.body.user_id,
      name: req.body.name,
      email: req.body.email,
      phone: req.body.phone,
      address: req.body.address,
      gender: req.body.gender
    };
```

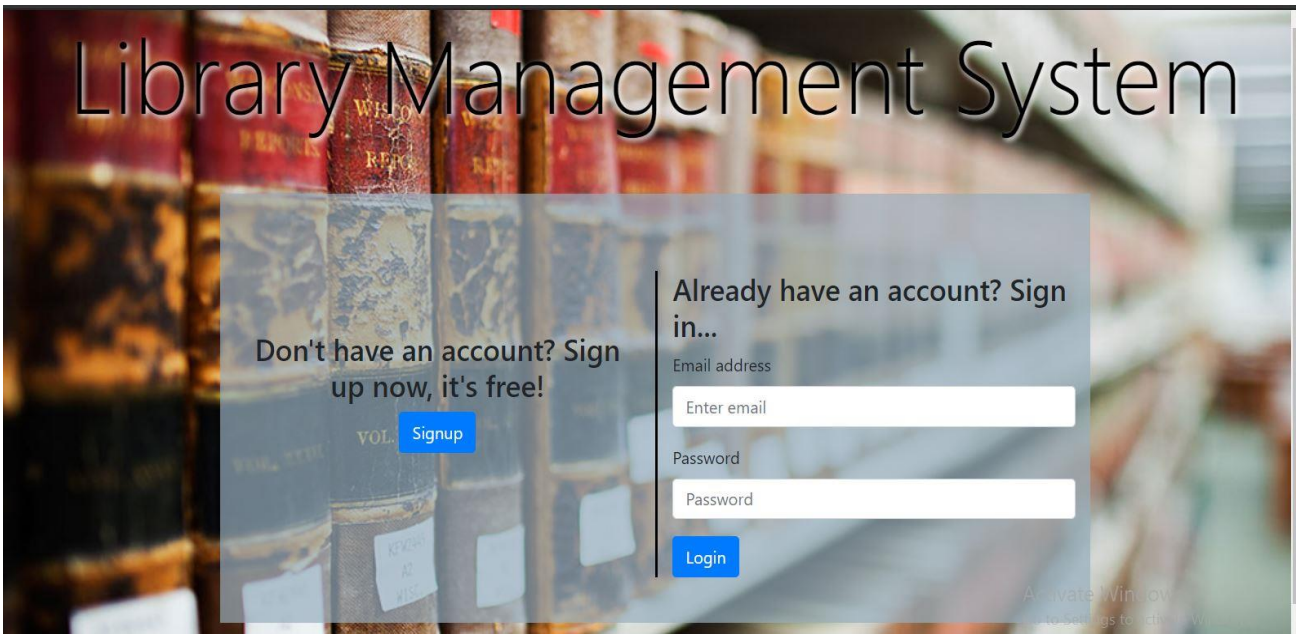
Customer.js

```
var express = require('express');
var router = express.Router();
var userModel  = require.main.require('./models/userModel');
var bookModel  = require.main.require('./models/bookModel');
var validationRules  = require.main.require('./validation_rules/rules');
var asyncValidator  = require('async-validator-2');

router.get('/home', (req, res)=> {
 userModel.totalBooksBorrowedByCustomer(req.session.customer,  (booksBorrowed)=>  {
 if(!booksBorrowed){
```

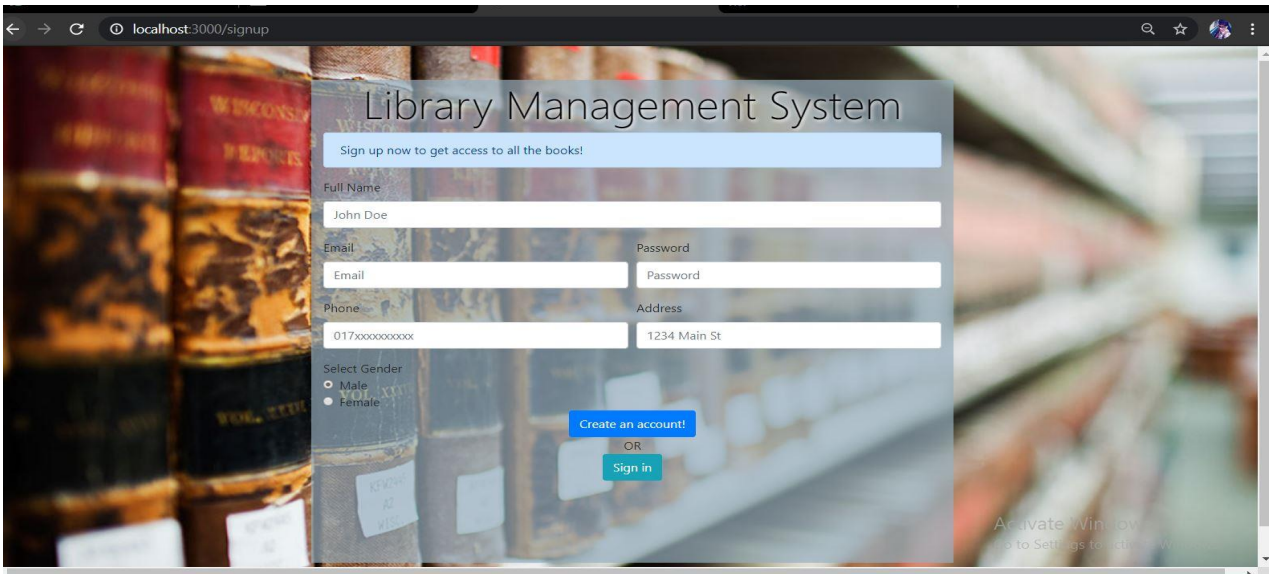
```
 res.send("nothing  here");
 }
else {
 res.render('customer/home', {tbbbc: booksBorrowed.length});
}
});
});

router.get('/profile',  (req, res)=> {
 var customer = userModel.getUser(req.session.customer,  (result)=> {
    if(!result){
     res.send("invalid!");
     }
    else {
     console.log(result);
 res.render('customer/profile',  {res: result});
 }
 });
});

router.get('/profile/
```

SCREEN SHOTS

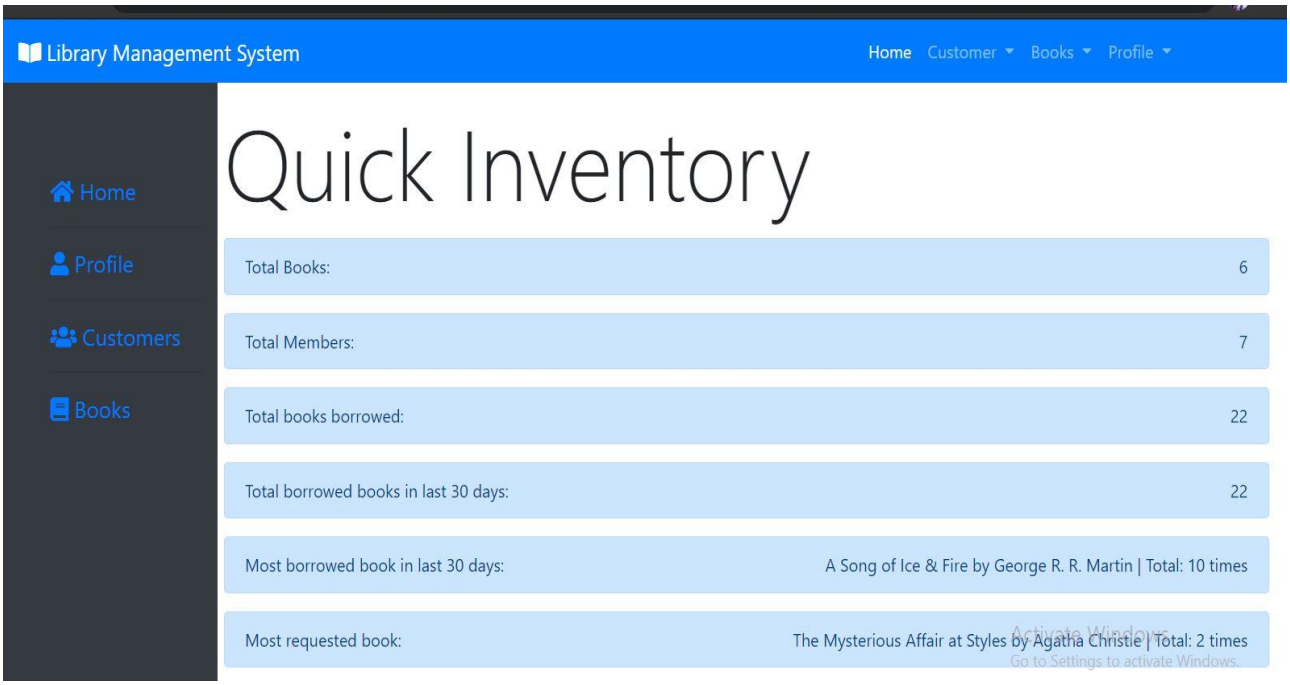
1) Login Page



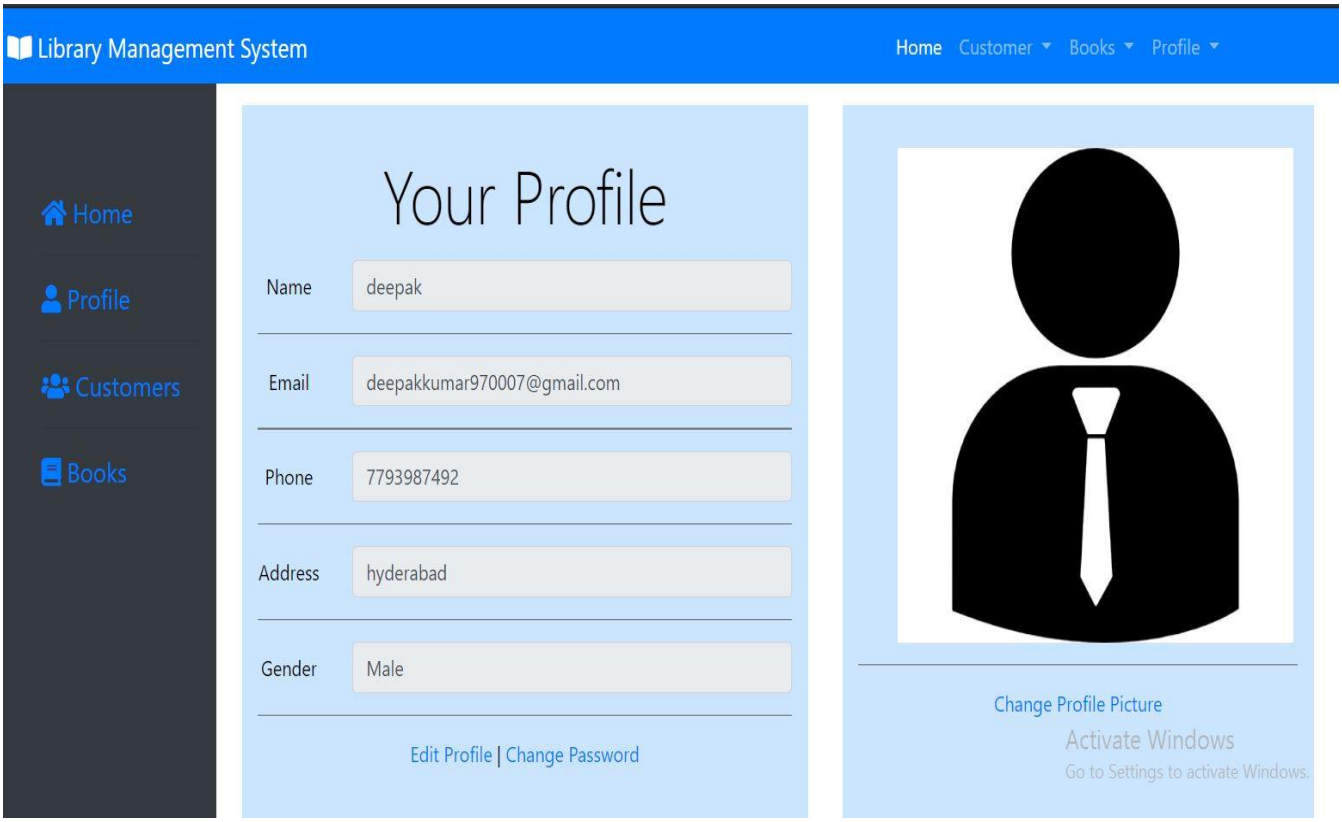
2) Signup Page



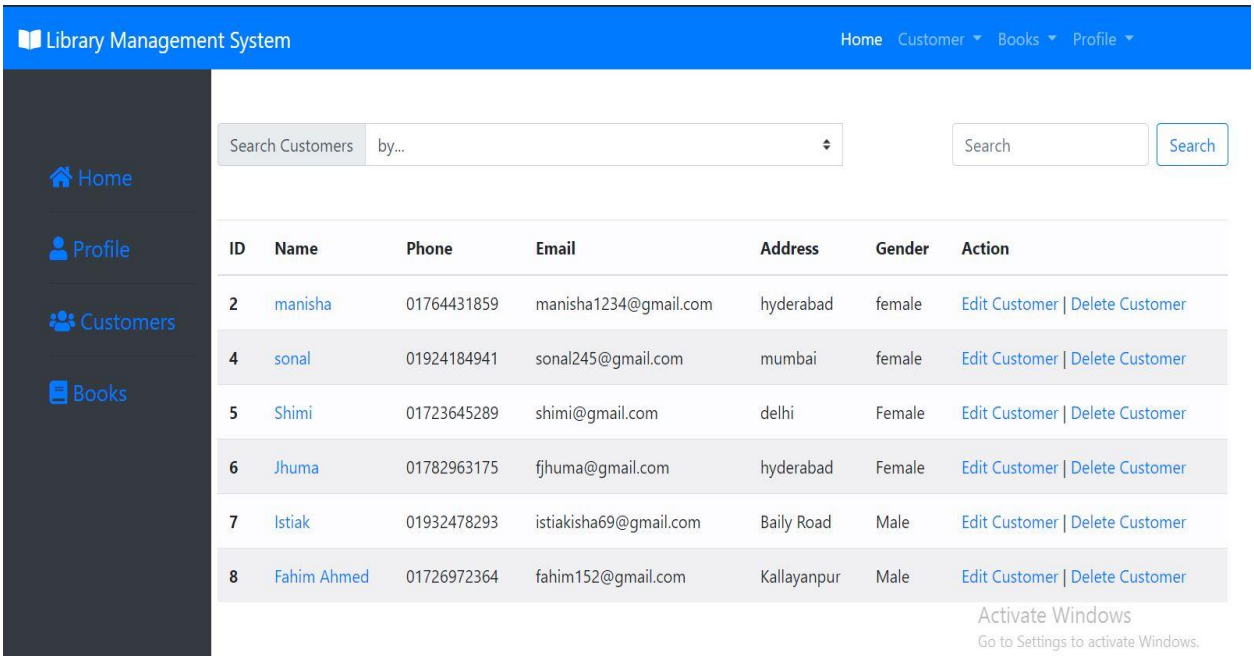
3) Home Page



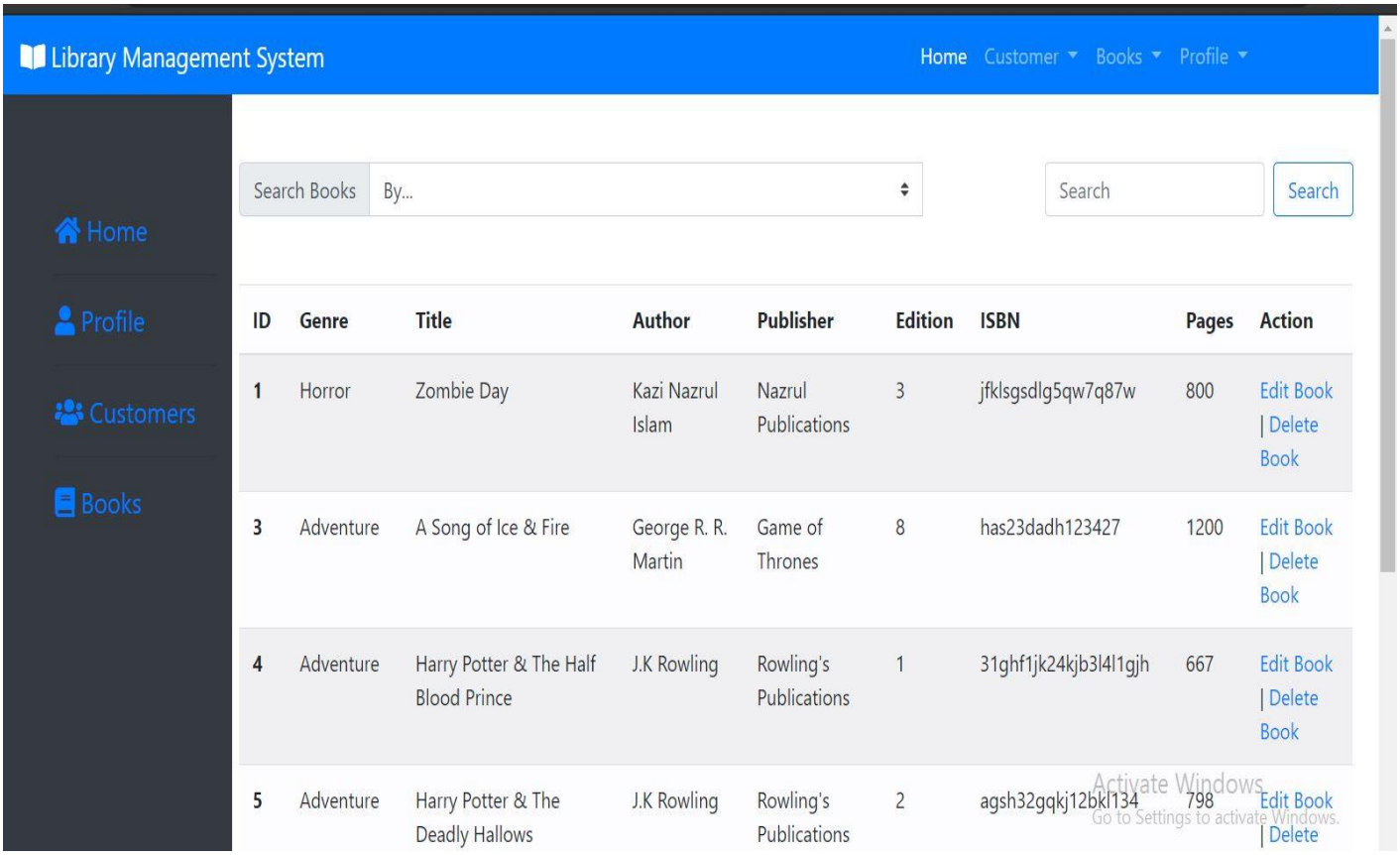
4) Profile Page



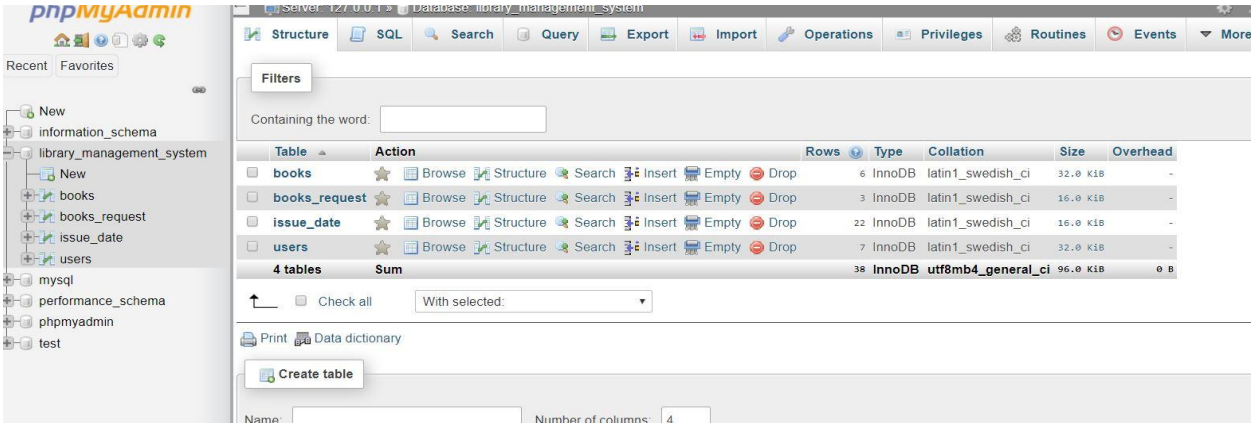
5) Customers Page



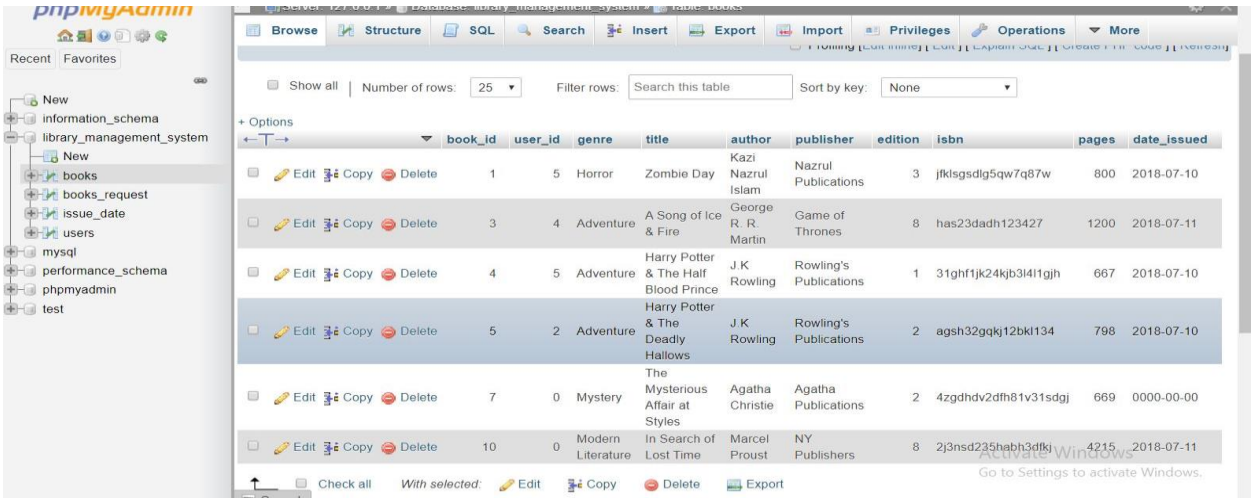
6) Books Pages



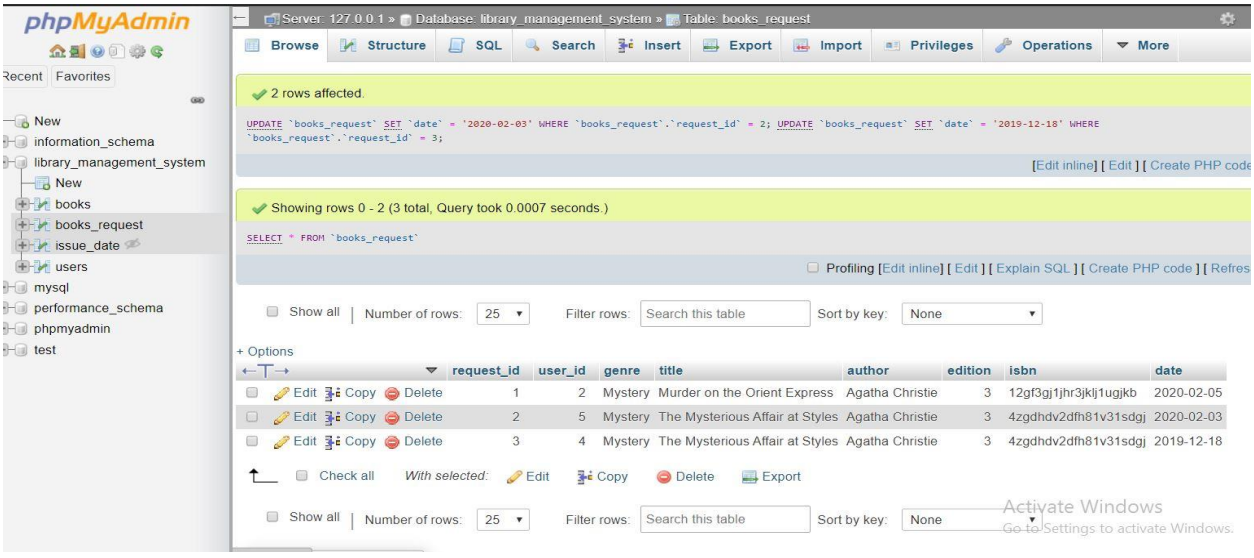
7) Database Table



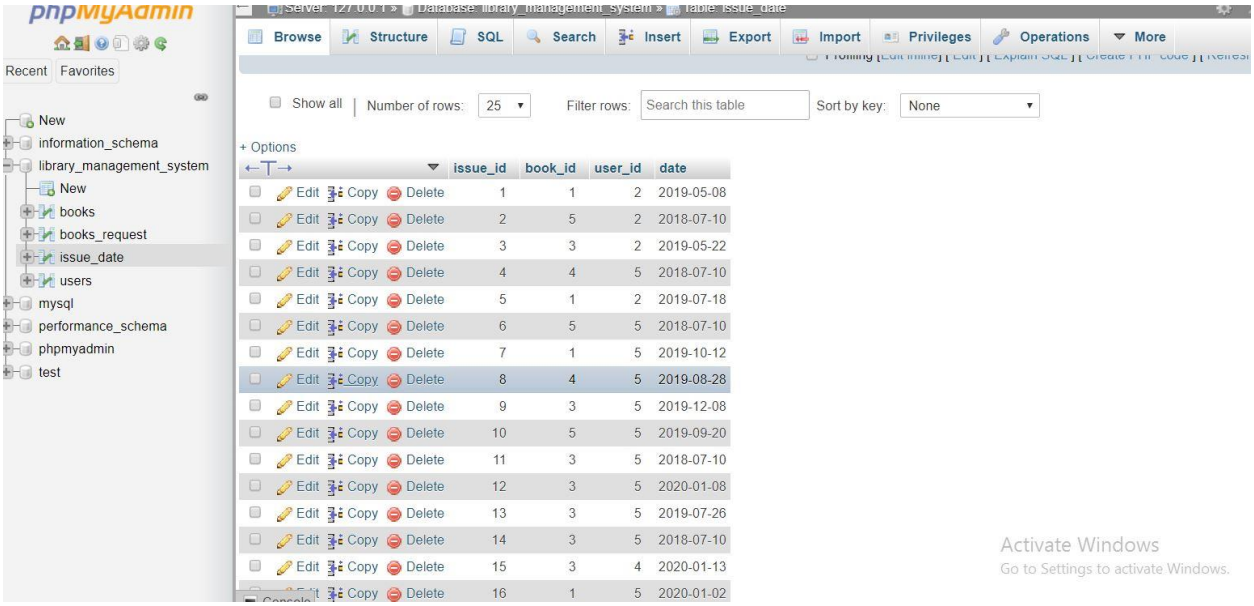
8) Book Table



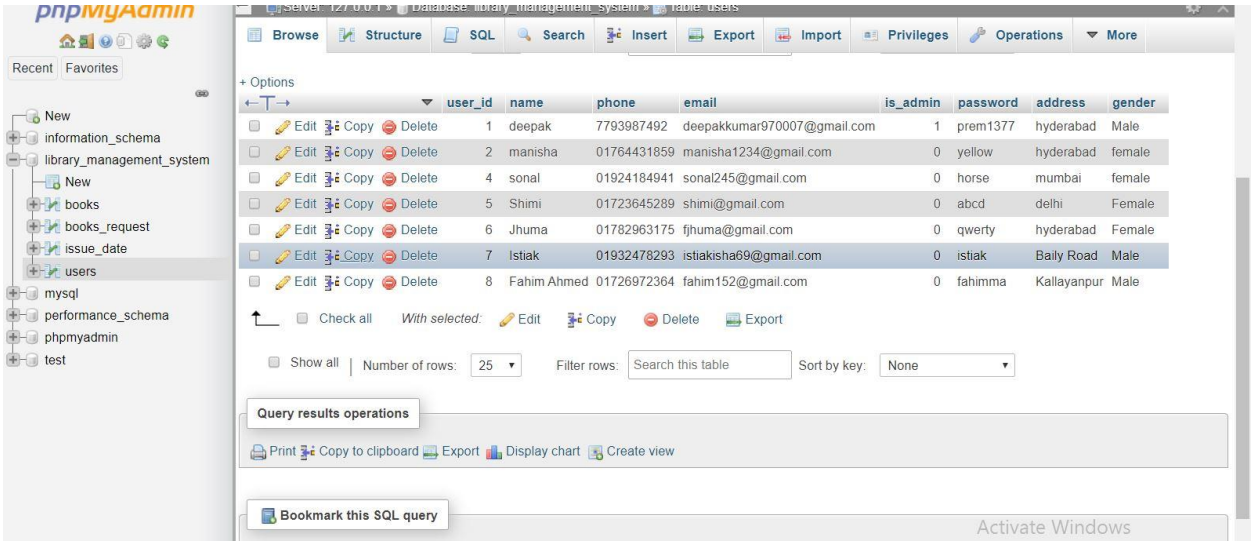
9) Book Request Table



10) Book Issue Date Table



11) User Table



REFERENCES

REFERENCES:

1. https://www.youtube.com/watch?v=FdC4Mjljd3k&t=33s
2. https://www.youtube.com/watch?v=giB8kBE8l60&t=52s
3. https://www.youtube.com/watch?v=0dQI86QIvrg
4. https://www.w3schools.com/html/html_intro.asp
5. https://www.w3schools.com/css/css_background.asp
6. https://www.w3schools.com/js/js_datatypes.asp
7. https://www.w3schools.com/sql/sql_insert.asp
8. https://www.w3schools.com/sql/sql_update.aspututhj
9. http://www.dave-reed.com/Nifty/02-JavaScript
10. https://www.w3schools.com/howto/howto_website.asp