



# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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## PUSTAKALAYA: BOOKABOOK

### *Digital Library Management System*

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**Abstract:** *Digital Libraries (DLs) play a central role in the way information is produced, accessed and used in the Internet era. पुस्तकालय-Book A Book is a computerized system that can accomplish the activities in the VESIT library by providing easy accessibility to library usage for librarians and users of the library. The automated library system support evacuates the problems encountered in the manual library. The system provides Student, Faculty and Admin login. Students can check availability of books, issue and reissue books using the system. Admin can avail all the facilities of student and book management. Along with these regular library activities additional features like recommendations of books, reminders and notifications to students and ebooks facilities are also provided. When books are out of stock alternatives like ebooks, similar books and claim request facilities are provided. Faculties of college can donate ebooks and hard copies of books to the library using this system. The design parameters are HTML, CSS, Javascript, PHP and Database MYSQL.*

**Index Terms -** Computerized system, library management system, claim request, issue, reissue, return, notification, recommendation, rating

### I. INTRODUCTION

Library management system consists of a list of records about the student detail, book details and its regular transaction performance. Our project पुस्तकालय : BookAbook is an Automated Library System. It helps us in automating all the procedures of the library. It helps the librarian to manage the library with the computerized system, by use of this system he/she can record various transactions like issue of books, return of books, adding of new students and more. The existing system is not fully computerized and hence it consumes a lot of time of librarians as well as of students.

The system has modules namely the admin, the faculty and the student. Admin modules describe the content of the book and student details like adding the book, accepting the requested book and returning the book etc. Student module which describes the student act of daily work in the library like view book details, placing a request for the book and return book. The faculty module has an additional facility to donate books and update e-books into the system. The system reduces the time by preventing formation of long queues and provides efficiency to everyone.

### II. LITERATURE SURVEY

Shubham Zunjar, Rahul Yadav, Rutuja Markad, Sneha Patil have discussed in their paper "Library Management System" about the importance of digital libraries. In this paper, they aim to develop a computerized library management system to help students, librarians and faculty and which also reduces the manual work.[1] A.Thendral Mary, S.Ramya, Mr.S.Krishna Murthy, Dr.A.Valarmathi proposed their paper "Enhanced Library System" which majorly focuses upon overcoming the issue of the current library system i.e. data loss and time consuming. They have developed a Windows application using Eclipse Neon IDE tool and MySQL which aims to provide fast access to libraries for the user.[2] Ms. Praveena Mathew, Ms. Bincy Kuriakose, Mr.Vinayak Hegde informed in their paper "Book Recommendation System through Content Based and Collaborative filtering method" about a book recommendation system which performs content based filtering on the dataset and recommends a book based on user's interest. They also perform Collaborative filtering which helps in predicting the best book with respect to the user's choice.[3]

### III. EXISTING SYSTEM

The Traditional Library Management System works in an offline manner. Students have to stand in a queue for issuing, reissuing and returning books. They have to wait in the queue without knowing whether the required book is available or not. This increases the queue waiting time and decreases the efficiency of the system. The System does not provide students the facility of requesting and recommending a book. This system is also disadvantageous for the staff as it does not maintain a proper track /record of the transactions of a particular book and a particular student. Also, the existing system fails to manage all the transactions of the fine payments of a particular period of time. Since it is a completely manual process, there can be loss of data due to human errors. There is a crucial need of improving and upgrading this system into an automated version.

### IV. ARCHITECTURE OF PROPOSED LIBRARY MANAGEMENT SYSTEM

**पुस्तकालय.** BookAbook is a centralized automated library system. The system is designed such that only authenticated users can access the system. The users are students and admin who can use the system once they login with their valid email-id and passwords. All the data is stored, updated and fetched from a centralized database. The transaction details of all activities are recorded. This ensures that the system is transparent and reliable.

The students are able to search a book, issue and reissue a book and request a book, claim the book in case it is unavailable. The admin is responsible for updating the details about books, students, events, library timings, etc. He is responsible to confirm the issue, reissue and return of the books. The system provides book recommendation and fine functionality to enhance user experience.

#### 4.1 PROPOSED SYSTEM:

The Proposed system automates all the library’s activities. Students can find books in an instant, issue/reissue books quickly, and view all their details efficiently at a place. The purpose of this system is to provide instant and accurate data regarding any type of book, thereby saving a lot of time, effort and chaos. The system automates the whole process of book issuing and return for the librarian as well as the students and faculty. The library staff can manage and view all the records of books and users. Fine generation and payment for students is automated. All the transactions are transparent and proper records are maintained. Book Recommendation module helps students to choose a book to refer to. The Notification module helps students by notifying them about their activity concerned with issuing/reissuing/returning the book. Pre-booking and checking the availability of books enhances the user experience.

### V. MODULE DESCRIPTION

The system has three modules

1. Admin
2. Faculty
3. Student

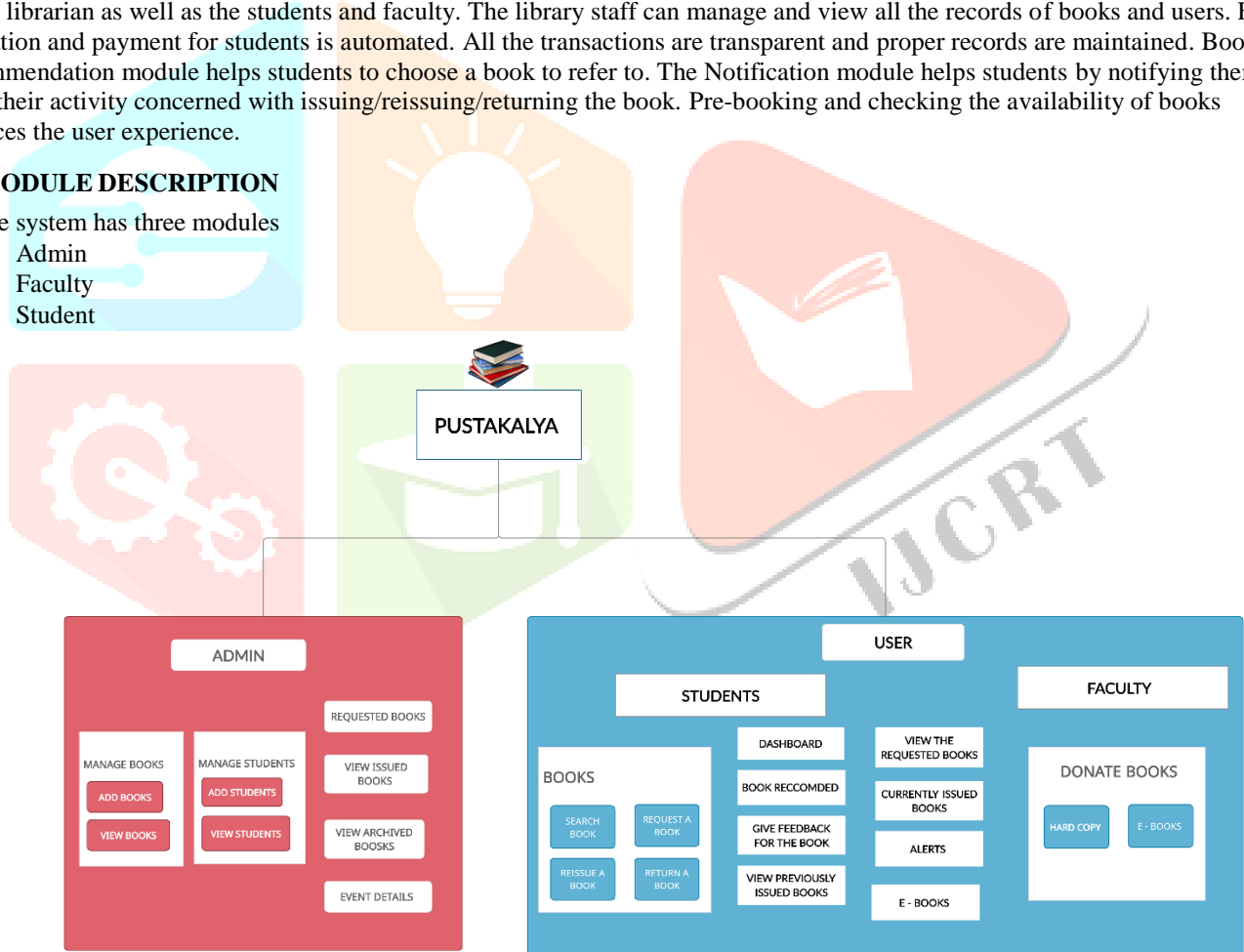


Fig 5.0 MODULAR DIAGRAM

The functionality provided by the system are given below

#### 5.1 Search Book

The students can search books of their interest online and check the books availability in the library. The filtering option based on book name and author makes it more efficient.

#### 5.2 Book Availability

The system checks the availability of the book and displays the count in the user end. If the book is available, the user can issue it. If not available students, they have an option to either claim a request for the book or can refer to the e-book.

### 5.3 Book Request

After checking the availability of a book, users can make an issue request. Students can make the issue request only if it satisfies the constraint that the maximum number of books that can be issued per student are 2. In case they already have 2 books issued, to make a new request, they will have to return the currently issued book. After the issue request is placed, students will be notified and they can collect the book within 2 days from the library. If he/she fails to do so, the request will automatically get cancelled.

### 5.4 Book Issue

If the book is collected from the library within 2 days of requesting the book, it will be issued to that student. The admin is responsible for confirming the issuing of books by students. As the confirmation is done, the notification about the issued book will be displayed on their personal dashboard which would contain the book id, the issue - return date, etc.

### 5.5 Book Reissue

After the student has issued the book, he/she can reissue the book after a minimum 3 days of issuing it. In case the student wants to reissue and has a fine, he/she will have to pay the fine first and then the book can be reissued. If the book is in high demand and its copies are not available in the library, the reissue facility is prohibited for that period of time.

### 5.6 Fine Calculation

The fine functionality helps the admin as well as students to have a transparent and centralized penalty collection module. If the user fails to return or reissue the book before the deadline, a penalty is charged per day. This functionality updates the fine every day.

### 5.7 Book return

The Return facility is implemented in the admin module. The user has to visit the library to return the book. In case there is any fine pending, the user has to first complete the payment. The return will be confirmed once he has no fine on the book and the book is received in a proper condition.

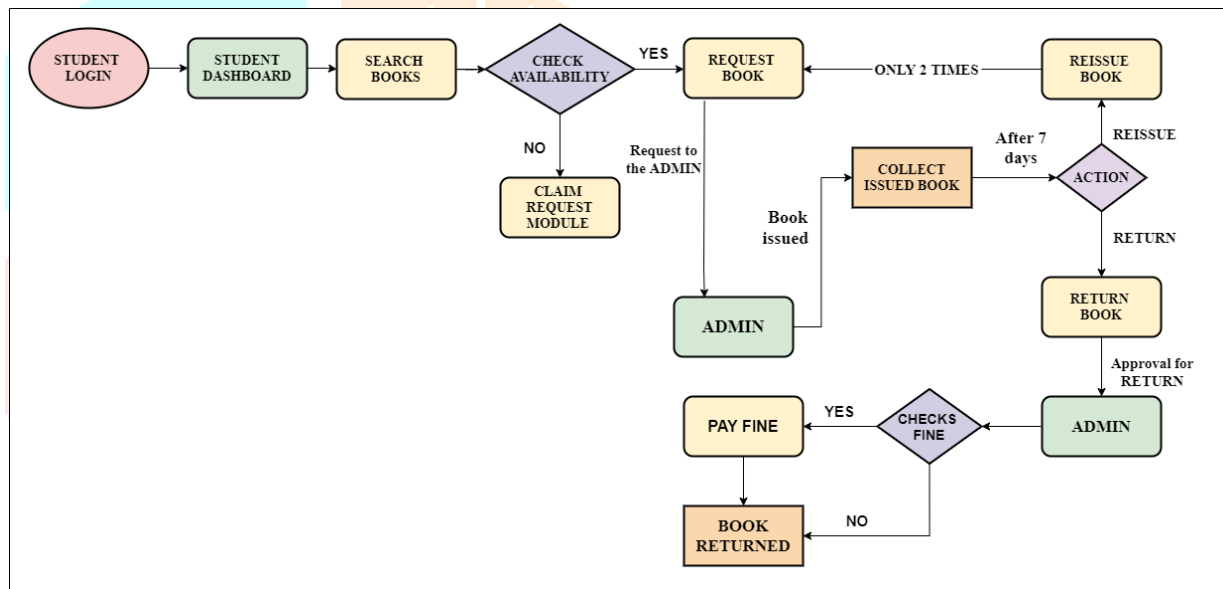


Fig 5.1 Search book, Request, Issue, Reissue and Return Modules

### 5.8 Claim Request

The claim request module works when a book is unavailable or out of stock. Students can use this module when they need the book on an urgent basis and thus get notified once an unavailable book comes back in stock at the library. The system maintains a queue of such students and notifies them. Also, if the claim requests for a particular book are higher than:

- The reissuing process of that book is put on halt temporarily.
- Once the book is back in stock the students will be notified as well as issued the book on first come first serve basis

This module ensures that there is proper distribution of books among the students especially when the books are out of stock.

### 5.9 Notification

This feature notifies the user about various updates regarding the updates about his issue, reissue and claim requests. In case the notification is about the return, the user is provided with a form to rate the book. These notifications are given through a system generated mail as well as on the Student dashboard.

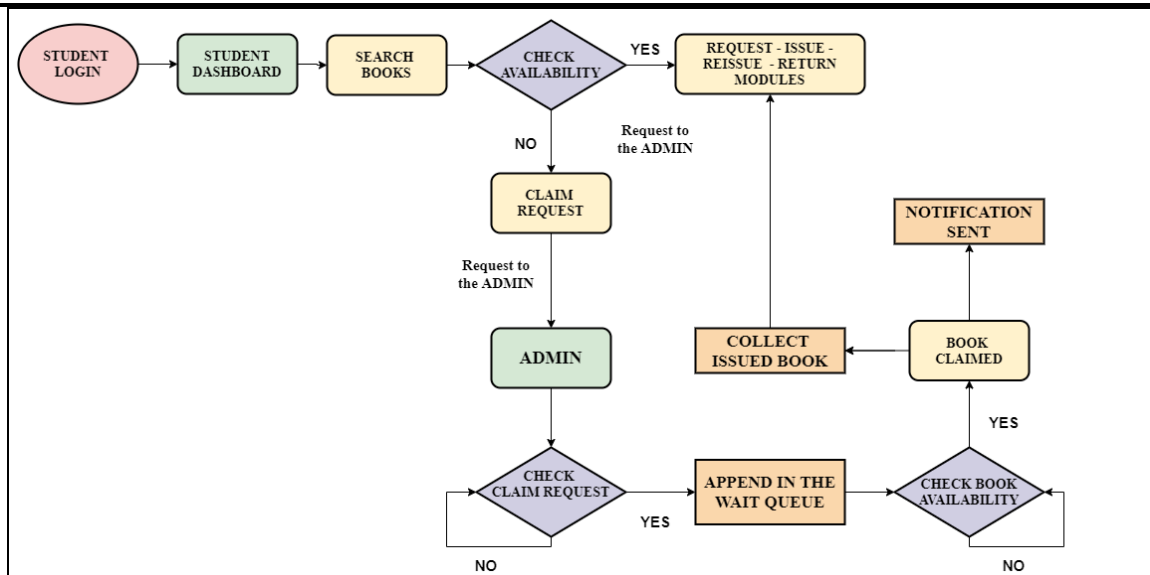


Fig 5.2 Claim Request and Notification Module.

**5.10 Book Recommendations**

The system also recommends books to students similar to their interests. The recommendation module of the system is designed based on Content Based Filtering and Collaborative Filtering.

**A). Content Based Filtering:**

Content Based Filtering system selects and determines items based on the correlation and relationship between the content of the items in the dataset. This system works by checking the categories/domain of the book and recommends books based on the same category.

**B). Collaborative Filtering:**

Content Based Filtering approach cannot help us to find the quality of content. So, to overcome this the system also selects and determines books based on their ratings provided by the students.

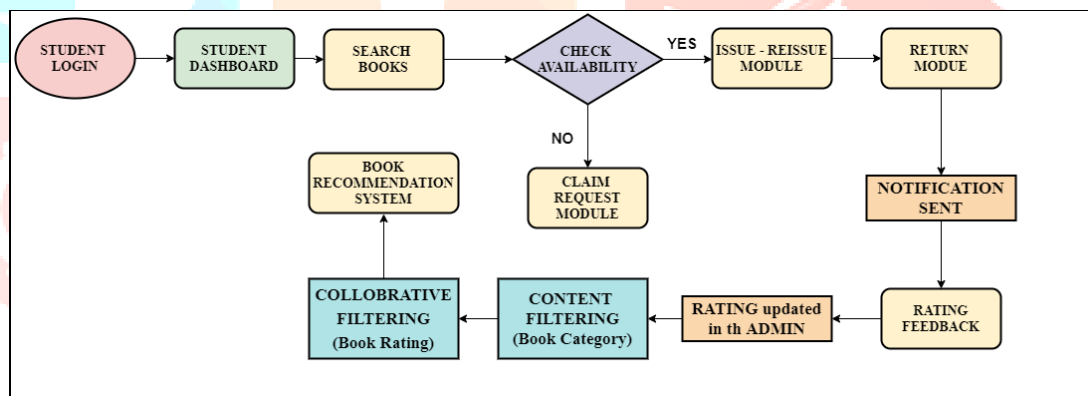


Fig 5.3 Recommendation and Rating Module.

**5.11 Donations:**

This module is available for faculty members only. The faculty can donate the hard copy to the library of any particular book. They can even upload the soft copy of the book available with them for the students to refer.

**5.12 E-Books :**

Considering the covid situation, E-book facility is made available to all the students. In case of unavailability of any book, the student can refer to the e-book section. These e-books are updated by the faculty of the college or the admin of the library.

**5.13 Events :**

This functionality enables the library to update the users about any event to be held in the library. The admin enters the details about the event from the admin panel. These events are displayed on the home page of the library website.

**5.14 Best User :**

In the leaderboard section of the home page, the students who have issued the maximum number of books and made use of the reference section will be updated as the best user of the month by the admin. This is an additional functionality which encourages the students to make best use of the library.

## VI. RESULTS AND DISCUSSION

### 6.1 Home Page :

The homepage gives a descriptive view of all the sections in our library like library timings, eBooks section, newly-added books, most-popular books, best users, upcoming events and login page.

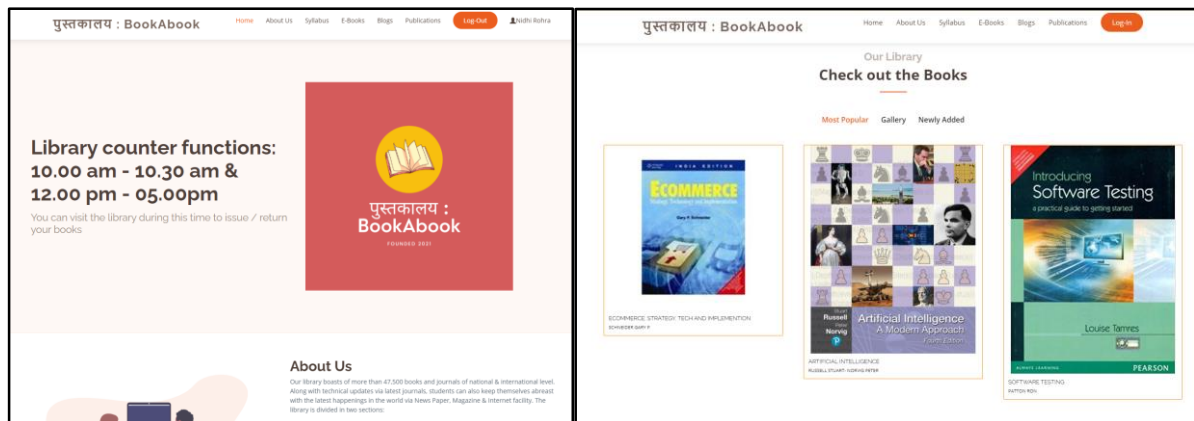


Figure 6.1 : HomePage

### 6.2 Login Portals :

Students and admin are provided with different login portals.

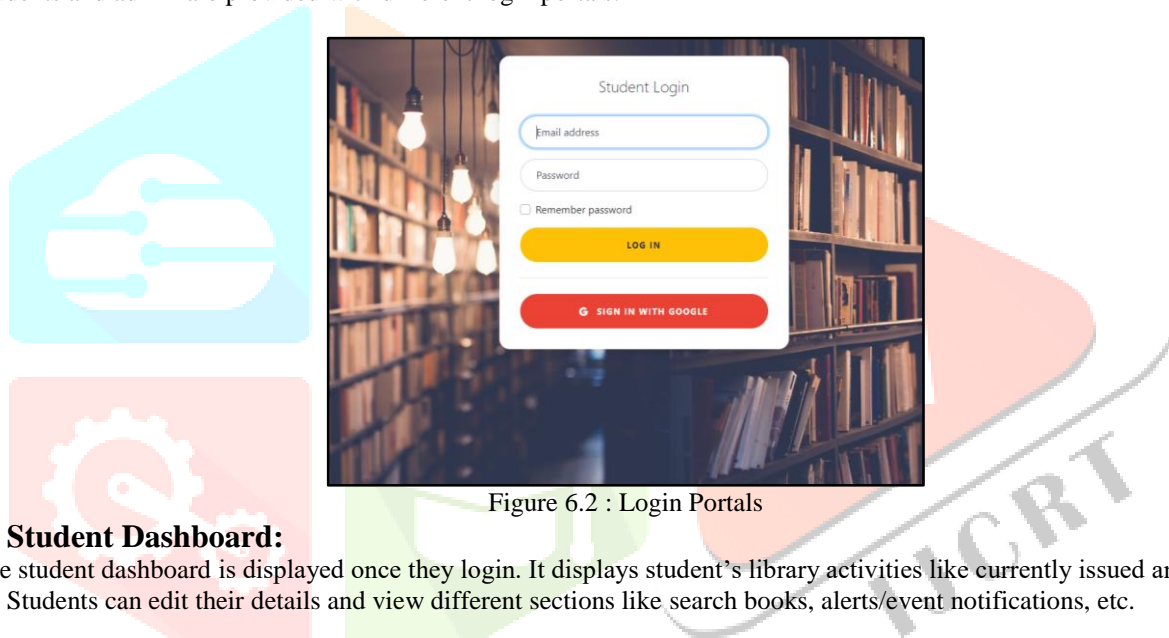


Figure 6.2 : Login Portals

### 6.3 Student Dashboard:

The student dashboard is displayed once they login. It displays student's library activities like currently issued and claimed books. Students can edit their details and view different sections like search books, alerts/event notifications, etc.

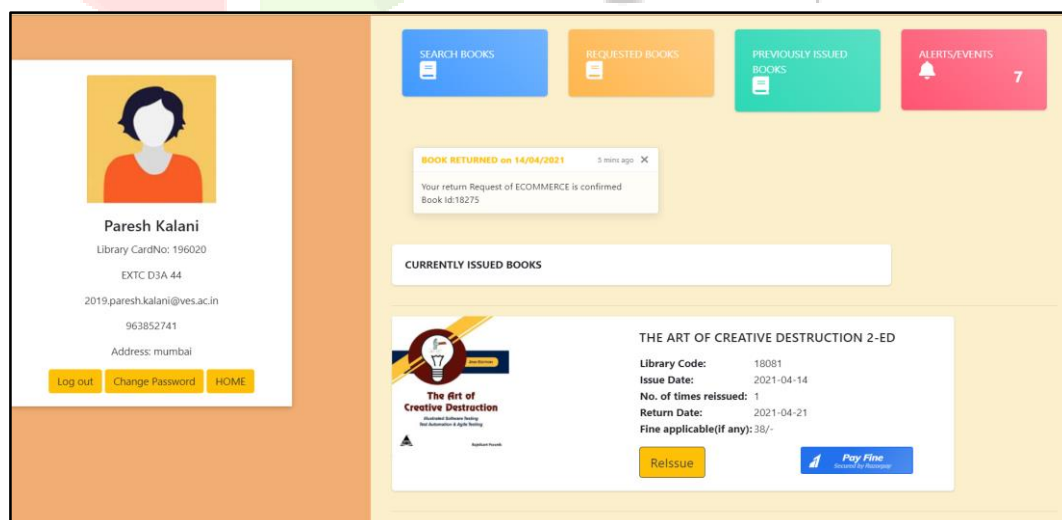


Figure 6.3: Student Dashboard



## 6.4 Book Details :

All the book details can be viewed and the issuing process can be carried out. Soft copies can also be accessed.

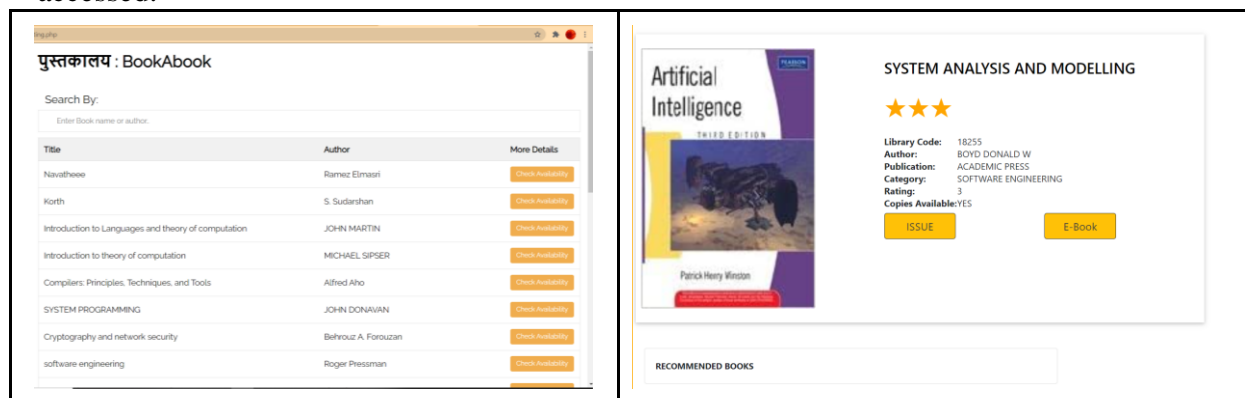


Figure 6.4: Book Details

## 6.5 Recommendation and Alerts:

The system recommended books can be seen below the book details page. The alerts/notifications section notifies students about the book activities.

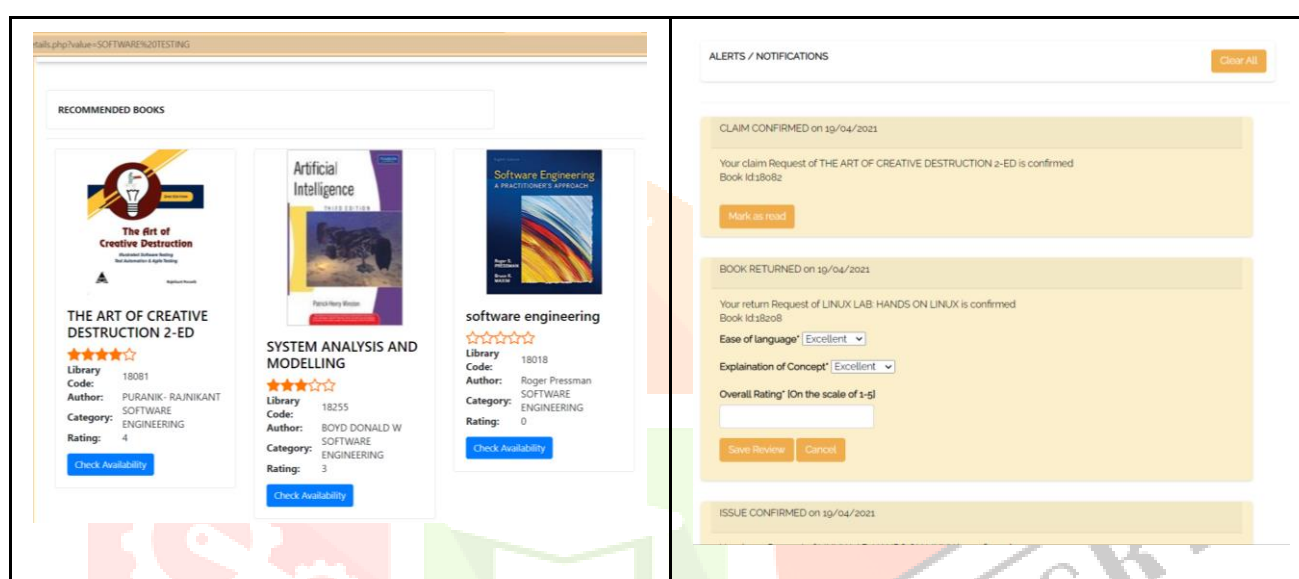


Figure 6.5: Recommendation and Alerts

## 6.6 Confirmations and Constraints:

All the constraints and restrictions according to the library rules are implemented and displayed to the students. The students get proper confirmations on book requests submissions.

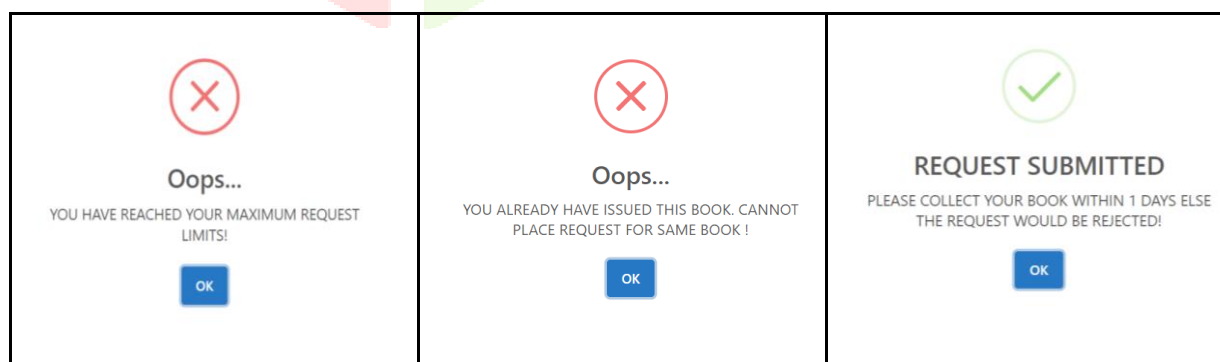


Figure 6.6: Confirmations and Constraints

## 6.7 Admin Dashboard:

The admin dashboard can be accessed through proper login credentials. All the library activities handled can be accessed here. The modifications in students and books database are done by admin.

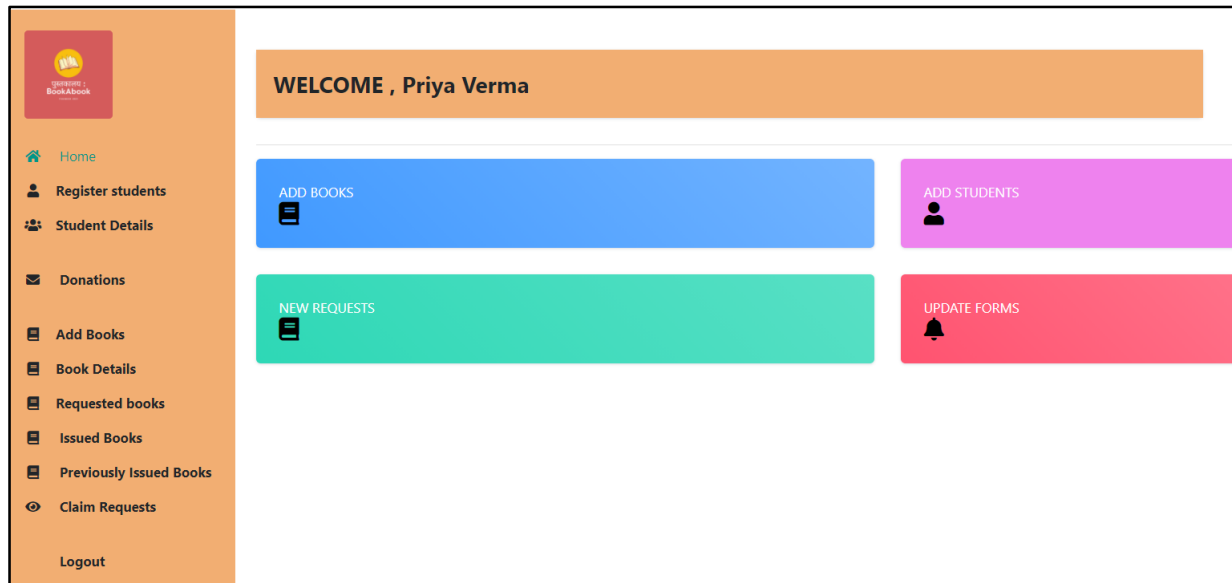


Figure 6.7 : Admin Dashboard

## 6.8 Book Requests Handling:

Admin is able to view all the sections of book activities like book requests, issued books and returned books. He thus manages different library activities like book issuing, reissuing, returning and claiming requests of books.

BOOK REQUESTS							
Search...							
Student Name	Student Id	Book Name	Book Id	Request Date	Relssue	Collect Action	
Nidhi Rohra	196026	LINUX LAB: HANDS ON LINUX	18208	2021-05-09 13:35:55	NO	Collected	

CURRENTLY ISSUED BOOKS									
Search...									
Student Name	Student Id	Book Name	Book Id	Issue Date	Return Date	Fine	No of Times Reissued	Action	
Gaurav Taneja	196024	THE ART OF CREATIVE DESTRUCTION 2-ED	18083	2021-04-01	2021-04-08	22	0	Return	
Mary Kom	196023	THE ART OF CREATIVE DESTRUCTION 2-ED	18084	2021-04-02	2021-04-09	20	0	Return	

PREVIOUSLY ISSUED BOOKS									
Search...									
Return ID	Book ID	Book Name	Student ID	Student Name	Issue Date	Return Date	Actual Returned Date	Admin ID	Fine
5	18252	ARTIFICIAL INTELLIGENCE 5-ED	196020	Paresh Kalani	2021-03-24	2021-03-31	2021-04-02	10	4
7	18275	ECOMMERCE	196022	Shivaji Maharaj	2021-03-21	2021-03-28	2021-04-08	10	8

Figure 6.8: Book Requests Handling

## 6.9 Faculty dashboard for Donations:

Faculty can donate hard copy and soft copy of books.

Figure 6.9: Faculty dashboard for Donations

## VII. CONCLUSION

Library is the most essential part of an Institution. We aim at automating the manual, time consuming library management system to a digitized library system, which will benefit the students as well as the staff of the library. It makes the entire process online where a student can search books, issue books and return books. Library staff can add and keep records of books and students. The system will also provide additional information about library timings, events occurring in the library, popular and new arrived books. Recommendations for books help students to search for books efficiently. All the transactions are transparent and recorded. Notifications and reminders help students, keeping them updated. Overall the system reduces the manual process and human efforts and increases the efficiency.

## VIII. ACKNOWLEDGMENT

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