A PROJECT REPORT ON LIBRARY MANAGEMENT SYSTEM

THIS PROJECT IS PART OF C++ Lab

SUBMITTED BY

AP22110010945

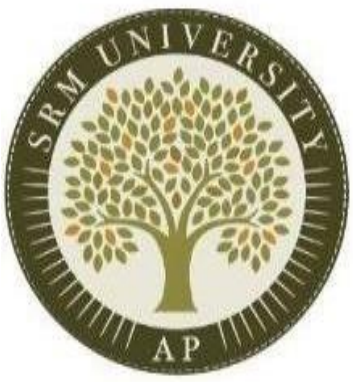
AP22110010960

AP22110010961

AP22110010975

SUBMITTED TO

MRS.KAVITHA RANI



SRM UNIVERSITY *AP*

Andhra Pradesh

SRMUniversity–AP

Neerukonda,Mangalagiri,Guntur

Andhra Pradesh – 522 240

Dec,2023

INTRODUCTION

The Library Management System is a software application designed to streamline the organization and accessibility of a library's book collection. It facilitates efficient cataloging, user interaction, and book lending processes.

PROCESS

1. Define Book Class:
- Create a class named Book with attributes for title, author, and ID.

2. Define Library Class:
- Create a class named Library that contains a vector of Book objects.

3. Implement methods within the Library class:
- addBook: Adds a new book to the library.
- displayBooks: Displays information about all books in the library.
- removeBook: Removes a book from the library based on its ID.
- Implement Main Function:

4. Create the main function.
- Declare a Library object to manage the library.
- Enter a continuous loop for the main menu.

5. User Interaction Loop:
- Display the main menu with options:
- Add Book
- Display Books
- Remove Book
- Exit

6. Handle User Input:
- Accept user input for menu choice.

7. Process User Choice:

a) If the user chooses to add a book:
- Prompt for book details (title, author, and ID).
- Create a new Book object and add it to the library using the addBook method.

b) If the user chooses to display books:
- Call the displayBooks method to show information about all books in the library.

c) If the user chooses to remove a book:
- Prompt for the book ID to be removed.
- Call the removeBook method to remove the specified book.

d) If the user chooses to exit:
- Terminate the program.

8. Compile and Run:
- Compile the code using a C++ compiler.
- Run the compiled program.
- Interact with the Program.

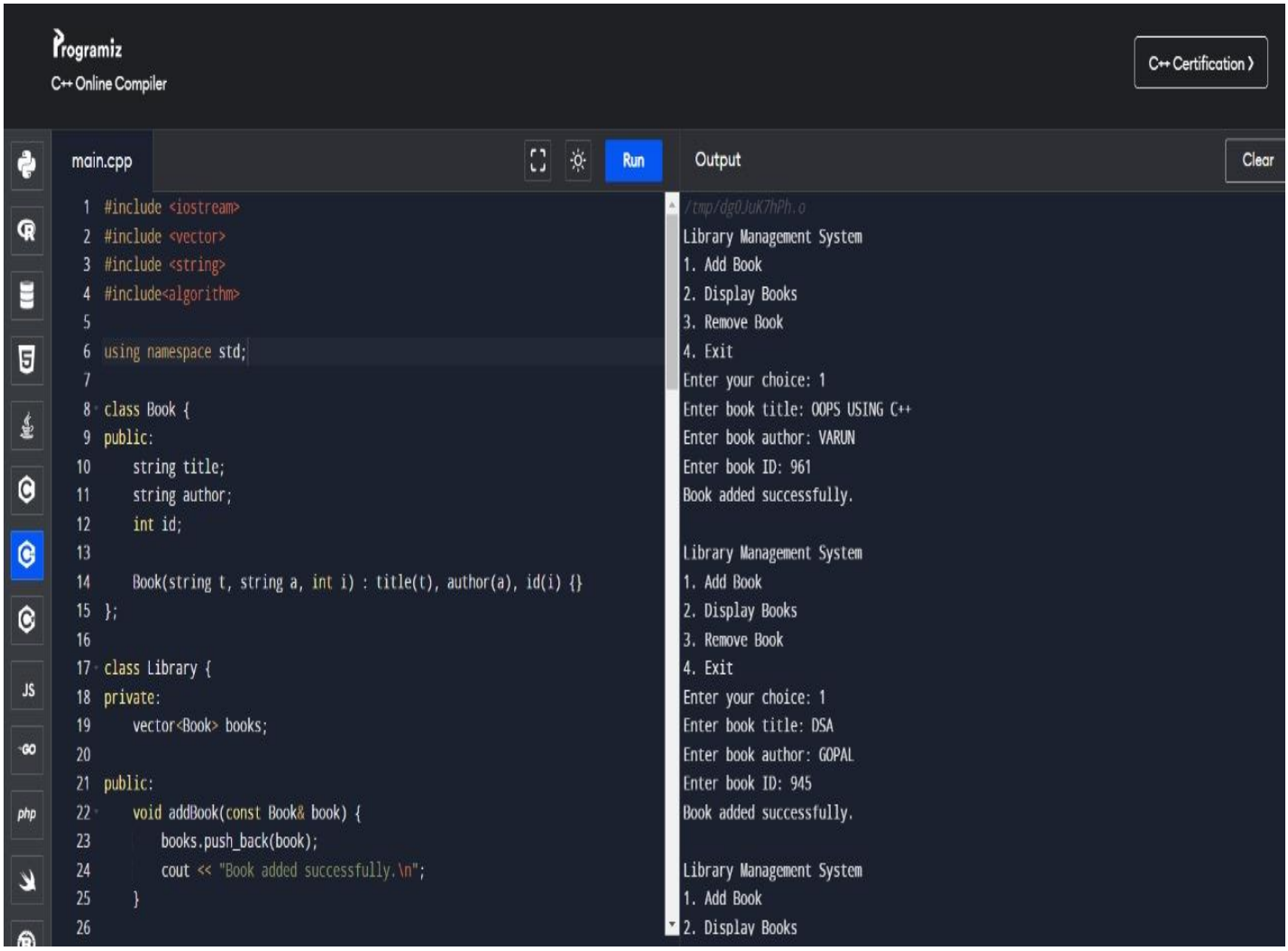
CODE

```
#include <iostream>
#include <vector>
#include <string>
#include<algorithm>

using namespace std;

class Book {
public:
    string title;
    string author;
    int id;

    Book(string t, string a, int i) : title(t), author(a), id(i) {}
};

class Library {
private:
    vector<Book> books;

public:
    void addBook(const Book& book) {
        books.push_back(book);
        cout << "Book added successfully.\n";
    }

    void displayBooks() {
        cout << "Library Books:\n";
        for (const auto& book : books) {
            cout << "ID: " << book.id << ", Title: " << book.title << ", Author: " <<
book.author << endl;
        }
    }

    void removeBook(int bookId) {
        auto it = find_if(books.begin(), books.end(), [bookId](const Book& b) {
```

```
 return b.id == bookId;
        });

        if (it != books.end()) {
            books.erase(it);
            cout << "Book removed successfully.\n";
        } else {
            cout << "Book not found.\n";
        }
    }
};

int main() {
    Library library;

    while (true) {
        cout << "\nLibrary Management System\n";
        cout << "1. Add Book\n";
        cout << "2. Display Books\n";
        cout << "3. Remove Book\n";
        cout << "4. Exit\n";
        cout << "Enter your choice: ";

        int choice;
        cin >> choice;

        switch (choice) {
            case 1: {
                string title, author;
                int id;

                cout << "Enter book title: ";
                cin.ignore();
                getline(cin, title);

                cout << "Enter book author: ";
                getline(cin, author);

                cout << "Enter book ID: ";
                cin >> id;

                Book newBook(title, author, id);
                library.addBook(newBook);
                break;
            }
            case 2:
                library.displayBooks();
                break;
```

```
case 3: {
            int id;
            cout << "Enter book ID to remove: ";

  cin >> id;
            library.removeBook(id);
            break;
        }
        case 4:
            cout << "Exiting the program.\n";
            return 0;
        default:
            cout << "Invalid choice. Try again.\n";
      }
   }

   return 0;
}
```

RESULTS



Programiz
C++ Online Compiler

C++ Certification ❯

main.cpp

Run

Output

Clear

```cpp
#include <iostream>
#include <vector>
#include <string>
#include<algorithm>

using namespace std;

class Book {
public:
    string title;
    string author;
    int id;

    Book(string t, string a, int i) : title(t), author(a), id(i) {}
};

class Library {
private:
    vector<Book> books;

public:
    void addBook(const Book& book) {
        books.push_back(book);
        cout << "Book added successfully.\n";
    }
```

```
Enter your choice: 2
Library Books:
ID: 961, Title: OOPS USING C++, Author: VARUN
ID: 945, Title: DSA, Author: GOPAL

Library Management System
1. Add Book
2. Display Books
3. Remove Book
4. Exit
Enter your choice: 3
Enter book ID to remove: 945
Book removed successfully.

Library Management System
1. Add Book
2. Display Books
3. Remove Book
4. Exit
Enter your choice: 2
Library Books:
ID: 961, Title: OOPS USING C++, Author: VARUN

Library Management System
1. Add Book
2. Display Books
```

Programiz
C++ Online Compiler

C++ Certification ❯

main.cpp

Run

Output

Clear

```cpp
#include <iostream>
#include <vector>
#include <string>
#include<algorithm>

using namespace std;

class Book {
public:
    string title;
    string author;
    int id;

    Book(string t, string a, int i) : title(t), author(a), id(i) {}
};

class Library {
private:
    vector<Book> books;

public:
    void addBook(const Book& book) {
        books.push_back(book);
        cout << "Book added successfully.\n";
    }
```

```
Library Management System
1. Add Book
2. Display Books
3. Remove Book
4. Exit
Enter your choice: 3
Enter book ID to remove: 945
Book removed successfully.

Library Management System
1. Add Book
2. Display Books
3. Remove Book
4. Exit
Enter your choice: 2
Library Books:
ID: 961, Title: OOPS USING C++, Author: VARUN

Library Management System
1. Add Book
2. Display Books
3. Remove Book
4. Exit
Enter your choice: 4
Exiting the program.
```

THANK YOU