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Group Members:

Arya Subedi [313147]

Sujit Khanal [311650]

Utsav Prasad sah [311653]

Abstract

The Library Management System (LMS) is a software tool designed to automate and simplify library operations. It supports book management**,** student registration**,** admin control**,** borrowing/returning of books**,** and secure login**.** The system enhances efficiency, reduces manual workload, and ensures accurate tracking of library resources using file handling and role-based access. Suitable for academic libraries, it offers a user-friendly interface and robust data management.

Keywords:

- *Add Book*
- *Add Student*
- *Add Staff*
- *Remove Record*
- *Update Record*
- *Search Record*
- *Show Records*
- *Issue Book*
- *Return Book*
- *Show Issued Records*
- *Logout*

Chapter: 1 Introduction

1.1 Background

The project titled “Library Management System” is a library management software for monitoring and controlling the transactions maintain the records related to Book purchase, Issue Book, Return Book, Search Book and Member, Fine collection, and all the necessary requirements for the library to management. The purpose of the site is to computerizing and centralizing student and admin details is to simplify the task of maintaining records of library users and administrative staff.

The project “Library Management System” is developed in C-programming which are eligible for running in windows console screen. The library management system is fully automated library service and will be a web-based application where only the registered user can access to the system.

1.2 Problem Statement

In many libraries, the work is still done by hand. This causes several problems, such as:

- Fast report generation is not feasible.
- Tracking books becomes challenging.
- Proper maintenance of information regarding book issuance and returns is lacking.
- Books and member records can get lost or damaged.
- It takes a long time to issue or return books
- It is difficult to search for books or check availability
- More errors happen when writing by hand.
- Keeping track of fines and due dates becomes confusing.

1.3 Objective

The main objective of this project is to build an application Library Management System using C Programming.

1.4 Applications

The **Library Management System** can be used in many places to make book management easier and faster. Below are some places where this system is useful.

- **Schools and Colleges**
  - To manage textbooks, reference books, and student borrowing records
  - To help teachers and students find books quickly

- **Public Libraries**
  - To handle large numbers of books and members
  - To keep the library **organized** and efficient

- **Research Centers and Universities**
  - To track valuable research books and journals
  - To ensure only authorized users can access certain materials.

- **Private Institutions and Training Centers**
  - To maintain small or medium-sized libraries for students and trainers

- **Offices or Organizations with In-house Libraries**
  - For managing books and reports within the organization
  - To reduce time spent searching for materials.

1.5 System Requirements

To run the **Library Management System**, your computer should have some basic software and hardware. Below are the requirements:

1.5.1 Hardware Requirements

- **Processor:** Intel Pentium or higher.
- **RAM:** Minimum 2 GB.
- **Hard Disk Space:** At least 100 MB of free disk space.
- **Keyboard and Monitor:** For input and display.

1.5.2 Software Requirements

- **Operating System:** Windows 7, 8, 10 or later
- **Compiler:** Any C language compiler (Turbo C, Dev C++, Visual studio code)
- **Text Editor:** Notepad or any IDE for writing code
- **Console:** Windows command prompt (for output).

Chapter: 2 Literature Review

A Library Management System is designed to automate and manage daily library operations efficiently, especially in Open and Distance Learning (ODL) institutions.

It includes advanced features like ID card-based login, centralized databases, theft detection, material circulation, and web-based reporting modules to enhance functionality.

The system aims to simplify library processes, reduce manual work, save time and cost, and adapt to the changing needs of users.

It includes separate modules for Admin, Librarian, and Students, each with its own login and specific roles, making the system more organized and user-friendly.

Chapter: 3 Methodology

To make the Library Management System, we first learned how a real library works. We saw that writing everything in registers takes a lot of time and causes many problems. So, we planned to create a computer program to help manage books and users easily.

We chose the **C programming language** because it is simple and works well on a basic computer. We decided to add important features like adding books**,** issuing books**,** returning books**,** searching for books**,** and calculating fines**.**

We started by making the main structure of the program, and then we created the smaller parts step by step. We used functions**,** loops**,** and file handling in C to write the code. File handling helped us save the data like book details and member information, even after the program was closed.

We also made a login system, so only the right person (admin) can use the system. The program has a menu, where users can choose what they want to do, like add a book or search for a book.

After writing the code, we tested every part to make sure it works well. If we found any mistake, we corrected it. In the end, we checked the whole system and found that it worked properly and was easy to use.

3.1 Algorithm

Step 1. START

Step 2. Display: "1. Login

Step 3. IF Register THEN
Input role of Admin
ELSE

Input username, password

IF valid THEN

Show Dashboard

ELSE

Show error, retry

Step 4. WHILE Admin is logged in:

Display options:

1. Add Book
2. Add Student
3. Add Staff
4. Remove Record
5. Update Record
6. Search Record

7. Issue Book
8. Return Book
9. Show Issued Records
10. Logout

Step 5. IF Issue Book:
Input Book ID
IF already issued THEN
Show error
ELSE
Issue book, save record

Step 6. IF Return Book:
Input Book ID

Step 7. IF Logout:
Exit loop

Step 8: Stop

3.2 Flowchart

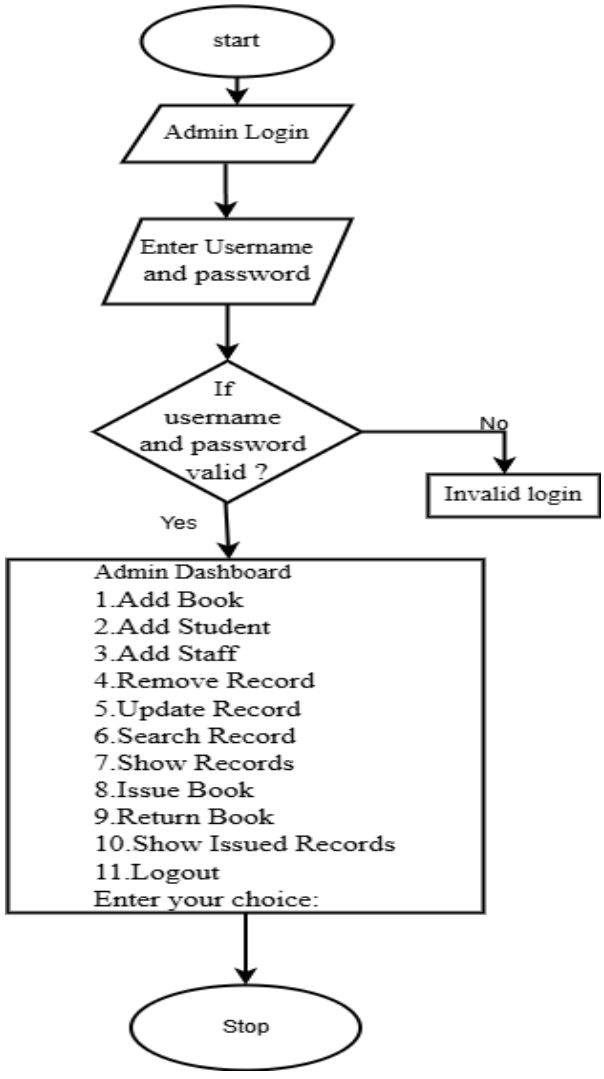

Figure 1: Flowchart: Library Management System

Chapter 4: RESULT & DISCUSSION

4.1 Output

The Library Management System works well with important features like adding books, students, and staff. Each action shows a clear success message to confirm it was done correctly. Users can easily remove or update records with instant feedback.

Searching and viewing records is fast and simple. The system handles book issue and return smoothly, updates stock, and calculates fines when needed. Fine collection is tracked and confirmed.

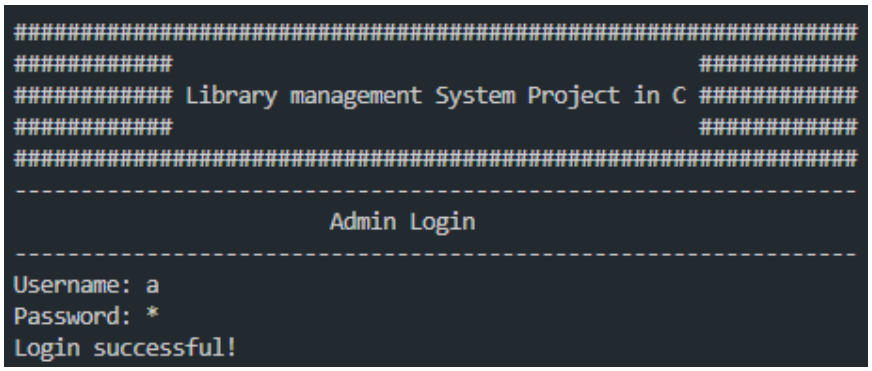

Figure 2: Admin Login Page

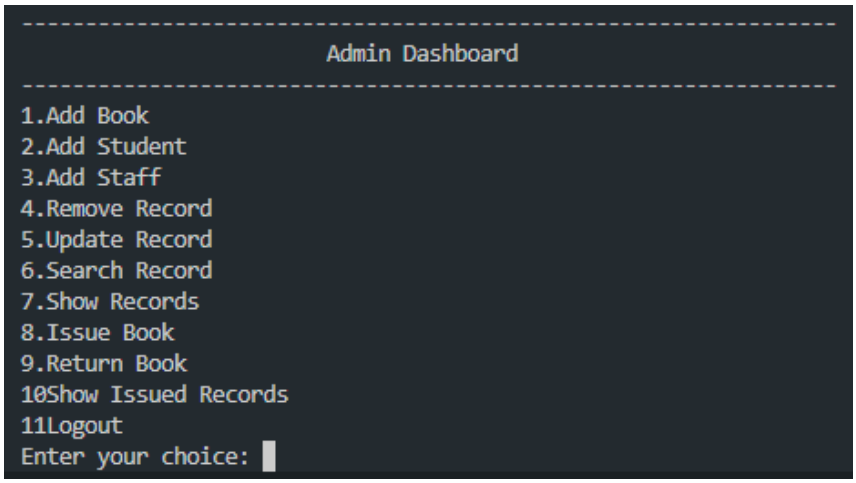

Figure 3: Admin Dashboard

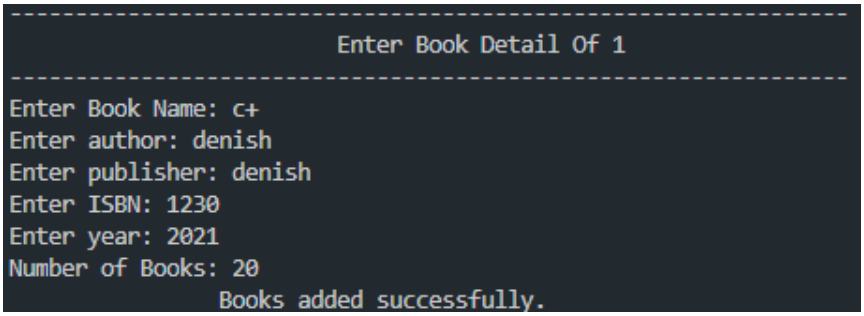

Figure 4: Adding Book

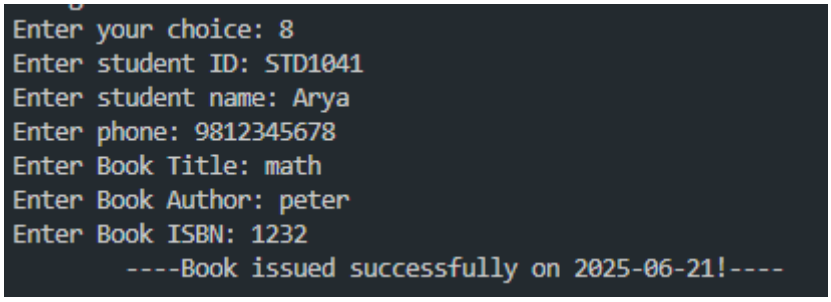

Figure 5: Issue Book

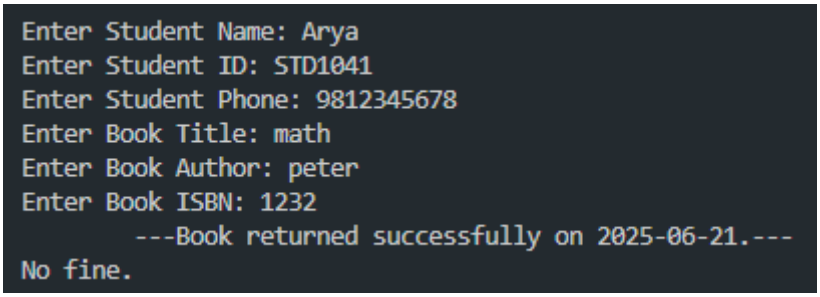

Figure 6: Return Book

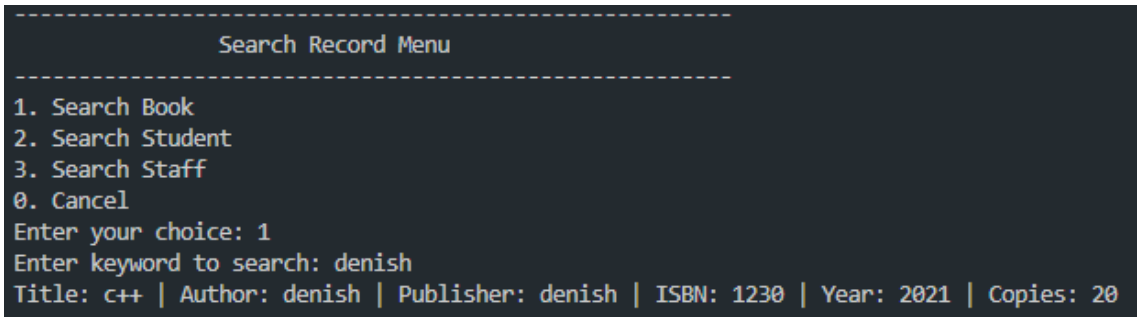

Figure 7: Searching Books

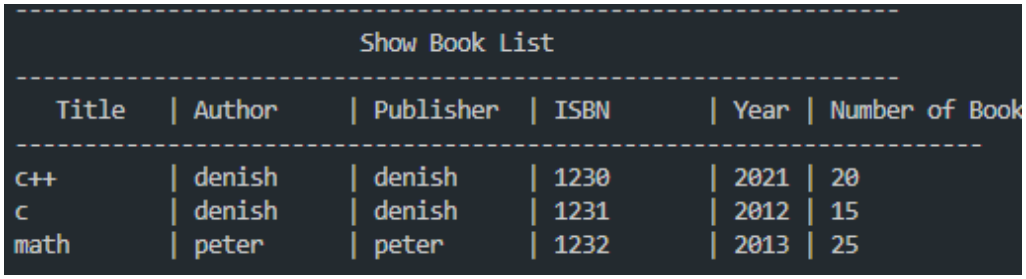

Figure 8: Showing Books list

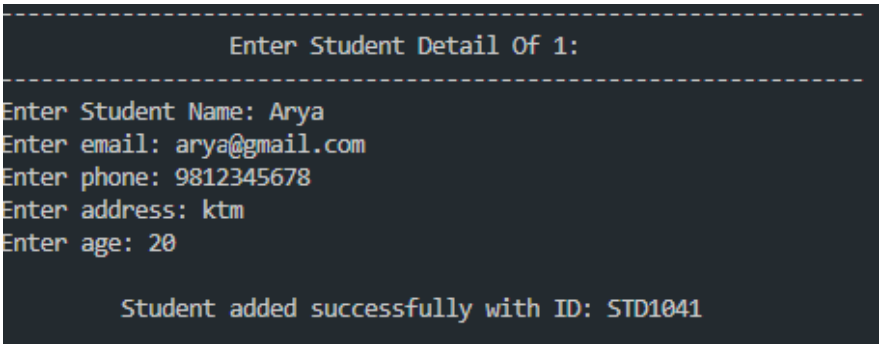

Figure 9: Adding Student

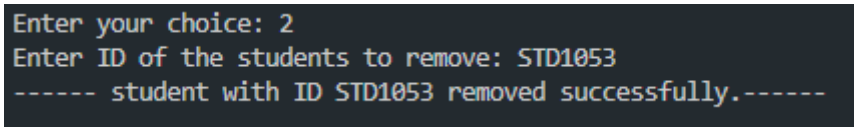

Figure 10: Removing Student

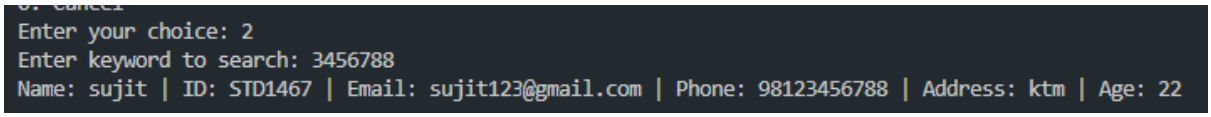

Figure 11: Searching Student

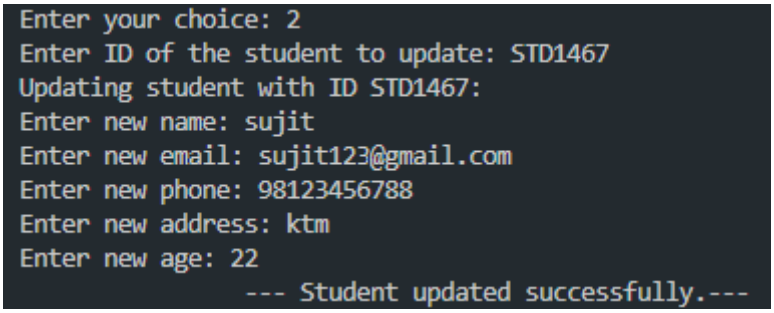

Figure 12: Updating Student

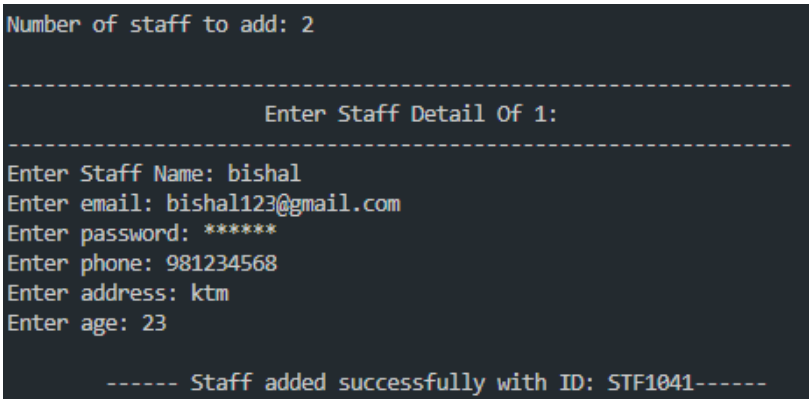

Figure 13: Adding Staff

```
Enter your choice: 3
Enter ID of the staff to update: STF7724
------ Updating staff with ID STF7724 ------
Enter new name: shyam
Enter new email: shyam123@gmail.com
Enter new password: ****
Enter new phone: 985246133
Enter new address: kathmandu
Enter new age: 20
--- Staff with ID STF7724 updated successfully. ---
```

Figure 14: Updating Staff

4.2 Gantt Chart

Time	Weeks 1	Weeks 2	Weeks 3	Weeks 4	Weeks 5
Requirement Analysis					
System Design					
Coading					
Testing					
Documentation					

Figure 15: Gantt Chart

Chapter 5: Conclusions

The Library Management System makes it easy to add, search, update, and delete books and user information. It allows secure login for admins and staff, keeps track of books issued and returned, and saves all data in files. This project uses basic C programming to help manage a library more quickly and clearly. In the future, more features can be added to make it even better.

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