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MINI PROJECT REPORT ON

"LIBRARY MANAGEMENT SYSTEM"

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CERTIFICATE

Certified that the project work entitled **"Library Management System"** carried out by

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bonafide students of IV semester students in partial fulfillment for the award of Bachelor of Engineering in Computer Science and Engineering of St Joseph Engineering College during the year 2022-23.It is certified that all corrections/ suggestions indicated during Internal Evaluation have been incorporated in the report.The project report has been approved as it satisfies the academic requirements in respect of miniproject work .

Ms Jaishma Kumari B   **Dr Sridevi Saralaya**
Project Guide   **HOD-CSE**

EXTERNAL VIVA

NAME OF THE EXAMINER   **SIGNATURE**

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Acknowledgment

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Abstract

This project introduces a Library Management System implemented in Python using the Tkinter GUI library and MySQL database. The system allows users to add books, retrieve book details, view all books, add users, and register books for adoption. It aims to simplify library operations and improve efficiency.

In the realm of library management, various systems have been developed to streamline operations. This project builds upon existing solutions by creating a user-friendly interface and enhancing database management. The primary problem addressed is efficient book and user management within a library. The system's purpose is to offer a comprehensive, easy-to-use tool for library administrators to maintain records and track book adoptions accurately.

In conclusion, the Library Management System presented here provides a practical solution for efficient library operations. Users can easily add, retrieve, and manage books and user records. Future work could involve enhancing the system with features such as fine-grained access control, statistical analysis of library usage, and integration with external data sources to enrich book information further. This project offers a strong foundation for future developments in library management technology.

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Chapter 1

Introduction

In this project, we delve into the development of a Library Management System, a software solution designed to optimize library operations. Through the use of Python, Tkinter GUI, and MySQL database integration, we aim to simplify the complexities of book and user management within a library setting. This report delves into the creation, functionality, and potential applications of our system, which promises to streamline library administration and enhance user experience.

1.1 Problem Definition

The problem addressed in this project is the inefficiency and complexity associated with manual library management systems. Traditional methods of recording and tracking books and user information in libraries are time-consuming and error-prone. This project aims to alleviate these issues by developing a user-friendly Library Management System that automates key processes, making library operations more efficient and accurate.

1.2 Scope and Importance

This project's scope encompasses libraries of all sizes, from educational institutions to public libraries and private collections. It offers a versatile solution that can be tailored to specific library needs, including cataloging, resource management, and user services. Its scalability ensures it can adapt to libraries with diverse collections.

The project is essential for modernizing library management in the digital age. It reduces administrative workloads, minimizes errors, and enhances the user experience. Its digitization efforts preserve library resources and promote online accessibility. By empowering librarians with data-driven insights, it aids in informed decision-making for resource allocation and collection development. Ultimately, it has the potential to transform library administration, benefiting both librarians and patrons.

Chapter 2

Software Requirement Specification

2.1 Functional Requirement Specification

Functional Requirement Specification

- Main Menu: Users can access multiple functions: Add Book, Retrieve Book, View All Books, Add User, Register Book. Each option leads to respective operations.

- User Management: The system must allow librarians to add new users to the database.User information, including user ID, user name, phone number, and address, must be recorded.Users should be uniquely identified by their user ID.

- Book Management: The system must enable librarians to add new books to the library's collection.Book details, including book ID, book title, author, and publisher, must be recorded.Books should be uniquely identified by their book ID.

- Book Adoption: Users should be able to adopt (check out) books from the library.Each book adoption transaction must record the user ID, book ID, issue date, and return date.

- Retrieval of Book Information: The system must allow librarians to retrieve book information based on book ID.Retrieval should display book details, including book title, author, and publisher.If a book is not found, the system should provide a notification.

- Viewing Books: The system must provide an option to view all books in the library collection.The list of books should include book ID, book title, author, and publisher.

- Register Book: Users enter User ID, Book ID, Issue Date, and Return Date.System validates user and book existence, then records the adoption.

2.2 Software Requirement Specification

Software Requirement Specification

- **Language** : Python

- **Database used**: MySQL.

- **Design used**: PIL, tkinter.

- **Operating System**: Window 10.

- **Software used**: XAMPP, VS CODE, Python 3.11.

2.3 Hardware Requirement Specification

- **Installed Memory** : 16GB

- **Processor**: Intel(R) Pentium(R) CPU N3700 @ 1.60GHz 1.60GHz.

- **Hard Disk Space**: 244GB availability .

- **Display**: Intel(R) HD Graphics.

Chapter 3

System Design

3.1   ER Diagram

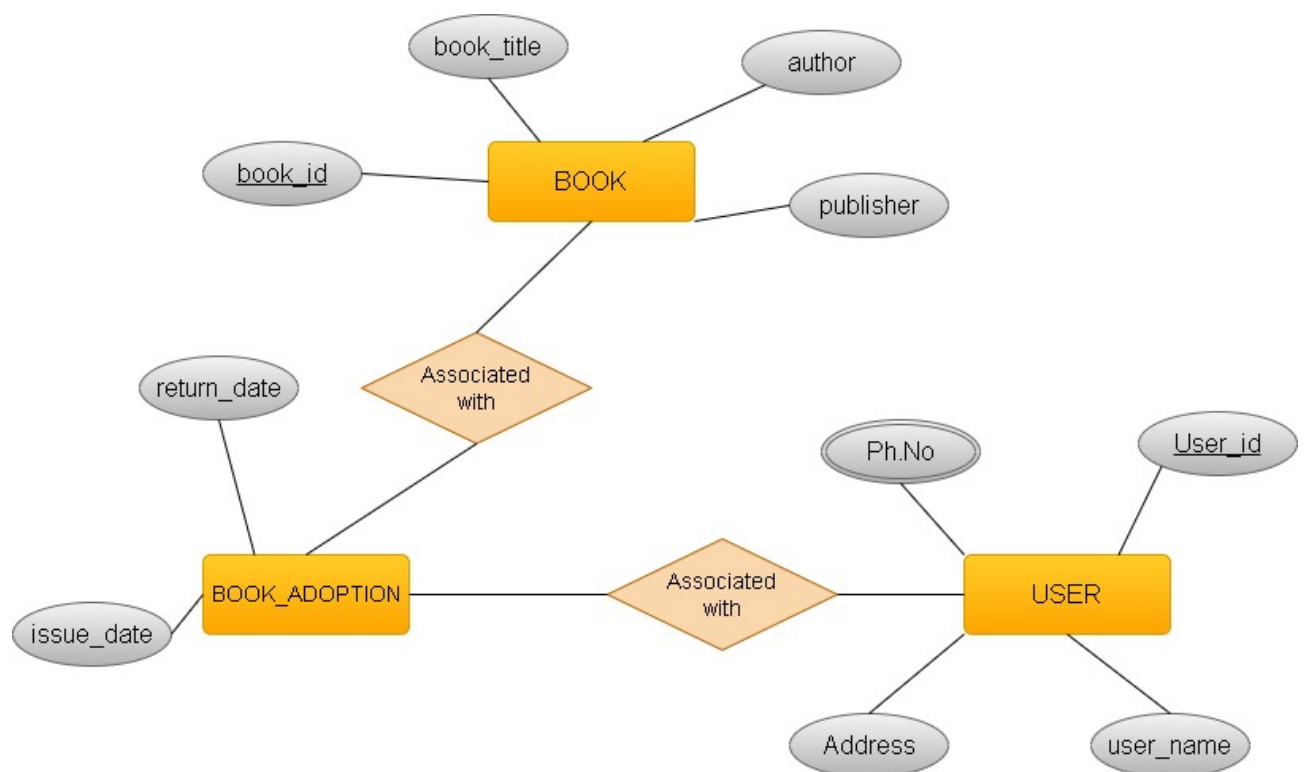Figure:3.1 shows the ER diagram of library database.

Figure 3.1: ER diagram

3.2   Schema Diagram
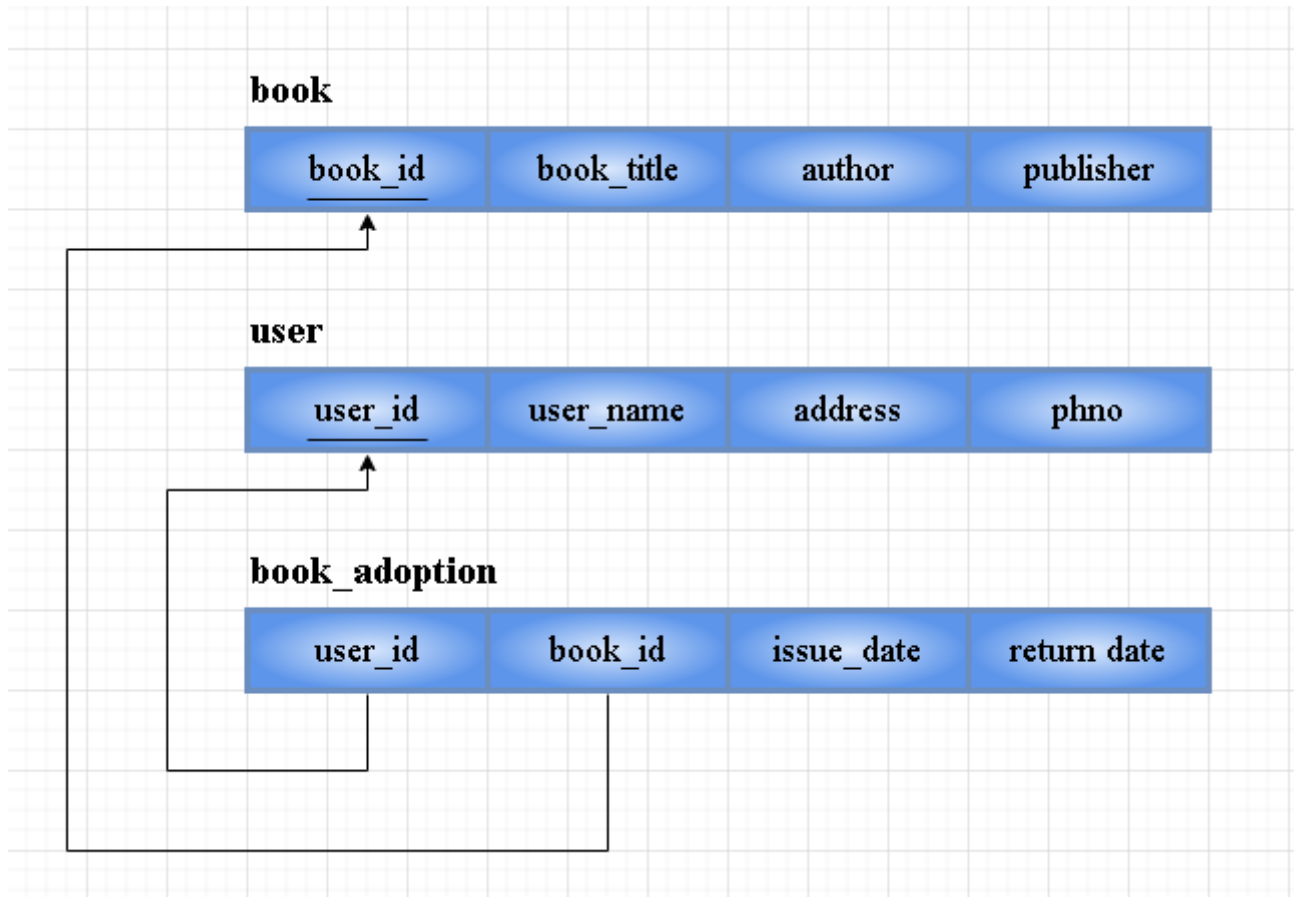
Figure:3.2 shows the Schema Diagram of Library Database.

Figure 3.2: Schema diagram

3.3 Table description

Attributes	Datatype	Constraints	Description
book id	int	primary key	id of book
book title	varchar	not null	Name of the book
author	varchar	not null	author of the book
publisher	varchar	not null	publisher of the book

Table 3.1: Book details (Table 1).

Attributes	Datatype	Constraints	Description
user id	int	primary key	id of user
user name	varchar	not null	name of the user
phno	varchar	not null	user phone number
address	varchar	not null	user address

Table 3.2: User details (Table 2).

Attributes	Datatype	Constraints	Description
user id	int	foreign key	id of the user
book id	varchar	foreign key	id of the book
issue date	date	not null	date of issue
return date	date	not null	date of return

Table 3.3: Book Adoption details (Table 3).

Chapter 4

Screenshots

Figure 4.1 shows the screenshot of the home page, which has five buttons add book, retrieve details, view all books, add user and register book.
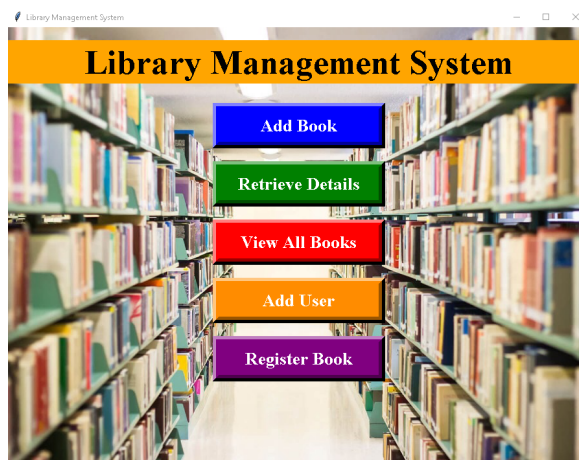

Figure 4.1: Home Page

Figure 4.2 shows the screenshot of the Add book dialog page.It has four fields namely book id, title, author, publisher and one button named as Add.

Figure 4.2: Add Book Page

Figure 4.3 shows the screenshot of the Retrieve Details dialog page.It has one field book id and one button named as Retrieve.If the book is adopted by any user then it will display the details of the user or else it will print as no user adopted the book with specific book id.
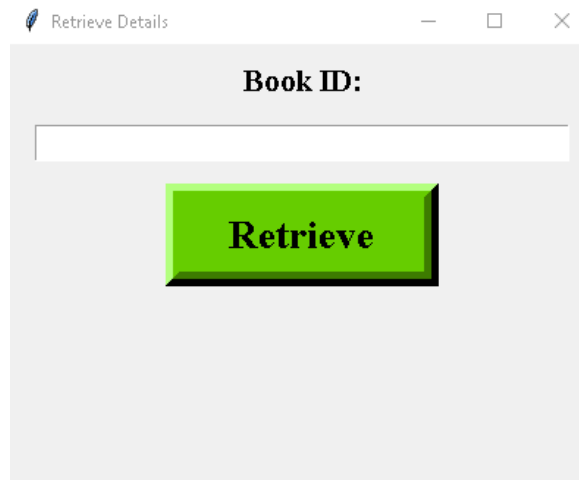

Figure 4.3: Retrieve Details Page

Figure 4.4 shows the screenshot of the View All Books dialog page.It will display the details of all books stored in the database.
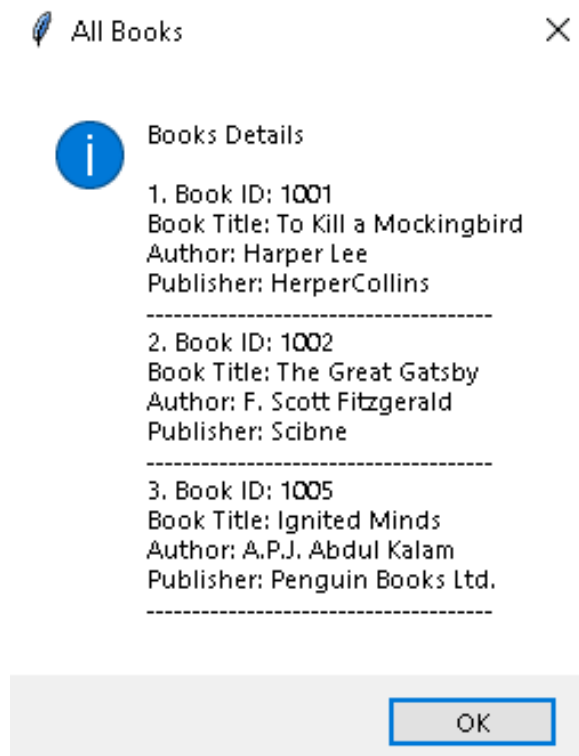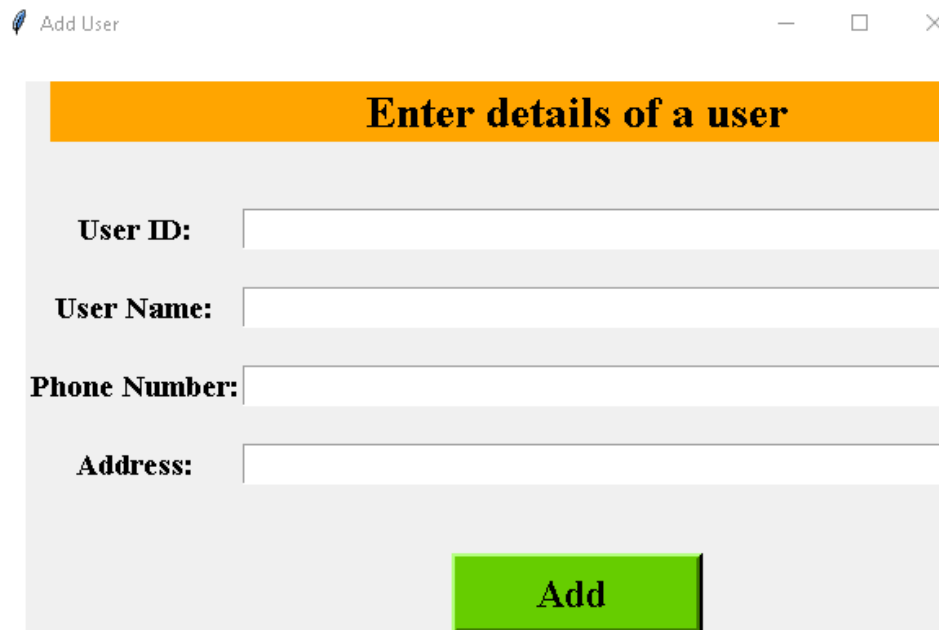

Figure 4.4: Books Details Page

Figure 4.5 shows the screenshot of the Add User dialog page.It has 4 fields namely user id, user name, phone number, address and one button named as Add.By entering the corresponding details and clicking the button the entered details will stored in database.
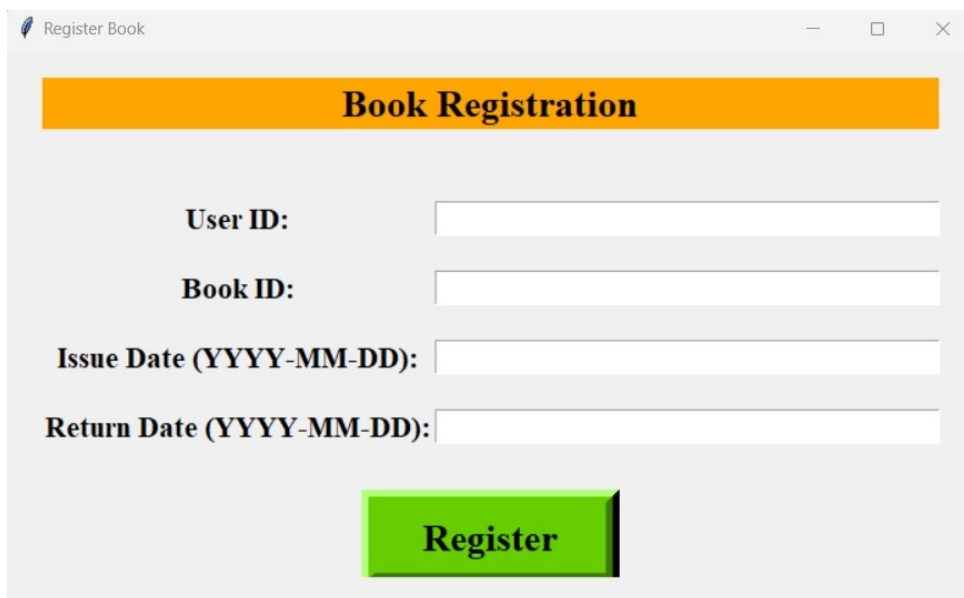

Figure 4.5: Add User Page

Figure 4.6 shows the screenshot of the Register Book dialog page.It has four fields namely user id, book id, issue date, return date and one button named as Register.

Figure 4.6: Book Registration Page

Figure 4.7 shows the screenshot of the library management database which has 3 tables book, user, book adoption.
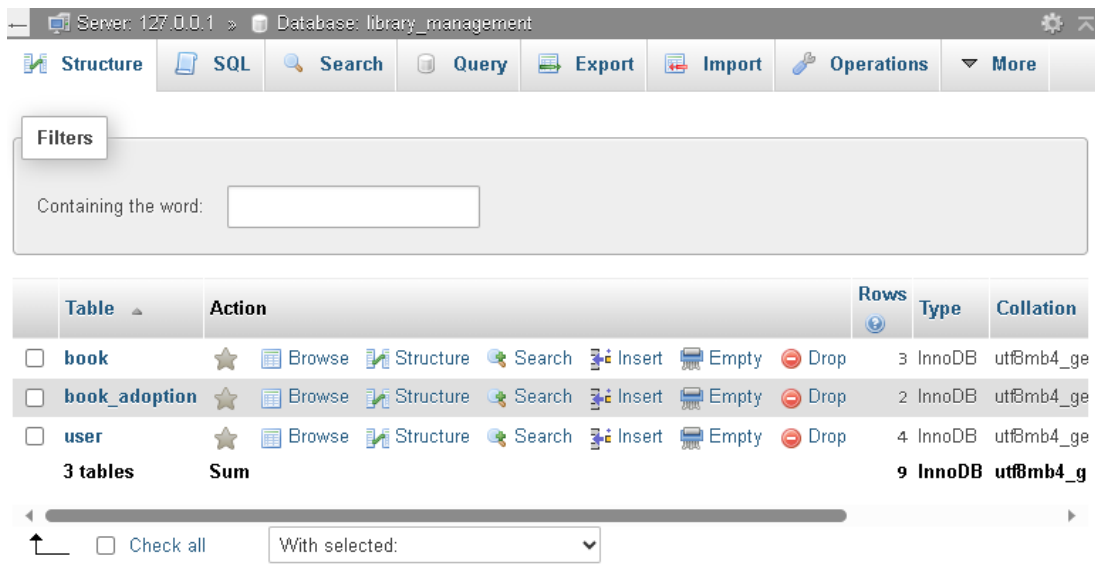

Figure 4.7: Library Management Database Page

Chapter 5

Conclusion and Future Scope

Conclusion

- The development and implementation of the Library Management System have marked a significant milestone in modernizing our library's operations and enhancing user experiences. The system has successfully streamlined processes, making it easier for both librarians and users to manage and access resources.

- By automating tasks such as book registration, retrieval, and user management, the system has significantly reduced manual workloads, enabling librarians to focus more on improving library services and resource curation.

- Users have benefited from the system's convenience, allowing them to retrieve information about books and their availability effortlessly. The addition of features like user notifications has improved communication and engagement between the library and its patrons.

- However, the journey does not end here. To keep pace with changing technology and evolving user needs, the system must continue to evolve and adapt. It is essential to address user feedback and explore further enhancements to ensure the library remains a vibrant and valuable community resource.

Future Scope

- **Mobile-Friendly Web Interface:** Adapting the web interface to be responsive and mobile-friendly, ensuring a seamless user experience on various devices and screen sizes.

- **Integration with Online Catalogs:** Integrating with online book catalogs and databases to provide users with access to a broader range of resources and materials.

- **Multi-Lingual Support:** Expanding language support to accommodate users from diverse linguistic backgrounds, making the system more inclusive.

- **User Reviews and Ratings:** Implementing a feature that allows users to rate and review books, promoting user engagement and helping others discover popular titles.

- **Inventory Management:** Developing tools for librarians to manage inventory efficiently, including tracking book additions, removals, and condition assessments.

- **Interlibrary Loan System:** Introducing an interlibrary loan system that enables users to borrow books from other affiliated libraries, increasing resource availability.

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