

Project Report
On
LIBRARY MANAGEMENT SYSTEM

Submitted by

C Sivakumari

R170615

Under the guidance of

B Lingamurthy

Department of Computer Science and Engineering



Rajiv Gandhi University of Knowledge and Technologies(RGUKT),
R.K.Valley, Kadapa, Andra Pradesh.



Rajiv Gandhi University of Knowledge Technologies
RK Valley, Kadapa (Dist), Andhra Pradesh, 516330

CERTIFICATE

This is to certify that the project work titled "LIBRARY MANAGEMENT SYSTEM" is a bonafied project work submitted by C Sivakumari in the department of COMPUTER SCIENCE AND ENGINEERING in partial fulfillment of requirements for the award of degree of Bachelor of Technology in Computer science and engineering for the year 2021-2022 carried out the work under the supervision

Lingamurthy
GUIDE

B.Lingamurthy,
Software Engineer
RGUKT RK Valley

P.H. 29/9
HEAD OF THE DEPARTMENT

Mr.P.Harinadha,
Assistant Processor
Computer Science and Engineering
RGUKT RK Valley

(G. Sandeep Kumar Reddy)
2

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Abstract

Online Library Management System is a system which maintains the information about the books present in the library, their authors, their categories, and the members of library to whom books are issued, and all. This is very difficult to organize manually. Maintenance of all this information manually is a very complex task. Owing to the advancement of technology, organization of an Online Library becomes much simple. The Online Library Management has been designed to computerize and automate the operations performed over the information about the members, book issues and returns and all other operations. This computerization of library helps in many instances of its maintenance. It reduces the workload of management as most of the manual work done is reduced for Admin.

Introduction

With the increase in the number of readers,better management of libraries System is required. The Library management system focus on improving the management of libraries. Library management System is a web based application. Here first Admin allowed to login into the website. He has access to do operations like add books,authors,categories etc. and he can take the information of library management system. In Library Management System I used Spring Boot and H2 database. It is in one module i.e.

- **Admin**

Admin Module

Admin is the super user of the website who can manage everything on the website. Admin can log in through the login page

- ◆ **Dashboard:**In this section, the admin can see all detail in brief like the details of books,publisher,authors,category.
- ◆ **Books:** In this section, the admin can manage the books like adding,update,delete and he can get details of books. He can get the data of Books.
- ◆ **Authors:**In this section, the admin can manage the authors like adding,update, and delete the Authors. He can get the data of Author.
- ◆ **Publisher:**In this section, the admin can manage the Publisher like adding,update, and delete the Publisher. He can get the data of Publisher.
- ◆ **Category:**In this section, the admin can manage the Category like adding,update, and delete the category. He can get the data of category.

Purpose

The main purpose of Library management system to provide a platform where Admin can add books, add authors, add publishers, add categories he can easily manipulates the library. With the help of this project the admin easily maintain the data of books, authors, publishers and category in manually. And he can get the data very easily.

Scope

Today also we have to go to the Library ,to update the details . As Technology is growing rapidly we are also moving to a technical world. where everything we want to be online. So with the help of this project we are bringing the use of technology we can easily do the work. This project makes Admin process easy and reduces the burden of Library staff. At a same time its help the Library to track all Book details with their data reports. This access friendly software provides quick and effective services which helps the Library Management System.

Advantages:

- ◆ The system allows Admin.
- ◆ Allows for faster service.
- ◆ Allows increased Fast updation of library details.
- ◆ Easy, user friendly GUI., Validation of data will be ensure only accurate valid and complete data stored in the database.
- ◆ Easy retrieval or data will be made possible by finding techniques.
- ◆ Report generation will help made it easy to analyze the performance.

Disadvantages:

- ◆ It reduces employment as the human efforts are being automated by this system.

Requirement Specification

Hardware Configuration:

Client Side:

Ram	512 MB
Hard disk	10 GB
Processor	1.0 GHz

Server side:

Ram	1 GB
Hard disk	20 GB
Processor	2.0 GHz

Software Requirement:

Front end	HTML,CSS, Bootstrap
Server side Language	Spring Boot,Apache maven
Database Server	H2
Web Browser	Firefox , Google Chrome or any compatible browser
Operating System	Ubuntu,Windows or any equivalent OS
Software	xampp

APACHE

The Apache HTTP Server Project is an effort to develop and maintain an open-source HTTP server for modern operating systems including UNIX and Windows. The goal of this project is to provide a secure, efficient and extensible server that provides HTTP services in sync with the current HTTP standards.

The Apache HTTP Server was launched in 1995 and it has been the most popular web server on the Internet since April 1996. It has celebrated its 20th birthday as a project in February 2015.

HTML

- HTML- HTML or Hyper Text Markup Language
- HTML-is the main markup language for creating web pages and other information that can be displayed in a web browser. HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (like <html>), within the web page content.
- HTML tags- most commonly come in pairs like <h1> and </h1>, although some tags represent empty elements and so are unpaired, for example . The first tag in a pair is the start tag, and the second tag is the end tag (they are also called opening tags and closing tags). In between these tags web designers can add text, further tags, comments and other types of text-based content. The purpose of a web browser is to read HTML documents and compose them into visible or audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page.
- HTML elements form the building blocks of all websites. HTML allows images and objects to be embedded and can be used to create interactive forms. It provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. It can embed scripts written in languages such as JavaScript which affect the behavior of HTML web pages.

H2 DATABASE

- H2 is an open-source lightweight Java database
- Extremely fast, open source, JDBC API
- Available in embedded and server modes; in-memory databases

- H2 is open source and written in Java.
- H2 supports **clustering** and **multi-version concurrency**.
- It has strong security features.

SPRING BOOT

- Spring Boot makes it easy to create stand-alone, production-grade Spring based Applications that you can "just run".
- Embed Tomcat, Jetty or Undertow directly (no need to deploy WAR files)
- Provide opinionated 'starter' dependencies to simplify your build configuration
- Automatically configure Spring and 3rd party libraries whenever possible
- Provide production-ready features such as metrics, health checks, and externalized configuration
- Absolutely no code generation and no requirement for XML configuration

Analysis and Design

Analysis:

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 admin to manage the details or record more effectively and time-saving

Disadvantage of present system:

- **Not user friendly:** The present system not user friendly because data is not stored in structure and proper format.
- **Manual Control:** All report calculation is done manually so there is a chance of error.
- **Lots of paper work:** Visitors maintain in the register so lots of paper require storing details.
- **Time consuming**

Design Introduction:

Design is the first step in the development phase for any techniques and principles for the purpose of defining a device, a process or system in sufficient detail to permit its physical realization. Once the software requirements have been analyzed and specified the software design involves three technical activities - design, coding, implementation and testing that are required to build and verify the software.

The design activities are of main importance in this phase, because in this activity, decisions ultimately affecting the success of the software implementation and its ease of maintenance are made. These decisions have the final bearing upon reliability and maintainability of the system. Design is the only way to accurately translate the customer's requirements into finished software or a system.

Design is the place where quality is fostered in development. Software design is a process through which requirements are translated into a representation of software. Software design is conducted in two steps. Preliminary design is concerned with the transformation of requirements into data

UML Diagrams:

Actor:

A coherent set of roles that users of use cases play when interacting with the use cases.an observable result of value of an actor.



Use case: A description of sequence of actions, including variants, that a system performs yields an observable result of value of an actor. actor diagram is drawned in a eclipse shape



UML stands for Unified Modeling Language. UML is a language for specifying, visualizing and documenting the system. This is the step while developing any product after analysis. The goal from this is to produce a model of the entities involved in the project which later need to be built. The representation of the entities that are to be used in the product being developed need to be designed.

USECASE DIAGRAMS:

Use case diagrams model behavior within a system and helps the developers understand of what the user require. The stick man represents what's called an actor.

Use case diagram can be useful for getting an overall view of the system and clarifying that can do and more importantly what they can't do.

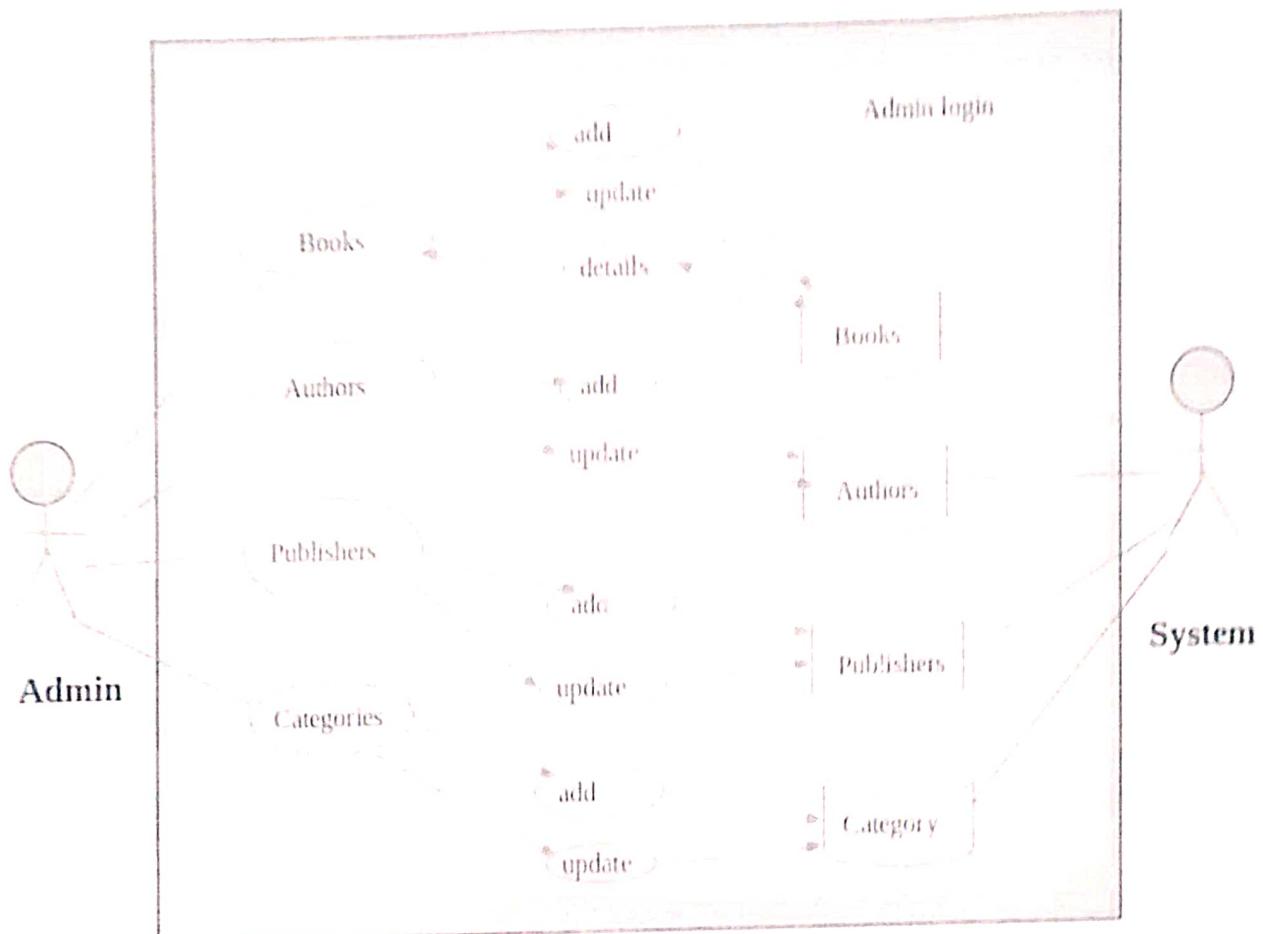
Use case diagram consists of use cases and actors and shows the interaction between the use case and actors.

- The purpose is to show the interactions between the use case and actor.
- To represent the system requirements from user's perspective.
- An actor could be the end-user of the system or an external system.

USECASE DIAGRAM: A Use case is a description of set of sequence of actions. Graphically it is rendered as an ellipse with solid line including only its name. Use case diagram is a behavioral diagram that shows a set of use cases and actors and their relationship. It is an association between the use cases and actors. An actor represents a real-world object. Primary Actor – Sender, Secondary Actor Receiver.

Use case diagram:

ADMIN



Implementation and System Testing

After all phase have been perfectly done, the system will be implemented to the server and the system can be used.

System Testing

The goal of the system testing process was to determine all faults in our project .The program was subjected to a set of test inputs and many explanations were made and based on these explanations it will be decided whether the program behaves as expected or not. Our Project went through two levels of testing

1. Unit testing
- 2 .Integration testing

Unit Testing

Unit testing is commenced when a unit has been created and effectively reviewed .In order to test a single module we need to provide a complete environment i.e. besides the section we would require The procedures belonging to other units that the unit under test calls Non local data structures that module accesses .A procedure to call the functions of the unit under test with appropriate parameters

1. Test for the admin module

Testing admin login form-This form is used for log in of administrator of the system. In this form we enter the username and password if both are correct administration page will open otherwise if any of data is wrong it will get redirected back to the login page and again ask the details.

Report Generation: admin can generate report from the main database.

Integration Testing

In the Integration testing we test various combination of the project module by providing the input.

The primary objective is to test the module interfaces in order to confirm that no errors are occurring when one module invokes the other module.

Evaluation

Project URL: <http://localhost:9080/login>

Login Page

The screenshot shows a web page titled "Admin Login Page". It features a "Username" field containing "svakumari@advitha" and a "Password" field containing "123456". A "Remember Me" checkbox is checked. At the bottom right, there is a link "© 2020 Copyright ©Sivakumari Challa".

Home Page

The screenshot shows a table titled "Book Management System" with the following data:

ISBN	Book Name	Serial Name	Description	Detail	Edit	Delete
9789351234567	Typing in Action	L00935123456	Book description1			
9789351234568	Java EE 8	R00935123456	Description1			
9789351234569	Starting Point	L00935123456	Description2			

At the bottom right, there is a link "© 2020 Copyright ©Sivakumari Challa".

Books

The screenshot shows a table of book records with columns: ISBN, Book Name, Serial Name, Description, Detail, Edit, and Delete. The data is as follows:

ISBN	Book Name	Serial Name	Description	Detail	Edit	Delete
AB12345	Spring in Action	CSEF12300	Book description1			
BC67890	PRACTICAL	KCSEF12300	Description1			
CD98765	Selling Book	LIVJH	description2			

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ADD BOOKS:

The screenshot shows an 'Add Book' form with fields for ISBN, Book Name, Serial Name, Description, and several dropdown menus for Author, Title, and Category.

Fields and their values:

- ISBN: AB12345
- Book Name: Spring in Action
- Serial Name: CSEF12300
- Description: Book description1
- Author: J. B. Rainsford
- Title: Spring in Action
- Category: Java
- Language: English
- Page Count: 500
- Price: 1000
- Stock Level: 100
- Barcode: 9781590593342
- Image:

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Update Books

The screenshot shows a web-based application titled "Book Management System". The main title bar says "Book Management System - Add New Book Details". Below it, a sub-header says "Update Book". The form contains fields for ISBN, Category Name, Book Name, Author Name, Publisher Name, Serial Name, and Description. The ISBN field has "9789898765432" entered. The Category Name field has "ECE" selected. The Book Name field has "ELECTRICAL" entered. The Author Name field has "2000" entered. The Publisher Name field has "SVA" entered. The Serial Name field has "KCNEF12345" entered. The Description field has "Description1" entered. At the bottom right of the form, there is a copyright notice: "© 2022 Copyright ©Sivakumari Challa".

Details Of Books

The screenshot shows a web-based application titled "Book Management System". The main title bar says "Book Management System - Add New Book Details". Below it, a sub-header says "Details Of Books". A table displays book details. The columns are: ISBN, Category Name, Book Name, Author Name, Publisher Name, Serial Name, and Description. The data in the table is as follows:

ISBN	Category Name	Book Name	Author Name	Publisher Name	Serial Name	Description
9789898765432	ECE	ELECTRICAL	2000	SVA	KCNEF12345	Description1

At the bottom right of the table, there is a copyright notice: "© 2022 Copyright ©Sivakumari Challa".

AUTHOR

List of Authors			
Author Name	Description	Edit	Delete
Sivakumari Challa	Guest Writer		
Guest	Guest Writer		
Administrator	Guest Writer		

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Add Author

Library Management System > Add Author

Add Authors

Author Name:

Description:

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Update Author

Library Management System > Update Author

Update Author

Author Name:

Description:

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Publisher

Publisher		
Action	Name	Count
View	Wiley	20
View	Springer	20
View	Elsevier	20
View	John Wiley & Sons	20

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Add Publisher

Add Publisher

Publisher Name

Publisher Name



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Update Publisher

The screenshot shows a web-based application for updating publisher information. At the top, there is a navigation bar with tabs for Home, Books, Publishers, and Authors. Below the navigation bar, the title "Update Publisher" is displayed. A sub-header "Update Publisher" is followed by a form field labeled "Publisher Name" containing the value "VARDHAN". There is also a small thumbnail image of a book. At the bottom right of the page, there is a copyright notice: "© 2022 Copyright ©Sivakumari Challa".

Category

The screenshot shows a web-based application for managing categories. At the top, there is a navigation bar with tabs for Home, Books, Publishers, and Authors. Below the navigation bar, the title "Category Management" is displayed. A sub-header "Category Management" is followed by a table listing three categories: CSE, ECE, and MECH. The table has columns for "Category Name", "Edit", and "Delete". Each category row contains a small thumbnail image of a book. At the bottom right of the page, there is a copyright notice: "© 2022 Copyright ©Sivakumari Challa".

Category Name	Edit	Delete
CSE		
ECE		
MECH		

Add Category

The screenshot shows a web-based application interface for adding a category. At the top, there is a navigation bar with the text "Category Management System" and "Add Category". Below the navigation bar, the main content area has a title "Add Category". There is a form with a single input field labeled "Category Name" containing the value "Electronics". Below the input field is a small "Save" button. At the bottom right of the page, there is a copyright notice: "© 2022 Copyright © International Chaitin".

Update Category

The screenshot shows a web-based application interface for updating a category. At the top, there is a navigation bar with the text "Category Management System" and "Update Category". Below the navigation bar, the main content area has a title "Update Category". There is a form with a single input field labeled "Category Name" containing the value "Electronics". Below the input field is a small "Save" button. At the bottom right of the page, there is a copyright notice: "© 2022 Copyright © International Chaitin".

Logout

Admin Login Page

You have been logged in.

Username:

Password:

[Forgot Password?](#) [Customer Chat](#)

Book Details:

Fields	Standard	Standard	Standard	Standard	Standard	Standard
1 DESCRIPTION	ID	ISBN	NAME		SERIALNAME	
2 Description1	5	BP567#R	ELECTRICAL		XCEF12389	
3 Book description	1	AP1287	Spring in Action		CXF12389	
4 description2	9	GH67F#	Spring Boot		UV#JH	

Author Details:

Fields

Standard	Standard	Standard
1 DESCRIPTION	ID	NAME
2 good writer	2	sivakumari challa
3 good thinker	6	pooji
4 windblowing writer	10	JKALAVATHI

Publisher Details:

Fields

Fields

Standard	Standard
1 ID	NAME
2 4	VARDHAN
3 8	SIVA
4 12	RAMAKRISHNA

Category Details:

Category

Standard	Standard
1 ID	NAME
2 3	CSE
3 7	ECE
4 11	MECH

Conclusion

Library Management System is very much graceful and lively. Admin first login into to the system and he can get the access on operating the Books, Authors, Publisher and Category databases.

- Automation of the entire system improves the productivity.
- It provides a friendly graphical user interface which proves to be better when compared to the existing system.
- It gives appropriate access to the authorized users depending on their permissions.
- It effectively overcomes the delay in communications.
- Updating of information becomes so easier.
- System security, data security and reliability are the striking features.
- The System has adequate scope for modification in future if it is necessary.

References

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- <https://www.spring.io/>

For H2 Database

- <https://www.h2database.com/>

For XAMPP

- <https://www.apachefriends.org/download.html>

*****THANKYOU*****