LIBRARY MANAGEMENT SYSTEM

A REPORT ON PROJECT BASED LEARNING
(SEMESTER -II)

Submitted by

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- CERTIFICATE-

This is to certify that the work incorporated in the report entitled **"LIBRARY MANAGEMENT SYSTEM,"** is carried out by a group of students with Project Id **3C72023** under the subject ***Project Based Learning*** during A.Y. **2022-2023** .

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Abstract

The Library Management System (LMS) is an essential tool for organizing and managing library resources efficiently. It is designed to automate various tasks involved in library operations, including cataloging, circulation and updating. This abstract provides an overview of the key features and benefits of a modern Library Management System.

The LMS offers a centralized platform for librarians to manage the entire lifecycle of library materials, from acquisition to disposal. It simplifies the cataloging i.e. (keeping list of books available in library) process by allowing librarians to input and update information about books and other resources. This ensures accurate and up-to-date records of the library collection, facilitating easy retrieval and efficient resource utilization.

The LMS incorporates patron management features to streamline user registration and maintain user profiles. With the advancement of technology, modern LMS platforms often provide online access to library resources. Users can access these materials remotely, expanding the reach and availability of library resources. The LMS also supports integration with discovery tools, allowing users to search and discover resources across multiple platforms from a single interface.

The benefits of implementing an LMS are numerous. It improves operational efficiency by automating manual processes, reducing paperwork, and eliminating redundant tasks. The system enhances the user experience by providing easy access to resources, personalized recommendations, and self-service options.

In conclusion, a Library Management System plays a vital role in the effective functioning of libraries in the digital age. It offers a comprehensive solution for cataloging, circulation, patron management, and reporting, enabling librarians to provide better services to their users. Due to advancement in technology, an LMS transforms libraries into dynamic hubs of knowledge and information, facilitating seamless access to resources and promoting lifelong learning.

ACKNOWLEDGEMENT

We take this occasion to thank God, almighty for blessing us with his grace and taking our endeavor to a successful culmination. We extend our sincere and heartfelt thanks to our esteemed guide, Mrs. **Usha Polina**, for providing us with the right guidance and advice at the crucial junctures and for showing me the right way. We also take this opportunity to express a deep sense of gratitude to **Mr. E. M. Reddy**. We would like to thank our friends and family for the support and encouragement they have given us during the course of our work.

Place: Name of Student (in Capital) & Sign

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INTRODUCTION

Library Management System Project helps to build manage overall books in library. Current days most of college organizations are using online LMS project. Through this concept we easily manage the record of books and which in turn will reduce paperwork. This system will certainly reduce the time which was used in conventional system.

Our Project emphasizes on this system by creating a UI in the form by creating a website. Creating a website requires a knowledge about frontend and backend language for e.g. (FRONTEND: - CSS, HTML; BACKEND: - Python, C++, JS)

Project includes frontend code written in CSS and HTML and Python while backend in Python. Our approach is basically

1. Define the System Requirements: Identify the requirements of the Library Management system. This includes the features, functionalities,
and user roles.

2. Design the System Architecture: Create a system architecture that outlines the system components, data flow, and user interface.

3. Choose the Appropriate Technology: Choose the appropriate technology stack for the system based on the requirements and architecture. Some commonly used technologies include HTML, CSS, JavaScript, React, Node.js, Mongo DB, etc.

4. Develop the User Interface: Create a user-friendly interface for the library management system that allows users to easily navigate and use the system.

5. Implement the System Functionality: Develop the system functionality based on the requirements and architecture. This includes features such as book borrowing, returning, searching, etc.

6. Test the System: Test the system to ensure that it is working as expected and meets the system requirements.

7. Deploy the System: Deploy the system to a hosting platform to make It accessible to users.

8. Maintain the System: Maintain the system by fixing bugs, updating features and ensuring that it runs smoothly.

Chapter 2
SYSTEM REQUIREMENTS AND ANALYSIS

1. SYSTEM ANALYSIS

In this chapter, we will discuss and analyze about the developing process of Library Management System including software requirement specification (SRS) and comparison between existing and proposed system. The functional and non functional requirements are included in SRS part to provide complete description and overview of system requirement before the developing process is carried out. Besides that, existing vs proposed provides a view of how the proposed system will be more efficient than the existing one.

2.1 SOFTWARE REQUIREMENT SPECIFICATION

2.1.1 GENERAL DESCRIPTION

PRODUCT DESCRIPTION:

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.

PROBLEM STATEMENT:

The problem occurred before having computerized system includes:

- File lost

When computerized system is not implemented file is always lost because of human environment. Sometimes due to some human error there may be a loss of records.

- File damaged

When a computerized system is not there file is always lost due to some accident like spilling of water by some member on file accidentally.

Besides some natural disaster like floods or fires may also damage the files.

- Difficult to search record

When there is no computerized system there is always a difficulty in searching of records if the records are large in number consuming. As there is no computerized system then to add each record paper will be needed which will increase the cost for the management of library.

2.1.2 SYSTEM OBJECTIVES

- Improvement in control and performance

The system is developed to cope up with the current issues and problems of library The system can add user, validate user and is also bug free.

- Save cost

After computerized system is implemented less human force will be required to maintain the library thus reducing the overall cost.

2. SYSTEM REQUIREMENTS

Library Management System Project has UI in form of website used by libraries to manage their operations efficiently .Here are some key requirements and analysis consideration for LMS :

2.1 Features:-

1. ADMIN ACCOUNT:

The Librarian has an ADMIN login which includes following features

- Add a New Book Record
- Deleting Book Record
- Updating New Record
- Catalog Management

The System provides a admin login in through which only the admin or librarian has access to the page

2. CATALOG MANAGEMENT:

Keeping a list or record of books available in library and thereby updating the stock. Some of are functions include:

- Book and Media Catalog: Ability to create , update and delete book record
- List of Books :Gives a list of Books through which system can be updated
-

2.2 Functional:-

I. REGISTER NEW BOOK

Description of feature:-

This feature allows adding new books to the library Functional requirements

Functional Requirements:-

-System must be able to verify information

-System must be able to enter number of copies into table.

-System must be able to not allow two books having same book id.

SEARCH BOOKS
Description of Feature :-

This feature is found in book maintenance part. We can search book based on book id, book name, and publication or by author name.

Functional requirements:-

- System must be able to search the database based on select search type
- System must be able to filter book based on keyword entered
- System must be able to show the filtered book in table view

SOFTWARE AND HARDWARE REQUIREMENTS

This section describes the software and hardware requirements of the system

2.3.1 SOFTWARE REQUIREMENTS

- Operating system- Windows 7 is used as the operating system as it is stable and Supports more features and is more user friendly
- Database MYSQL-MYSQL is used as database as it easy to maintain and retrieve records by simple queries which are in English language which are easy to understand and easy to write.
- Development tools and Programming language- HTML is used to write the whole code and develop WebPages with css, java script for styling work and php for sever side scripting.

2.3.2 HARDWARE REQUIREMENTS

- Intel core i5 2nd generation is used as a processor because it is fast than other processors and provides reliable and stable and we can run our pc for longtime. By using this processor we can keep on developing our project without any worries.
- Ram 1 gb is used as it will provide fast reading and writing capabilities and will in turn support in processing. Existing System:
- Early days Libraries are managed manually. It required lot of time to record or to retrieve the details. The employees who have to record the details must perform their job very carefully. Even a small mistake would create a lot of problems. Security of information is very less. Report generations of all the information is very tough task.

- Maintenance of Library catalogue and arrangement of the books to the catalogue is very complex task. In addition to its maintenance of member details, issue dates and return dates etc. manually is a complex task.

- All the operations must be performed in perfect manner for the maintenance of the library without any degradation which may finally result in the failure of the entire system. Proposed System:

To solve the inconveniences as mentioned in the existing system, an Online Library is proposed. The proposed system contains the following features:

- The students will register them through Online

- Individually each member will have his account through which he can access the information he needs.

- Book details like authors, number of copies totally maintained by library, present available number of books, reference books, non-reference books etc. all this information can be made handy.

- Regarding the members designation, number of books was issued.

- Issue dates and returns of each member is maintained separately and fine charged if there is any delay in returning the book.

- Administrator can add, update the books. Time consuming is low, gives accurate results, reliability can be improved with the help of security.

2.3 SOFTWARE TOOLS USED

The whole Project is divided in two parts the front end and the back end.

2.3.1 Front end

The front end is designed using of html , Php ,css, Java script

- HTML- HTML or Hyper Text Markup Language 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 <img>. 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.

- CSS- Cascading Style Sheets(CSS) is a style sheet language used for describing the look and formatting of a document written in a markup language. While most often used to style web pages and interfaces written in HTML and XHTML, the language can be applied to any kind of XML document, including plain XML, SVG and XUL. CSS is a cornerstone specification of the web and almost all web pages use CSS style sheets to describe their presentation.CSS is designed primarily to enable the separation of document content from document presentation, including elements such as the layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification.

- JAVA SCRIPT- JavaScript(JS) is a dynamic computer programming language. It is most commonly used as part of web browsers, whose implementations allow client-side scripts to interact with the user, control the browser, communicate asynchronously, and alter the document content that is displayed. It is also being used in server-side programming, game development and the creation of desktop and mobile applications. JavaScript is a prototype-based scripting language with dynamic typing and has first-class functions. Its syntax was influenced by C. JavaScript copies many names and naming conventions from Java, but the two languages are otherwise unrelated and have very different semantics. The key design principles within JavaScript are taken from

1. The Self and Scheme programming languages. It is a multi-paradigm language, supporting object-oriented, imperative,

2. And functional programming styles. The application of JavaScript to use outside of web pages—for example, in PDF documents, site-specific browsers, and desktop widgets—is also significant. Newer and faster JavaScript VMs and platforms built upon them (notably Node.js) have also increased the popularity of JavaScript for server-side web applications. On the client side, JavaScript was traditionally implemented as an interpreted language but just-in-time compilation is now performed by recent (post-2012) browsers.

- PHP- PHP is a server-side scripting language designed for web development but also used as a general-purpose programming language. PHP is now installed on more than 244 million websites and 2.1 million web servers. Originally created by Rasmus Lerdorf in 1995, the reference implementation of PHP is now produced by The PHP Group. While PHP originally stood for Personal Home Page, it now stands for PHP: Hyper text Preprocessor, a recursive backronym.PHP code is interpreted by a webserver with a PHP processor module, which generates the resulting web page: PHP commands can be embedded directly into an HTML source document rather than calling an external file to process data. It has also evolved to include a command-line interface capability and can be used

-in standalone graphical applications. PHP is free software released under the PHP

-License. PHP can be deployed on most web servers and also as a standalone shell on almost every operating system and platform, free of charge.

-MYSQL- MySQL("My S-Q-L", officially, but also called "My Sequel") is (as of July 2013) the world's second most widely used open-source relational database management system (RDBMS). It is named after co-founder Michael Widenius daughter, My. The SQL phrase stands for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements. MySQL was owned and sponsored by a single for -profit firm, the Swedish company MySQL AB, now owned by Oracle Corporation. MySQL is a popular choice of database for use in web applications, and is a central component of the widely used LAMP open source web application software stack (and other 'AMP' stacks). LAMP is an acronym for "Linux, Apache, MySQL, Perl/PHP/Python." Free-software-open source projects that require a full-featured database management system often use MySQL. For commercial use, several paid editions are available, and offer additional functionality. Applications which use MySQL databases

Chapter 3
SYSTEM DESIGN

1. Home Page: The following image symbolizes the home page of our website through which other features can be operated also it just a short introduction of our website through which we can jump various other webpages.

FRONTEND:-

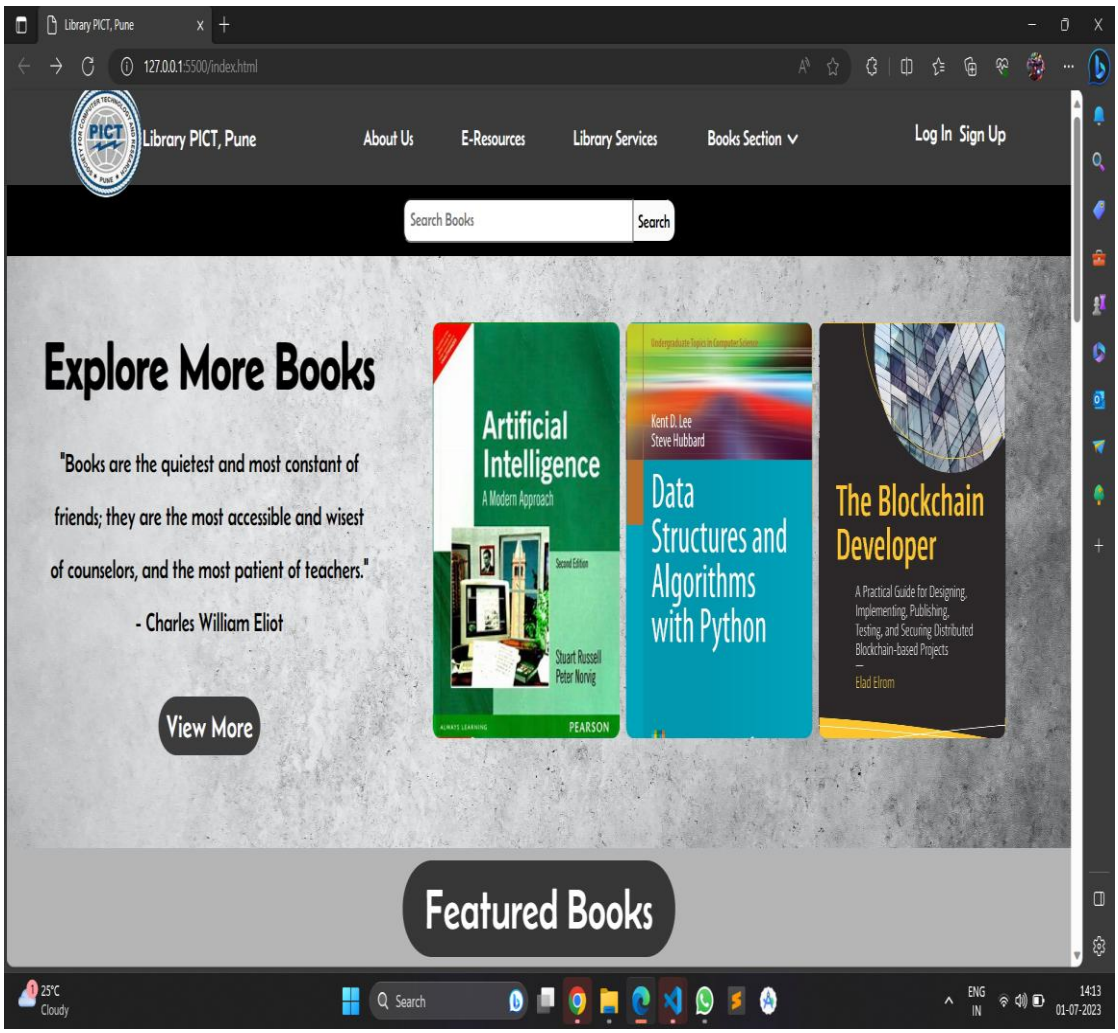

fig 1.1

BACKEND:-

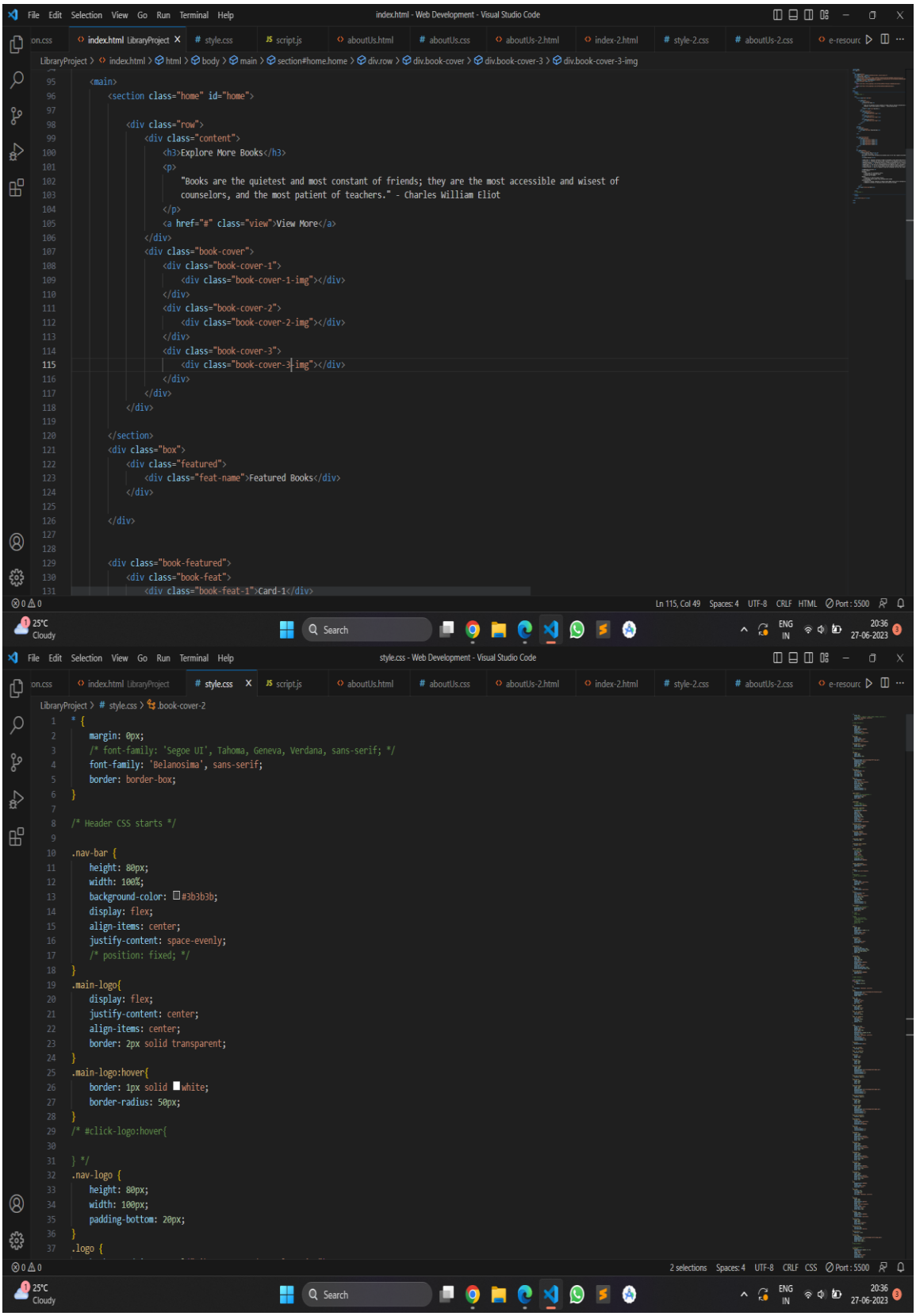

Fig 1.2

2. Login Page: The image indicates our login page through which the user or admin can access to the books. First it user or admin enters the username and password and then it verifies with the database and if the following is not verified then we are re-directed to same page

FRONTEND:-

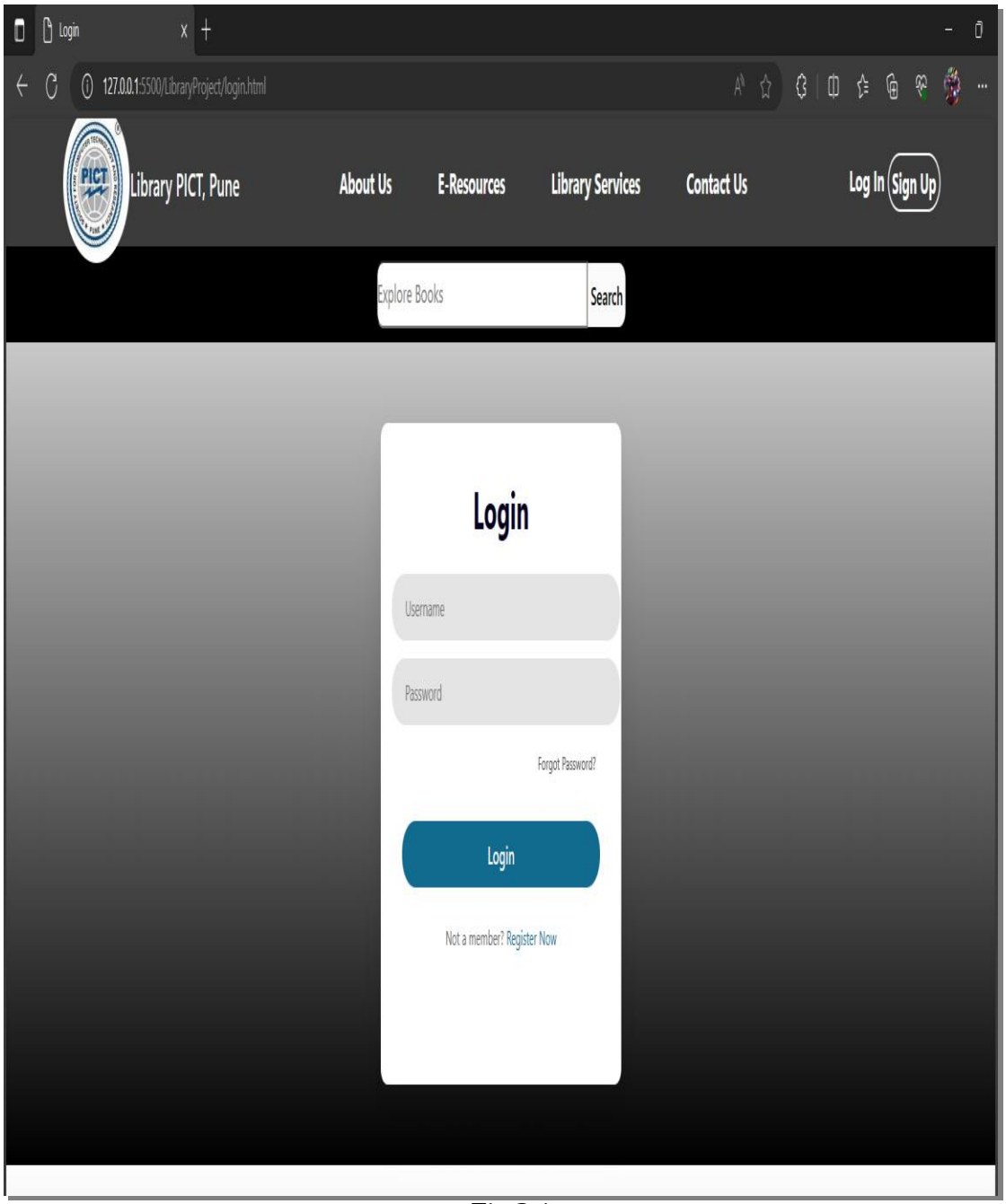

Fig 2.1

BACKEND:-

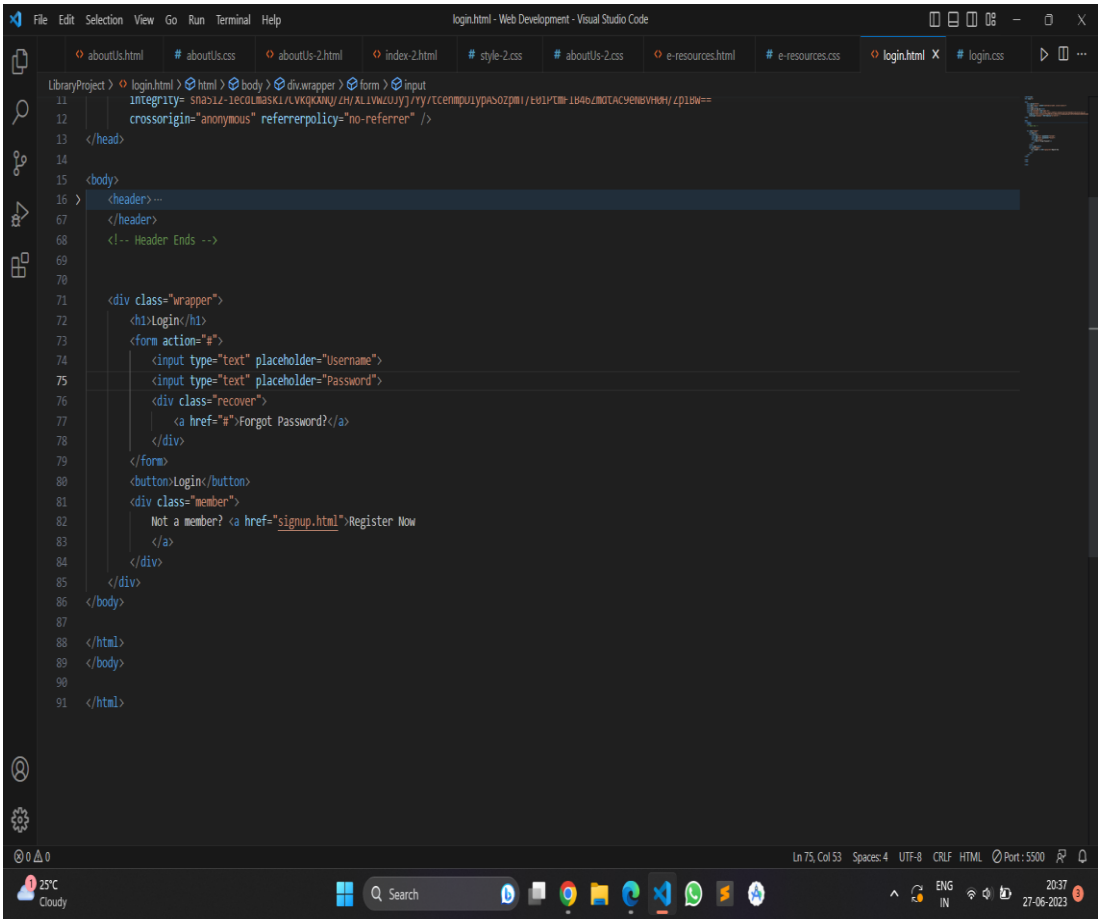

Fig 2.2

3. Sign Up Page: This page will just help to create account of a new user which is then added to the database. The user or admin enters the information given and then the information is then added to database as a new user

FRONTEND:-

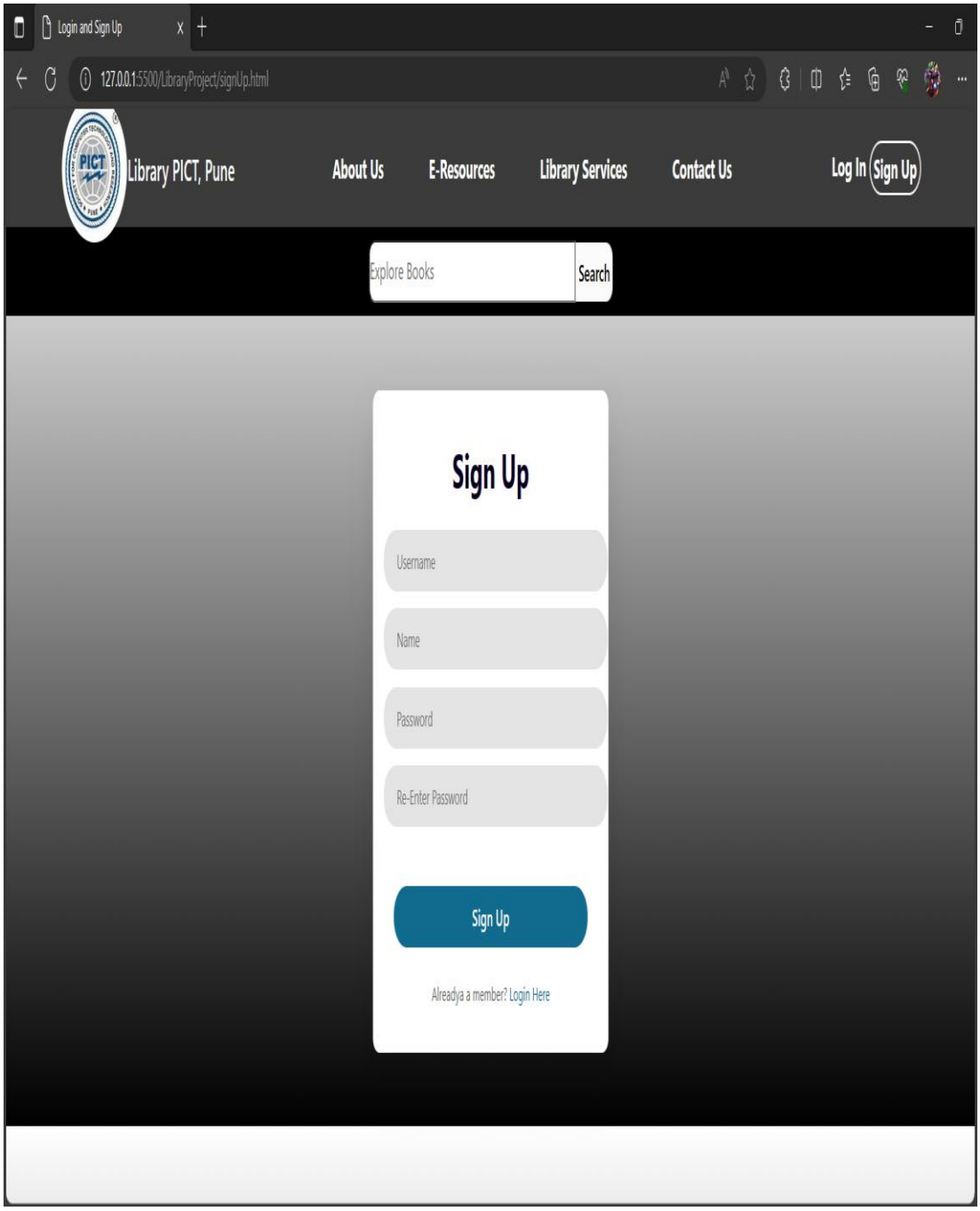

Fig 3.1

BACKEND:-

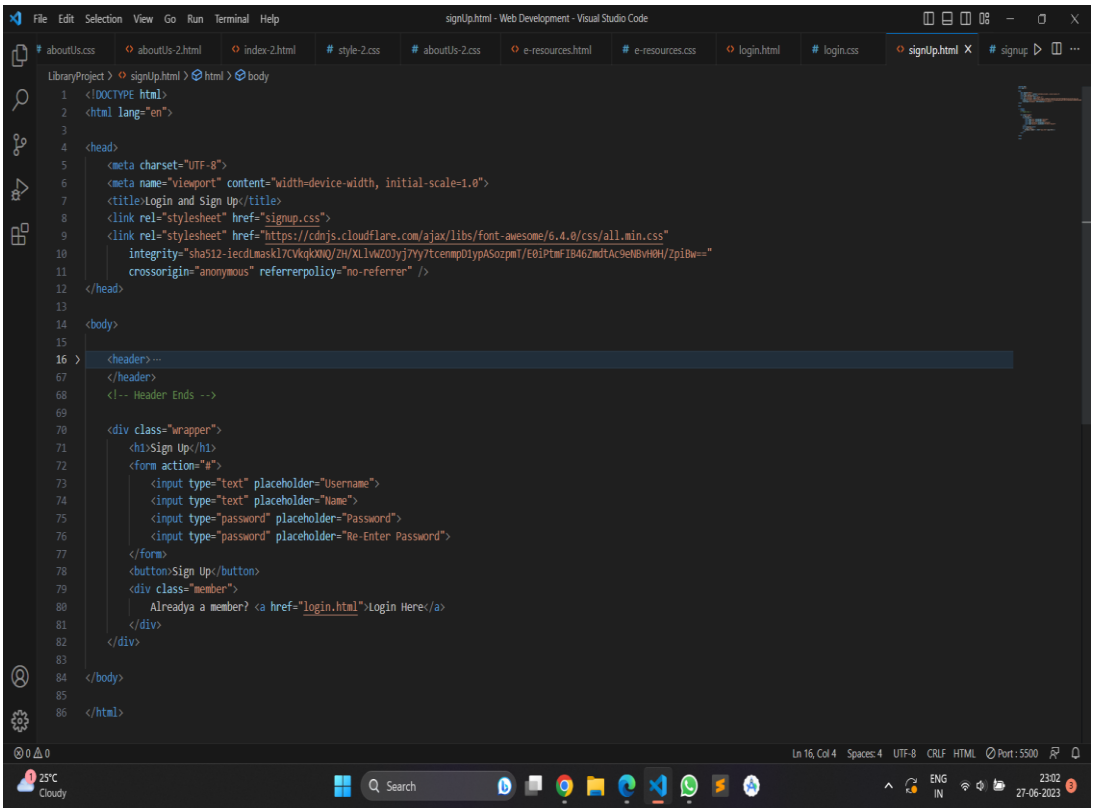

Fig 3.2

Chapter 4
SYSTEM TESTING

Unit testing is undertaken when a module has been created and successfully reviewed .In order to test a single module we need to provide a complete environment i.e. besides the module we would require

- The procedures belonging to other modules that the module under test calls

- Non local data structures that module accesses
- A procedure to call the functions of the module 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 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 for username and password

- Student account addition- In this section the admin can verify student details from student academic info and then only add student details to main library database it contains add and delete buttons if user click add button data will be added to student database and if he clicks delete button the student data will be deleted

- Book Addition- Admin can enter details of book and can add the details to the main book table also he can view the books requests.

2. Test for Student login module

- Test for Student login Form-This form is used for log in of Student .In this we enter the library id, username and password if all these are correct student login page will open otherwise if any of data is wrong it will get redirected back to the login page and again ask for library id, username and password.

- Test for account creation- This form is used for new account creation when student does not fill the form completely it asks again to fill the whole form when he fill the form fully it gets redirected to page which show waiting for conformation message as his data will be only added by administrator after verification.

3. Test for teacher login module- Test for teacher login form- This form is used for log in of teacher .In this we enter the username and password if all these are correct teacher login page will open otherwise if any of data is wrong it will get redirected back to the login page and again ask for username and password..

Chapter 5

CONCLUSION AND FUTURE SCOPE

This website provides a computerized version of library management system which will benefit the students 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. It also has a facility for student login where student can login and can see status of books issued as well request for book or give some suggestions. It has a facility of teacher's login where teachers can add lectures notes and also give necessary suggestion to library and also add info about workshops or events happening in our college or nearby college in the online notice board.

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 chat 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

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