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LIBRARY MANAGEMENT SYSTEM

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Abstract : The Library Management System (LMS) is a software application designed to handle the basic operations of a library. The primary objective of the LMS is to provide a user-friendly interface that automates the management of books, members, and transactions, thereby increasing efficiency and reducing the workload of library staff.

The system is designed to perform various tasks such as book cataloging, member registration, book issuing, returning, and tracking due dates. It includes modules for adding new books to the inventory, updating book information, and removing books from the catalog. For members, the system allows registration, updating personal information, and tracking borrowing history.

The LMS incorporates a robust search functionality that enables users to quickly find books based on various criteria such as title, author, genre, and ISBN. Additionally, it supports generating reports on library usage, overdue books, and member activity, which can help in decision-making and improving library services.

Security features are embedded in the system to ensure data integrity and prevent unauthorized access. The LMS provides different access levels for administrators, staff, and members, each with specific permissions to ensure that users can only access functions relevant to their roles.

IndexTerms **- Management system, Library management, Library, Library Management System.**

I. INTRODUCTION

A library management system is software that is designed to manage all the functions of a library. It helps librarian to maintain the database of new books and the books that are borrowed by members along with their due dates.

This system completely automates all your library's activities. The best way to maintain, organize, and handle countless books systematically is to implement a library management system software.

A library management system is used to maintain library records. It tracks the records of the number of books in the library, how many books are issued, or how many books have been returned or renewed or late fine charges, etc.

You can find books in an instant, issue/reissue books quickly, and manage all the data efficiently and orderly using this system. The purpose of a library management system is to provide instant and accurate data regarding any type of book, thereby saving a lot of time and effort.

2.Objectives:

The objective of the Library Management System is to handle the entire activity of a library. The software keeps track of all the information about the books and their complete details. The system contains database where all the information will be store safely. It will be much easier to find particular record rather than opening such huge files and finding a single record from them. The data will be much secure from any unauthorized access. It will be made secure by using passwords and by taking other security measures. Records will be easily edited and the database will easily be updated at the time of entering a record. There

will be no duplication of the data as the computerized will be used. To make the system user friendly. The system will be much easier to use and the operator will feel no difficulty. Library management can contain entities like categories of book, authors, year of publication etc.

3.1 PRILIMINARY SYSTEM ANALYSIS

Preliminary Investigation:

System analysis is a detailed study of various operations performed by a system and their relationship with in and outside of the system. All difficulties have been removed with the help of computerized system.

3.2 Need Of New System:

The aim of proposed system is to develop a system of improved facilities. The proposed system can overcome all the limitations of the existing system. The system provides proper security and reduces the manual work.

Security of data.
Ensure data accuracy's.
Proper control of the higher officials.
Minimum time needed for the various processing.
Greater efficiency.
Better Services.
User friendliness.
Minimum time required.

3.3 Feasibility study:

The feasibility study aims to see whether it is possible to develop a system at a reasonable cost. At the end of the feasibility study, a decision is taken where to process or not.

System Analysis:

Project is related to library management which provides reading services to its members. Any student and staff can become a member of the library by filling a prescribed form. They can get the book issued, so that they can take home and return them.

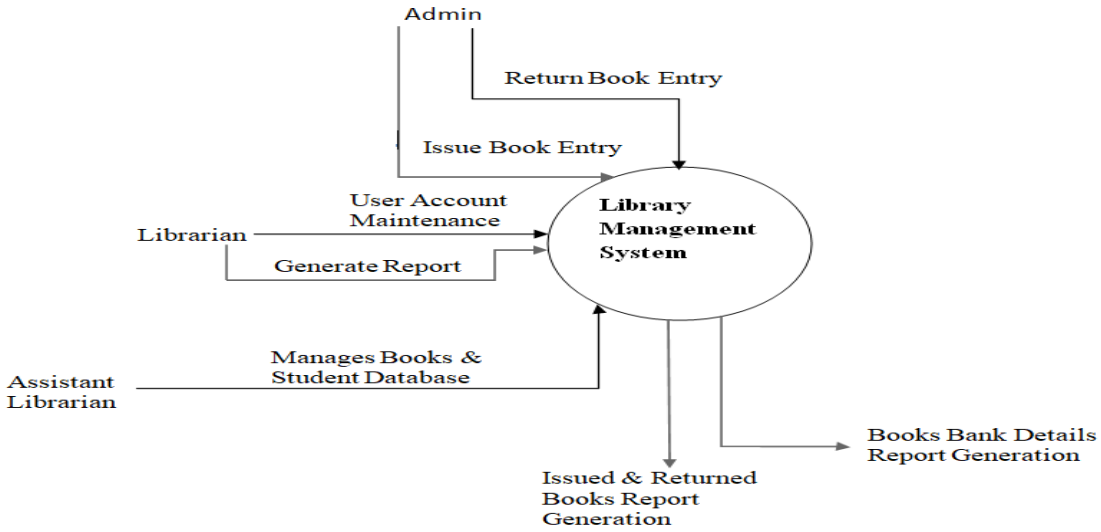
4.1 DETAILED SYSTEM ANALYSIS

It is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components. System analysis is conducted for the purpose of studying a system or its parts in order to identify its objectives. It is a problem solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose. The objective of the system analysis activity is to develop structured system specification for the proposed system. The structured system specification should describe what the proposed system would do; independent of the technology, which will be used to implement these requirements. The structured system specification will be used to implement these requirements. The essential model may itself consist of multiple models, modeling different aspect of the system. The data flow diagrams may model the data and there relationships and the state transition diagram may model time dependent behavior of the system.

The essential model thus consists of the following.

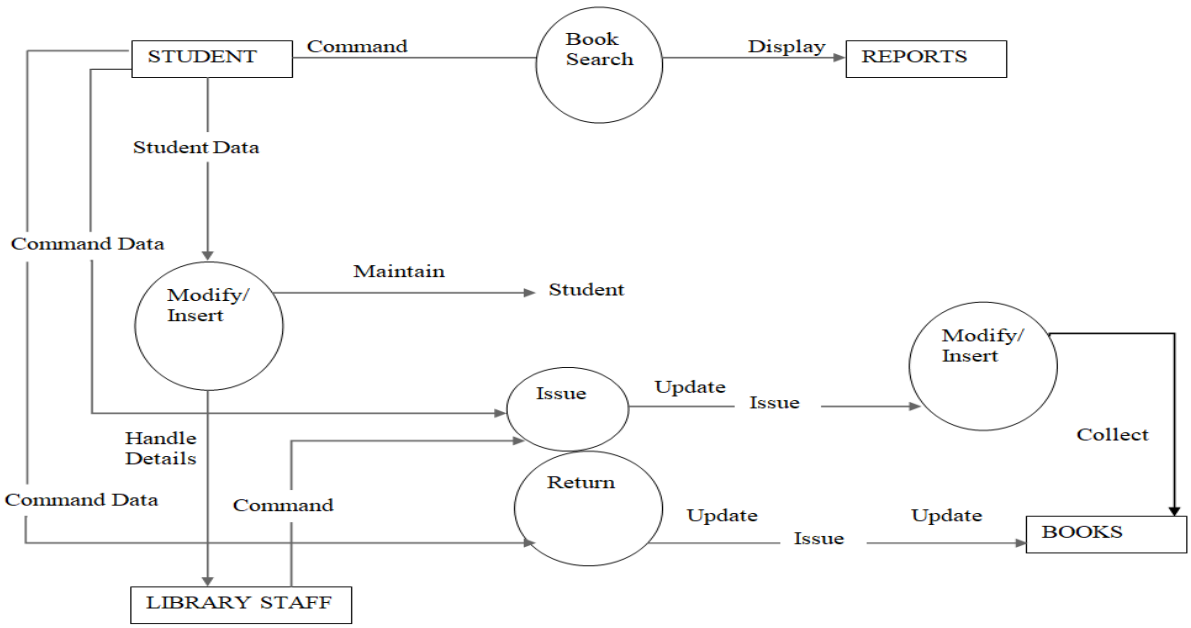
1. System Flow Diagram of Online Library Management System
2 . Data Flow Diagram
3 .Activity diagram for issuing book in library

1. System Flow Diagram



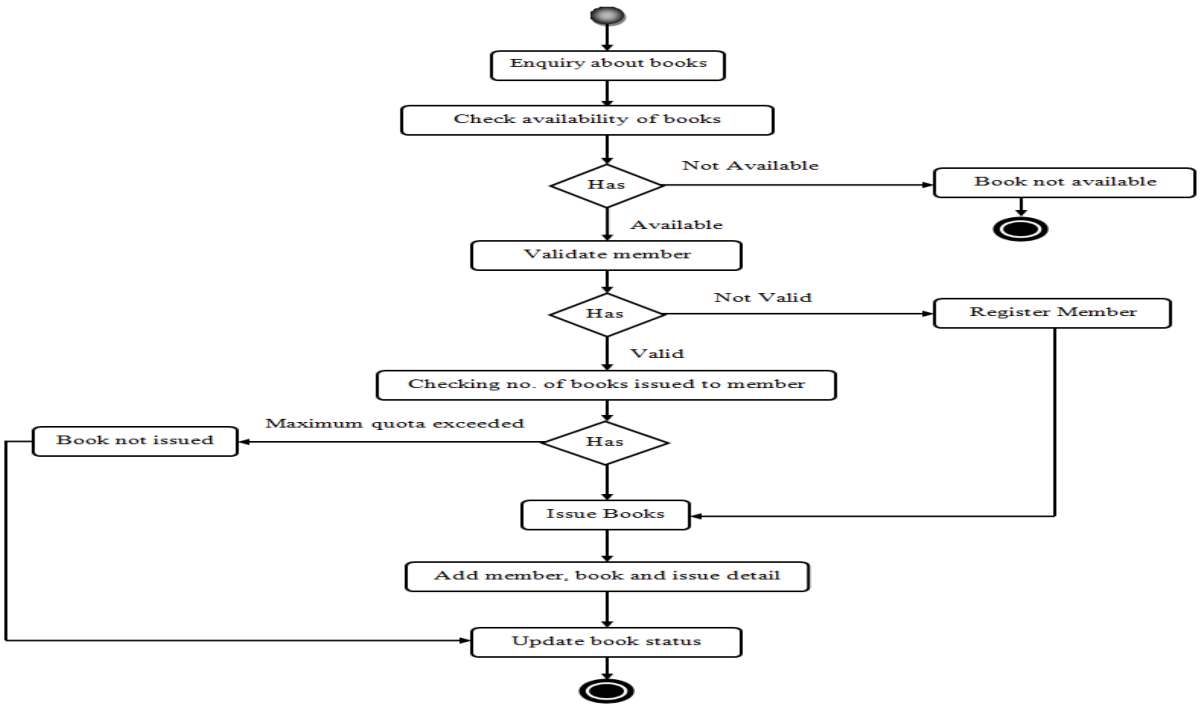
System Flow Diagram of Online Library Management System

2.Data Flow Diagram



Data Flow Diagram of Online Library Management System

3.Activity diagram for issuing book in library

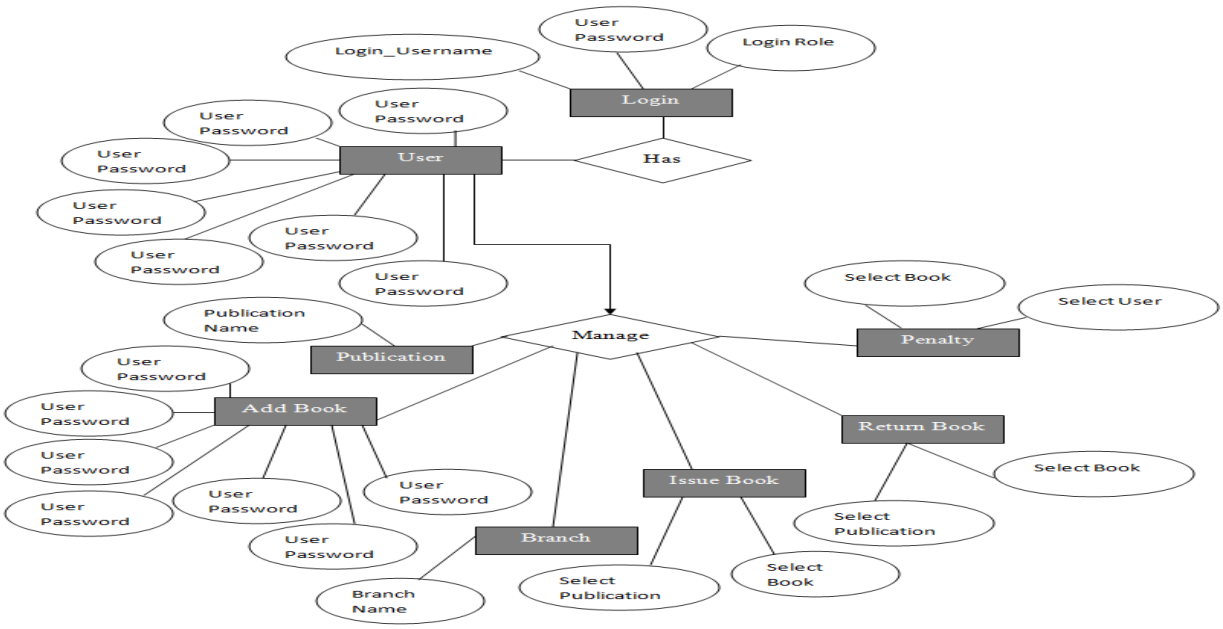


4.2 Database Design:

The Database in library system is intended to automate the library activities such as creating a new borrower, giving books to the borrowers, maintaining the details of all the item that were available in the books. This also helps the libraries by providing information such as total copies available each book, list of books that belong to a particular category.

It is clear that the physical objects from the previous section – the member, books, library – correspond to entities in the Entity-Relationship model, and the operations to be done on those entities – holds, checkouts, and so on – correspond to relationships. However, a good design will minimize redundancy and attempt to store all the required information in as small a space as possible.

ER Diagram

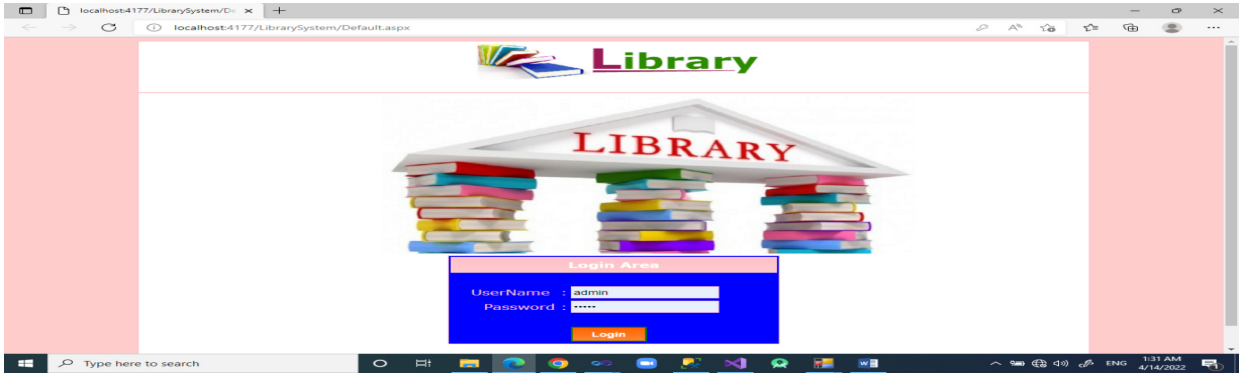


ER Diagram of library Management system

5.1 Proposed System

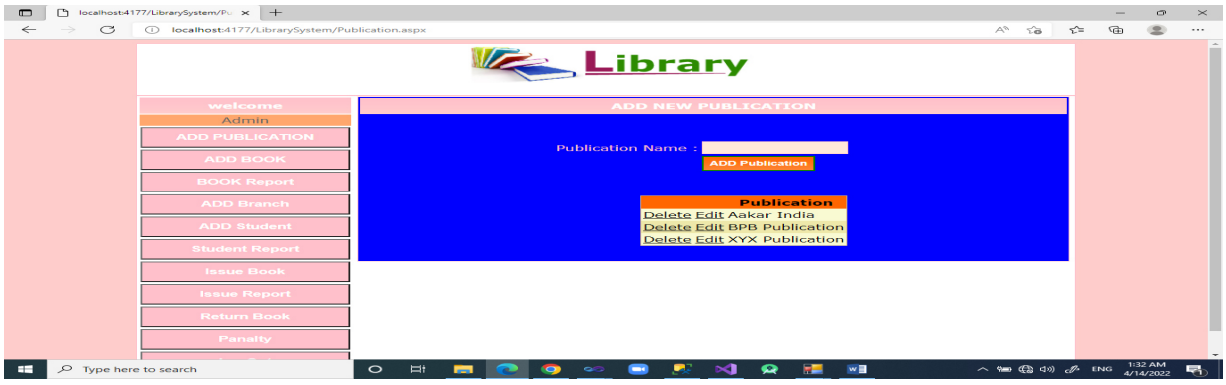
INPUT AND OUTPUT WINDOWS

INPUT WINDOW:
A login is a set of credentials used to authenticate the user. Most often, these consist of a username and password. However, a login may include other information, such as a PIN number, postcode or passphrase. Some logins require a biometric identifier, such as a fingerprint or retina scan.
ADMIN PANEL:



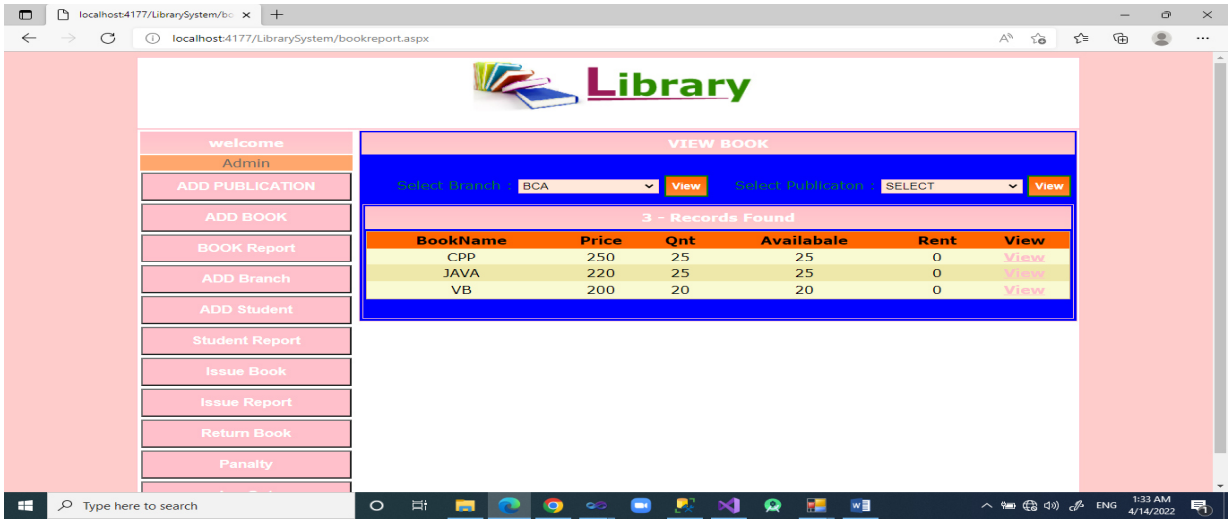
Login form of LMS

5.2 OUTPUT WINDOWS:

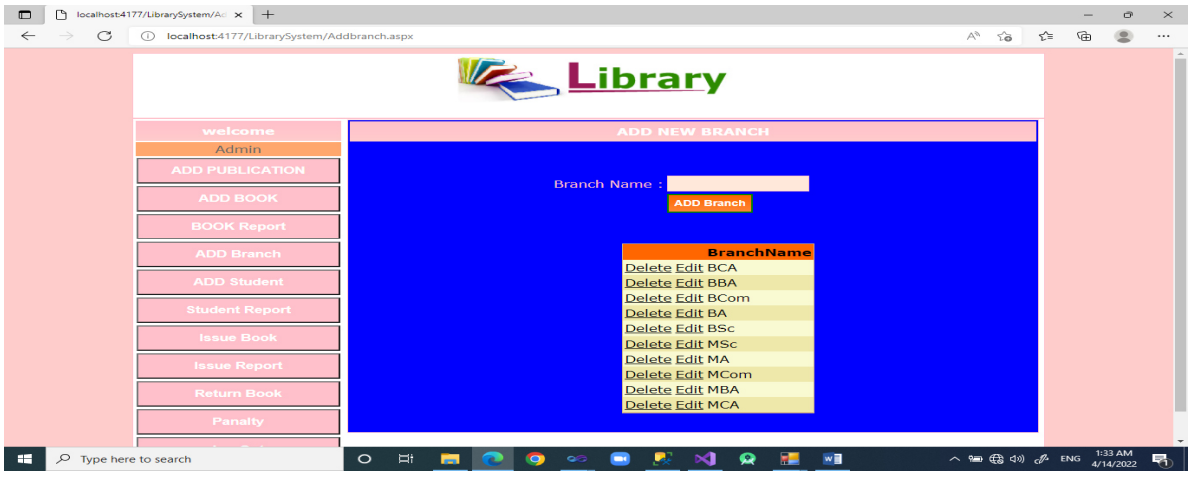


Add Publication

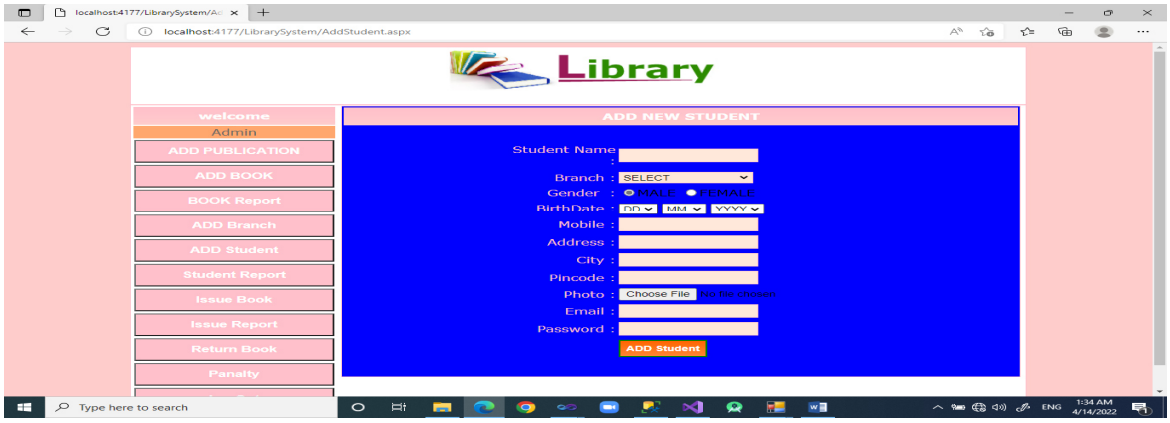
Add Book



Books Report

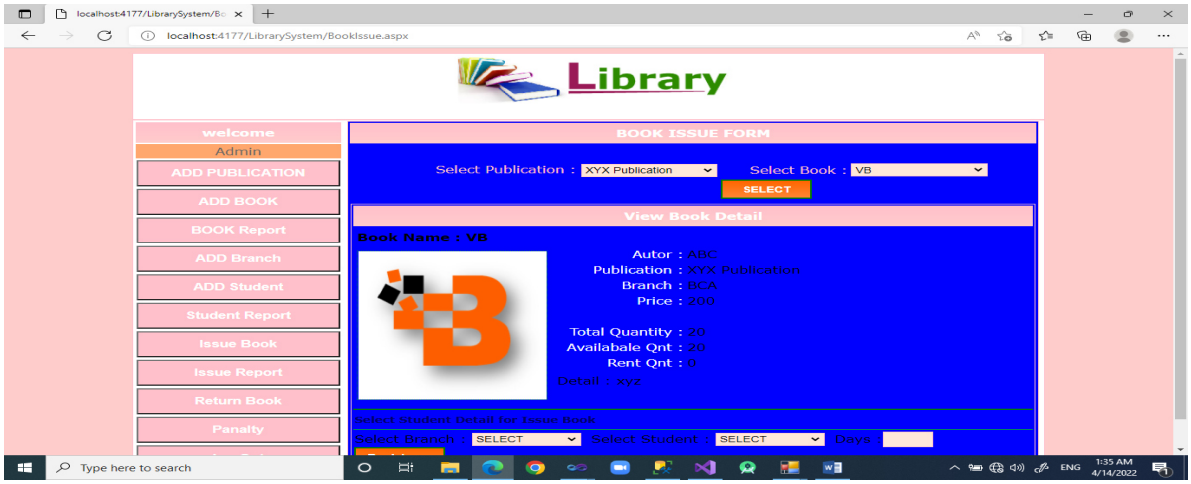


Add New Branch

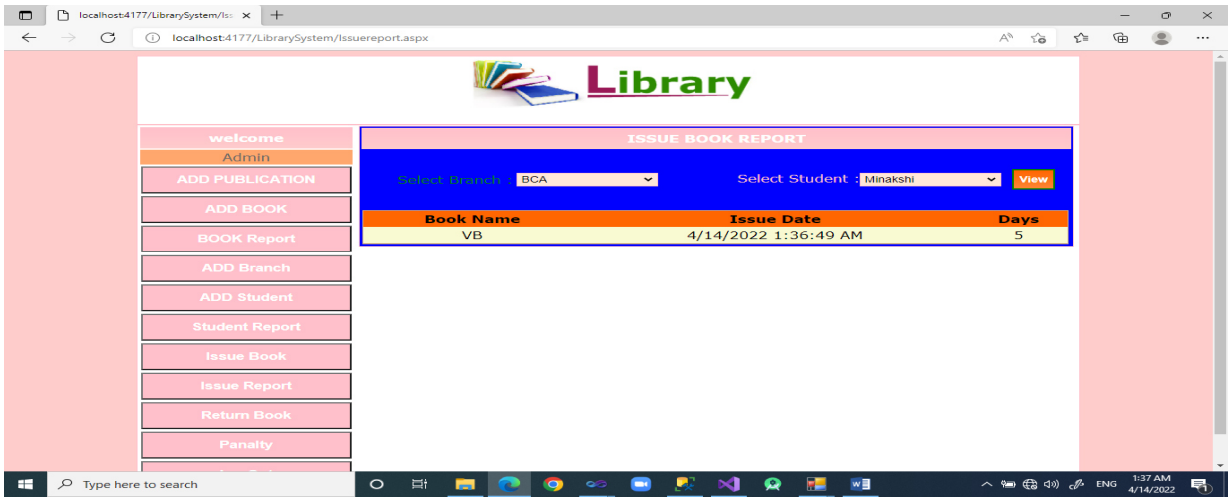


Add New Student

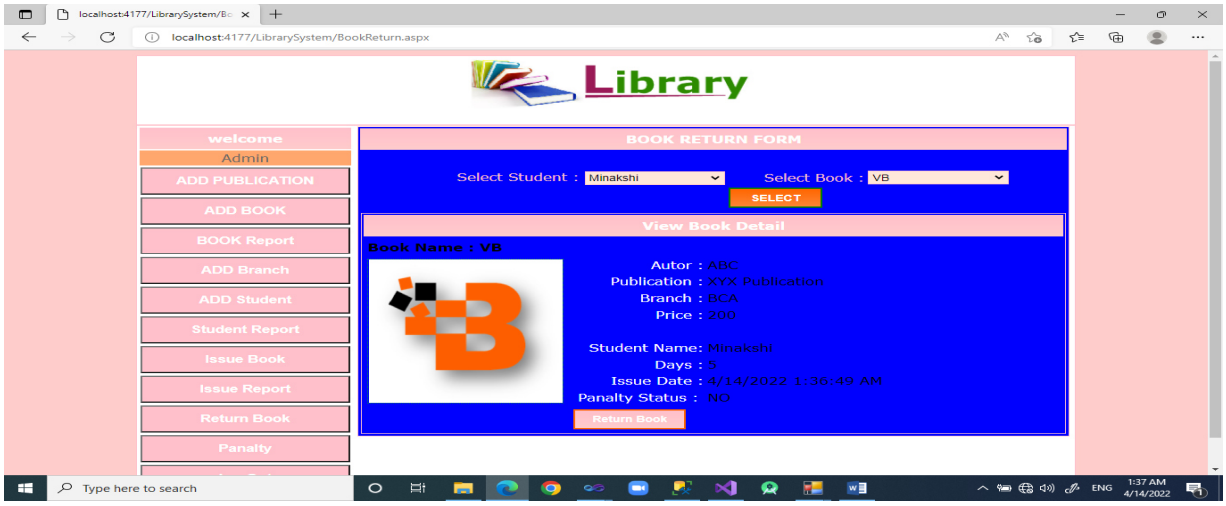
Student Report



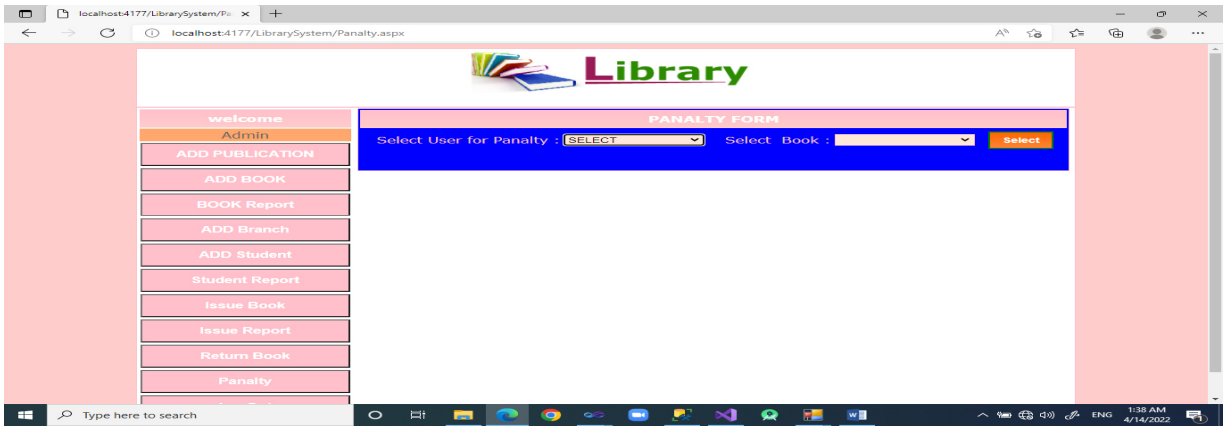
Issue Book Form



Issue Book Report



Book Return



Penalty Report

6.1 Future Scope:

The different areas where we can use this application are:

Any education institute can make use of it providing information about author, content of the available books in library.

Modification can be easily done according to requirements as and when necessary.

The system provides the members with online blocking of books capabilities and the online library system is up and running all day.

7.1 Conclusion:

From a proper analysis of positive points and constraints on the component, it can be safely concluded that the product is a highly efficient GUI based component. This application is working properly and meeting to all user requirements. This component can be easily plugged in many other systems.

In this application we can entry a new book which has a specific id, price, pages, book name and publisher. We also add a student's information such as name, id, , batch, semester which is help admin when a student

issue a book & return a book. If admin wants to see the details information of returning or issuing a book with date, he needs to click just a button on our application.

Hence, we have completed our project without any problems. We have done various researches for this project and this system is designed using HTML and C# in the front end and SQL Server in the back-end DB.

We have used CRUD Functions in it, just which is regularly used in the library. This system helps in the collage and local libraries where works makes easy for librarian and users.

This has been developed by considering all the needs given in the project and by through interaction with the users of the system.

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