

DETAILED PROJECT REPORT OF LIBRARY MANAGEMENT SYSTEM

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INTRODUCTION

Library Management System is a term for computer-based system that manage the catalogue of a library. The main purpose of this system is to manage library daily operation efficiently.

1. PROJECT AIM AND OBJECTIVES

Library Management System is a term for computer-based system that manage the catalogue of a library. The main purpose of this system is to manage library daily operation efficiently. Objectives of Library Management System (LMS)

- a) To build a system that can receive input and generate automatically output in easy way and short time.
- b) Provide timely access to requested materials.
- c) Simplify search/discovery of library resources.
- d) To build a monitoring system that is able to monitor and manage all library operations efficiently.
- e) To enter and preserve details of the various issues and keep a track on their returns.
- f) Online book issue
- g) Request column for librarian for providing new book.
- h) A separate column for digital library.

i) Student login page where student can find books issued by him/her and date of return.

j) A search column to search availability of books

2. USER REQUIREMENTS

The application is designed for the use of librarians and library users. By using library management system, the operation of borrowing and managing inventories is paperless. This system provides a user-friendly data entry with dropdown button menu, list box and checkbox in purpose to make the input entry easier to understand and use. It is also created to ensure that the library items are stored properly in order to maintain their security. This system will store all the books and members information that consist book numbers, book titles, author names and categories to the system database. It also provides search function to help students find the book by book name, title, category. Search function will search through the books database to look for the book and view where the book is situated. For the administrator user, only librarians have access to view or edit data from the system databases. Administrator user will handle administrative functions such as add a new book, update/delete an existing book information, view student information, and issue/ return book to students. Librarian need to enter correct password and user id before they can access to this function. From here, they can add, delete or update the book and borrower database.

Development Tools

In this project, a number of development tools would be used to complete this project. They are listed as follow.

Java

Java is a programming language and a platform. Java is a high level, robust, object-oriented and secure programming language. Java was developed by Sun Microsystems (which is now the subsidiary of Oracle) in the year 1995. James Gosling is known as the father of Java. Before Java, its name was Oak. Since Oak was already a registered company, so James Gosling and his team changed the name from Oak to Java.

HTML

HTML (Hypertext Markup Language) is the code that is used to structure a web page and its content. HTML is used to specify whether a web content should be recognized as a paragraph, list, heading, link, image, multimedia player, form, or one of many other available elements or even a new element that you define. It is the globally accepted programming language for formatting web pages. It is mostly used by small and medium scale businesses that do not really need advanced functionality on their websites. HTML is free, supports all browsers on the client's machine, easy to use and understand hence, the choice in building the structure of my web pages.

CSS

Cascading Style Sheets (CSS) is a stylesheet language used to describe the presentation of a document written in HTML or XML (including XML dialects such as SVG or XHTML). CSS describes how elements should be rendered on screen, on paper, in speech, or on other media. CSS is one of the core languages of the open web and is standardized across browsers according to the W3C (World Wide Web Consortium) specification.

JavaScript

JavaScript is a high-level, dynamic, weakly typed, prototype-based, multi-paradigm, and interpreted programming language. JavaScript is a full-fledged dynamic programming language that, when applied to an HTML document, can provide dynamic interactivity on websites. It would be used in conjunction with Django to ensure validation rules on the front-end of the websites.

Bootstrap

Bootstrap is a free and open-source front-end web framework for designing 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. Unlike many web frameworks, it concerns itself with front-end development only. Bootstrap would be used to design the styling of the application alongside CSS.

Bootstrap is important in the application for the following

JSP

JSP technology is used to create web application just like Servlet technology. It can be thought of as an extension to Servlet because it provides more functionality than servlet such as expression language, JSTL, etc. A JSP page

consists of HTML tags and JSP tags. The JSP pages are easier to maintain than Servlet because we can separate designing and development. It provides some additional features such as Expression Language, Custom Tags, etc.

ECLIPSE IDE

Eclipse IDE is one of the most powerful integrated development environments (IDEs) ever built. This well-designed, robust, and feature-loaded IDE is in use in most of the current IT environments. This article provides an overview of how to get started using Eclipse IDE, from installation and to executing a program and using shortcuts.

FUNCTIONAL FEATURES

1-REGISTER NEW STUDENT

Student is required to provide his/her details like name, email, department, gender, address, contact number and password. After clicking on register button, the student is redirected to the student registration page. If registration is successful, a message will be appeared showing registration is successful along with a automatic generated student Id. If not it shows registration unsuccessful and redirects to login page.

2-REGISTER NEW LIBRARIAN

Librarian is required to provide his/her details like name, email address, contact number and password. After clicking on register button, the librarian is redirected to the librarian registration page. If registration is successful, a message will be appeared showing registration is successful along with a

automatic generated librarian Id. If not it shows registration unsuccessful and redirects to login page.

3-STUDENT LOGIN

Student is required to enter his/her student id and password and after clicking on login if the login is successful he will be redirected to the student dashboard page else he will be redirected to the login page where a message will be displayed of invalid login(results if username/password does not match in database).

4-LIBRARIAN LOGIN

Librarian is required to enter his/her librarian ID and password and after clicking on login if the login is successful he will be redirected to the librarian dashboard page else he will be redirected to the login page where a message will be displayed of invalid login(results if id/password does not match in database).

5-BOOK SERVICES (LIBRARIAN DASHBOARD)

5A-ADD NEW BOOK

Add book is provided as an option of Book Services dropdown on the nav bar of librarian dashboard. When clicking on add book the librarian will be redirected to the add book form where he has to enter Book title, author, category and quantity, front page and back page. After clicking on add book, it will redirect to display message page where a message of “book added successfully” will appear.

5B-UPDATE BOOK

Clicking on search book it will be redirected to the update book page where in the table there is a option for update and delete in front of every book.

Clicking on the update option will redirected to the book update form where

the book title, book author, book category, book quantity fields will be prepopulated. The librarian can make the changes and click on update book and will be redirected to the update book page which now contains the updated book. Clicking on the delete option will be redirected to the delete book form where the book Id will be provided. If any student has issued book with the provided book Id, then a message will be displayed showing “ Book can’t be deleted, already Issued to a student”. Else the book with given book Id will be deleted from the database and a message displayed stating “book has been deleted successfully”.

6-SEARCH DASHBOARD(LIBRARIAN DASHBOARD)

On signing to the librarian dashboard it will be redirected to librarian welcome page where all the book data will be fetched from the book database and displayed in the table which contains book ID, Book title, book author, book category, book quantity, update/delete. Above the table is the search field where three buttons are given as search by title, search by author, search by category. The user is required to enter the relevant input in the search field and click on the respective button to get that result.

7-ASSIGN BOOK (LIBRARIAN DASHBOARD)

Assign Book option is provided on each books card, clicking on assign book will display a form where librarian is required to enter student ID. If any of the following cases arise, the book will give an error message- -If quantity of the specified book is less than 1. -If the student has already three books issued. -If a student id does not exist or match with the database. If everything is fine then clicking on assign book will display a message stating a message of “Book assigned to Student”.

8-STUDENT SERVICES(LIBRARIAN DASHBOARD)

8A-UPDATE STUDENT

On clicking on the update student dropdown will redirect to student update form where librarian is required to enter student id and click on get data button which will redirect to a update form page which shows all data of student with given id. We have to update the fields whichever has to be modified and click on update to update the modified details in database. On clicking on delete button, the book will be deleted from database and displays a message "Book deleted successfully". If the book which we want to be displayed is already assigned to a student. In such case, the book doesn't get deleted from database and displays a message "you can't delete the student because he is having a book".

8B-SHOW STUDENT BOOKS(LIBRARIAN DASHBOARD)

Clicking on show students book will redirect to a student service page where librarian has to give student id and click on check out button. A student books table will get displayed. In each row besides book details, submit book and fine option is provided. Clicking on book and fine option the book will be submitted and shows a message "Book is submitted". Eventually book will be deleted from issued books table database and book quantity of books table will be incremented by one value.

9-LOGOUT (LIBRARIAN DASHBOARD)

Logout is provided on the top right corner of librarian dashboard. Clicking on logout will remove the session object of the librarian and redirect to the homepage.

10-SEARCH BOOK (STUDENT DASHBOARD)

On signing to the student account it will be redirected to student welcome page where all the book data will be fetched from the book database and displayed in the table which contains book ID, Book title, book author, book category, book quantity, update/delete. Above the table is the search field where three buttons are given as search by title, search by author, search by category. The user is required to enter the relevant input in the search field and click on the respective button to get that result.

11-STUDENT SERVICE (STUDENT DASHBOARD)

Student Service option is provided on the top of student dashboard. Clicking on student service will redirect to show issued book page where for that particular student id the books issued will be fetched from database and displayed in a table which contains book ID, Book title, book author, book category, issue date, return date, status and fine amount in rupees.

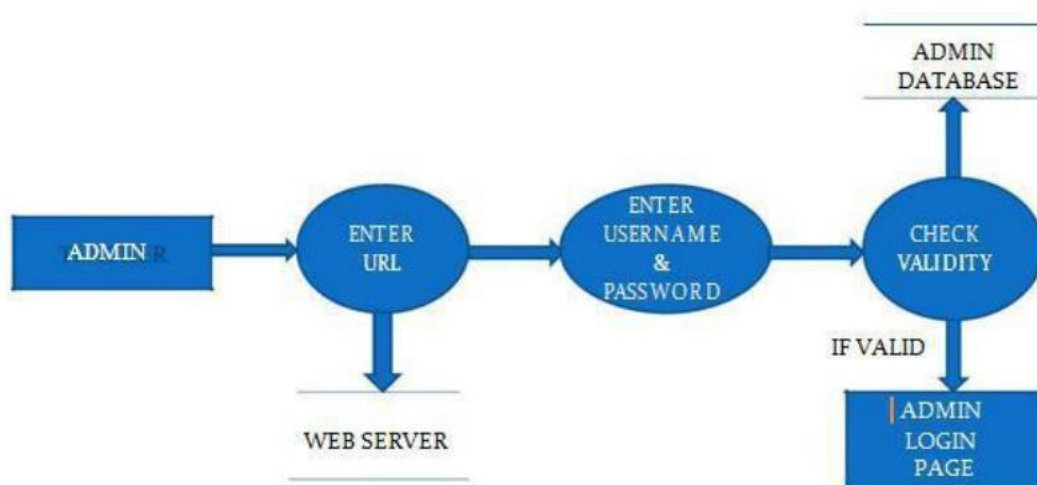
12-LOGOUT (STUDENT DASHBOARD)

Logout is provided on the top right corner of student dashboard. Clicking on logout will remove the session object of the student and redirect to the homepage.

DATA FLOW DIAGRAMS

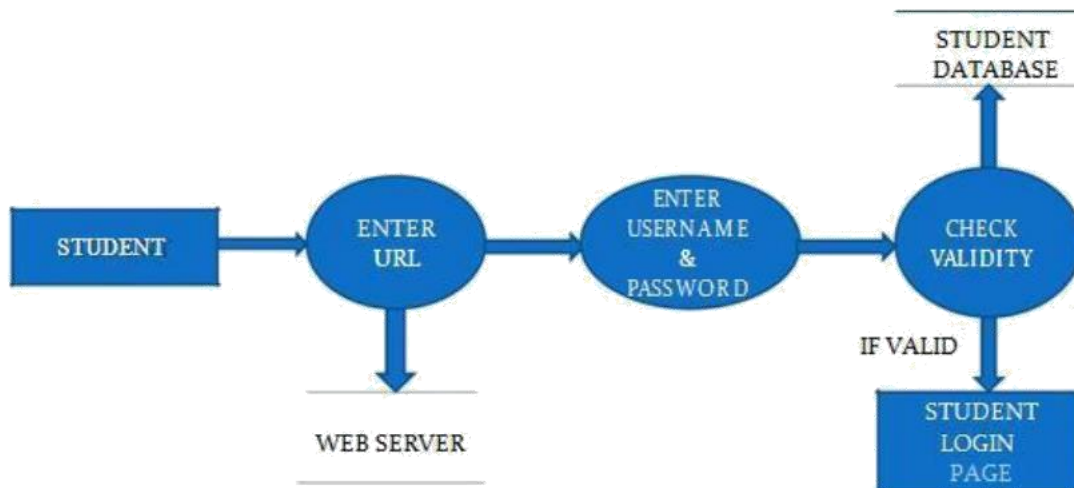
1. DATA FLOW DIAGRAM FOR LIBRARIAN LOGIN

After entering to the home page of the website, librarian can choose the LIBRARIAN LOGIN option where they are asked to enter librarian ID& password, and if he/she is a valid user then they will be redirected to librarian portal page



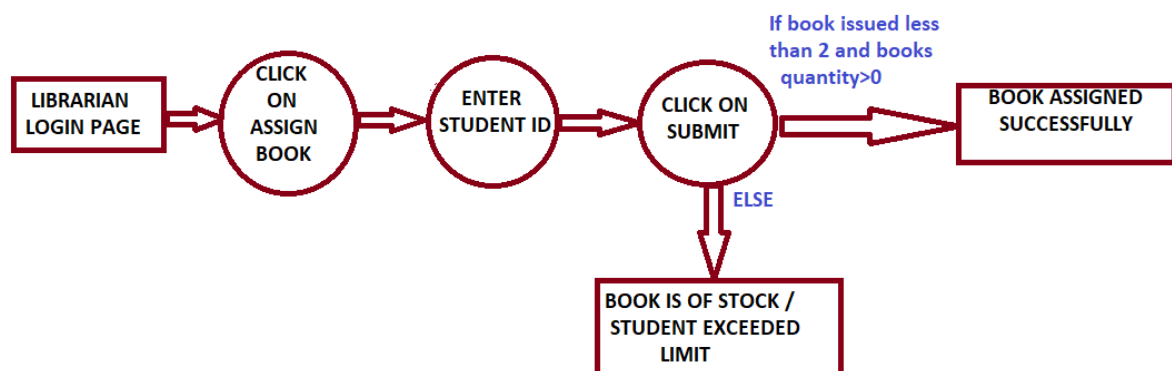
2. DATA FLOW DIAGRAM FOR STUDENT LOGIN

After entering to the home page of the website, student can choose the STUDENT LOGIN option where they are asked to enter student ID & password, and if he/she is a valid user then they will be redirected to student portal page.



3. DATA FLOW DIAGRAM FOR BOOK ISSUE

It is a second level Data Flow Diagram where after entering LIBRARIAN DASHBOARD page he/she can select a book issue option where after entering the book detail, he/she can select the book issue option and if the maximum no of books issued limit is not crossed then the book will be issued.



4. DATA FLOW DIAGRAM FOR BOOK SEARCH

After the home page login there will be an option of the book search where after entering book detail like author name, category, book name etc book details will be displayed.

