

# **LIBRARY MANAGEMENT SYSTEM FOR STANFORD**

**PROJECT : CBAP**

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## Introduction:

Stanford University is a private research university in California. The university was founded in 1885 and as of today, 83 Nobel laureates, 28 Turing Award laureates, and 8 Fields Medalists have been affiliated with Stanford as students, alumni, faculty, or staff.

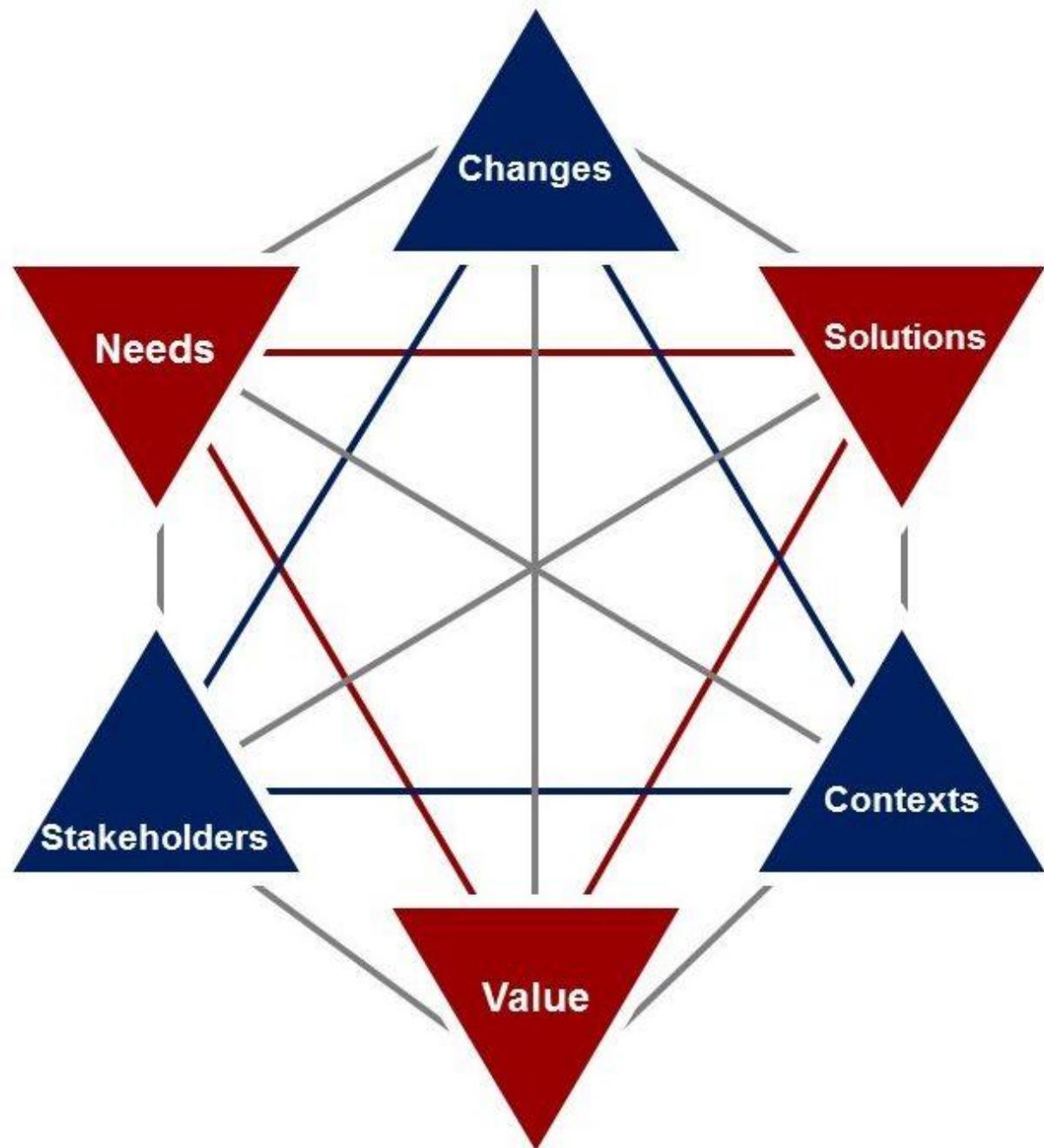
## Project Overview:

For the benefits of the students Stanford started its own library in 1885. The library at Stanford was housed in one large room capable of accommodating 100 readers. As the university grew to enroll more than 20,000+ students in a given year the library grew as well. Today the library boasts of having more than 4 million books in it.

The paper-based maintaining, organizing, and handling of countless books became a nightmare. The university wanted a Library Management Software to automate their library's activities. Using the software one can find books with a click, issue/reissue books quickly, and it will manage all the data efficiently using this system. It also provides immediate and accurate information regarding any type of book, magazine, or research paper, thereby saving a lot of time and effort.

## Business Analysis Core Concept Model as per BABOK

The Business Analysis Core Concept Model™ (BACCM™) is a conceptual framework for business analysis.



CORE CONCEPT	DESCRIPTION
Change	<ul style="list-style-type: none"> <li>Replacing the old traditional system with the new automated system to manage and organize more than 4 million books.</li> </ul>
Need	<ul style="list-style-type: none"> <li>The library at Stanford was housed in one large room capable of accommodating 100 readers.</li> <li>Today the library boasts of having more than 4 million books in it.</li> <li>The paper-based system of maintaining, organizing and handling has become a nightmare for them.</li> <li>A lot of time was wasted managing the library manually.</li> <li>It is impossible to manage more than 4 million books inventory at present.</li> <li>Library management was unable to generate reports on a timely basis.</li> </ul>

Solution	<ul style="list-style-type: none"> <li>Using the software one can find books with a click, issue/reissue books quickly, and it will manage all the data efficiently using this system. It also provides immediate and accurate information regarding any type of book, magazine, or research paper, thereby saving a lot of time and effort.</li> </ul>
Stakeholder	<ul style="list-style-type: none"> <li>Business Analyst</li> <li>Management</li> <li>Developer</li> <li>Project Manager</li> <li>Employees</li> <li>Library Manager</li> <li>Library Staff</li> <li>Tester</li> <li>Book Supplier</li> <li>Sponsor</li> </ul>
Value	<p>Reduce overheads and increase productivity of library staff. Cost Reduction.</p> <p>Up-to-date records of all books, research papers, magazines, and other materials available in the library.</p> <p>Improve student engagement in the library.</p> <p>It will generate dynamic reports for better decision-making.</p>

Context	The old paper-based system was a nightmare to maintain, manage and handle more than 4 million books. A lot of time is being wasted managing the library manually. Using the software one can find books with a click, issue/reissue books quickly, and it will manage all the data efficiently using this system
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## Project Task:

### Task 1: Identifying stakeholders

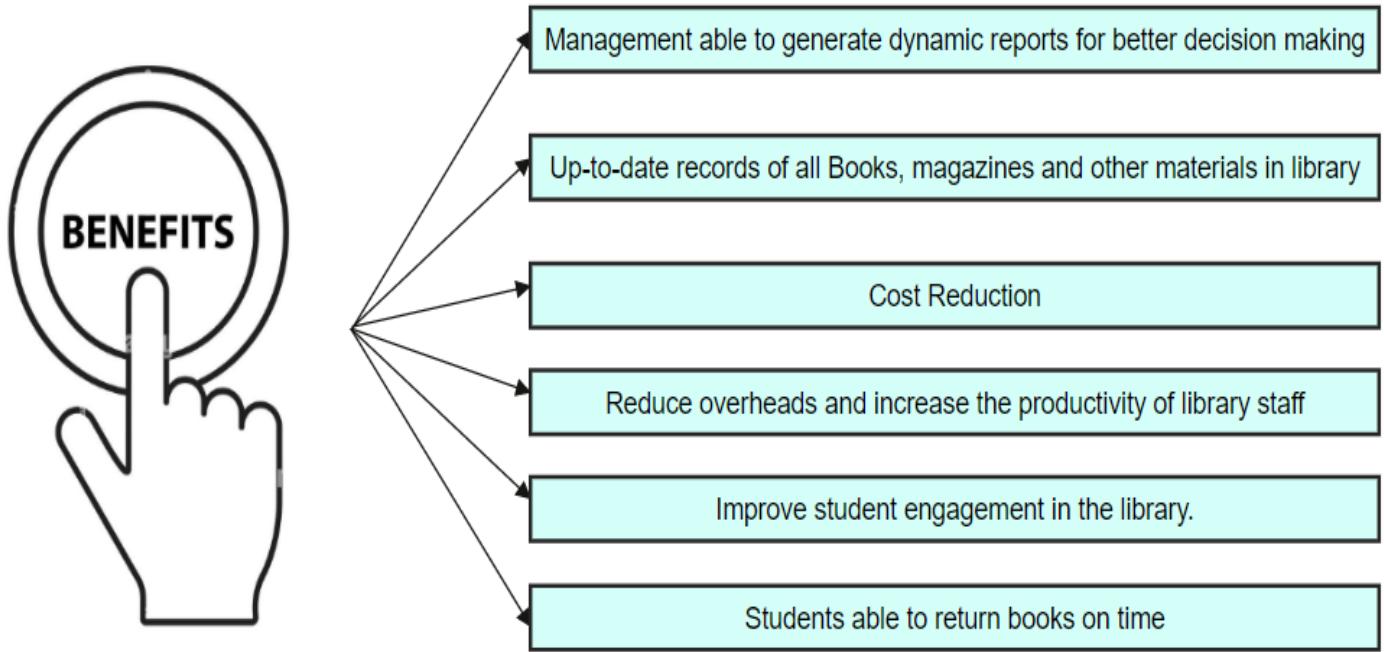
**- Create a list of stakeholders (as taught in Business Analysis Planning and Monitoring Knowledge Area)**

BUSINESS ANALYST	
External Stakeholders	Internal Stakeholders
Library Staff	Project Manager
Book Supplier	Developer
End User (Stanford Students)	Tester
Stanford Management	Operational Support
Customer (Sponsor)	Business Analyst
Payroll Team	Library Manager

## 2. Identify the problem statement in this system.

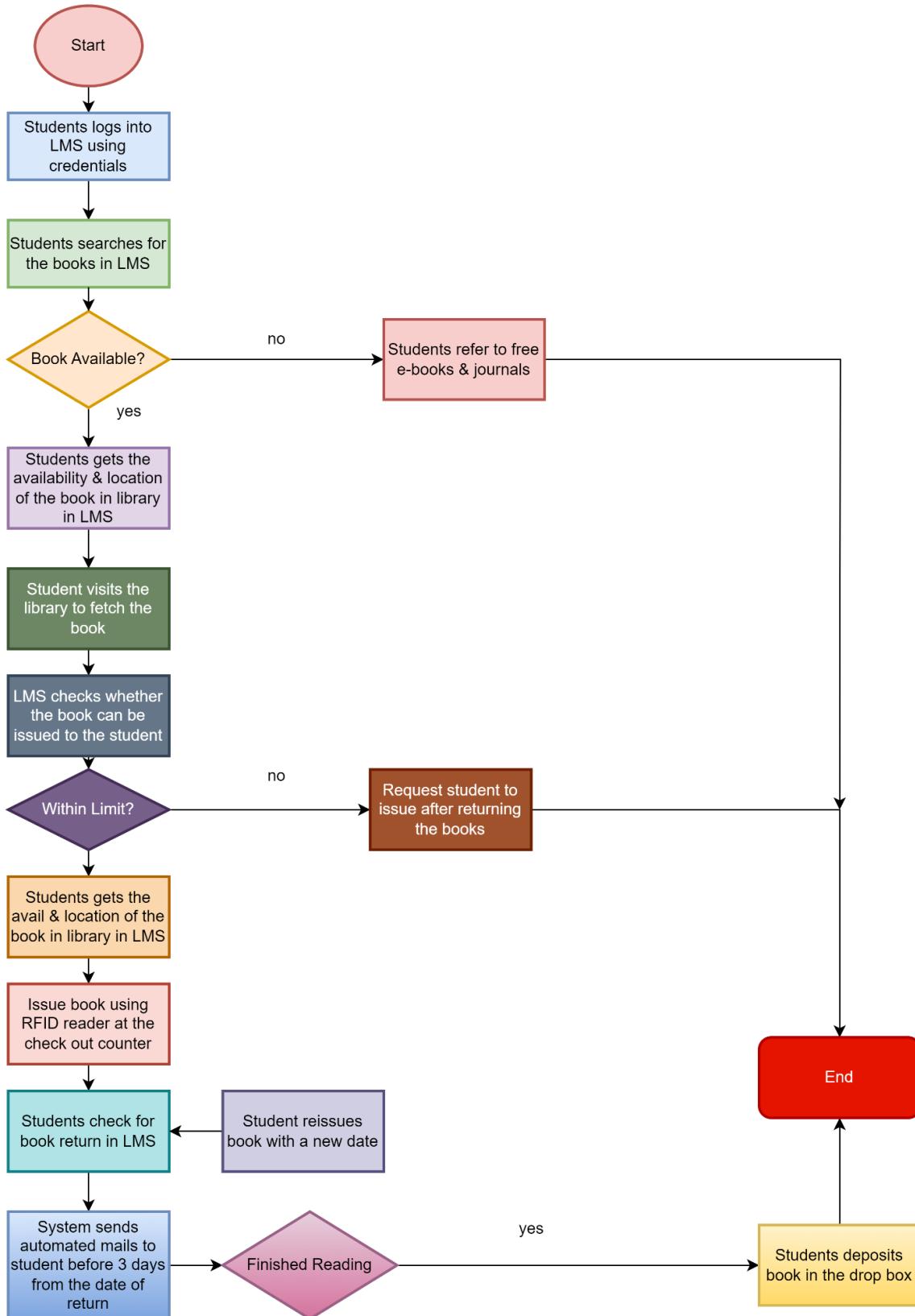
PROBLEM DEFINITION	
Library	Students
A lot of time is wasted managing the manual library since it is paper based	They could deposit books only in the library timings
The number of employees needed to manage the library is high	No reminder for books to be returned
Fine calculation is tedious and time consuming affair	Manually search the books in the library
No reports could be generated on books issued due to the manual system	No access to e-books and e-journals
It is difficult to manage 4 million books present in the library	

### 3. Identify advantages of the new Library Management System.

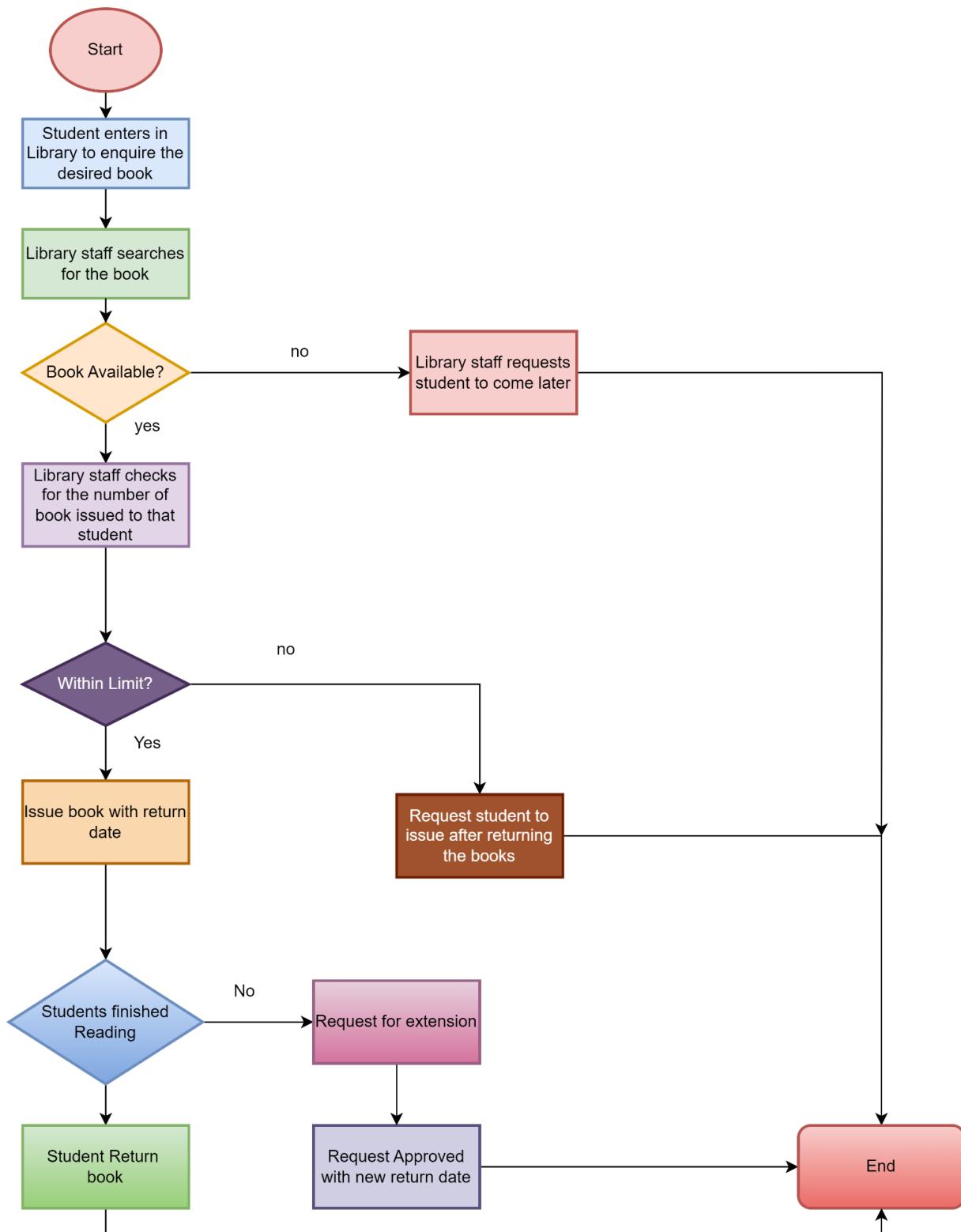


### 4. Create as-is and future process map (using flowcharts)

## As-is process Map:

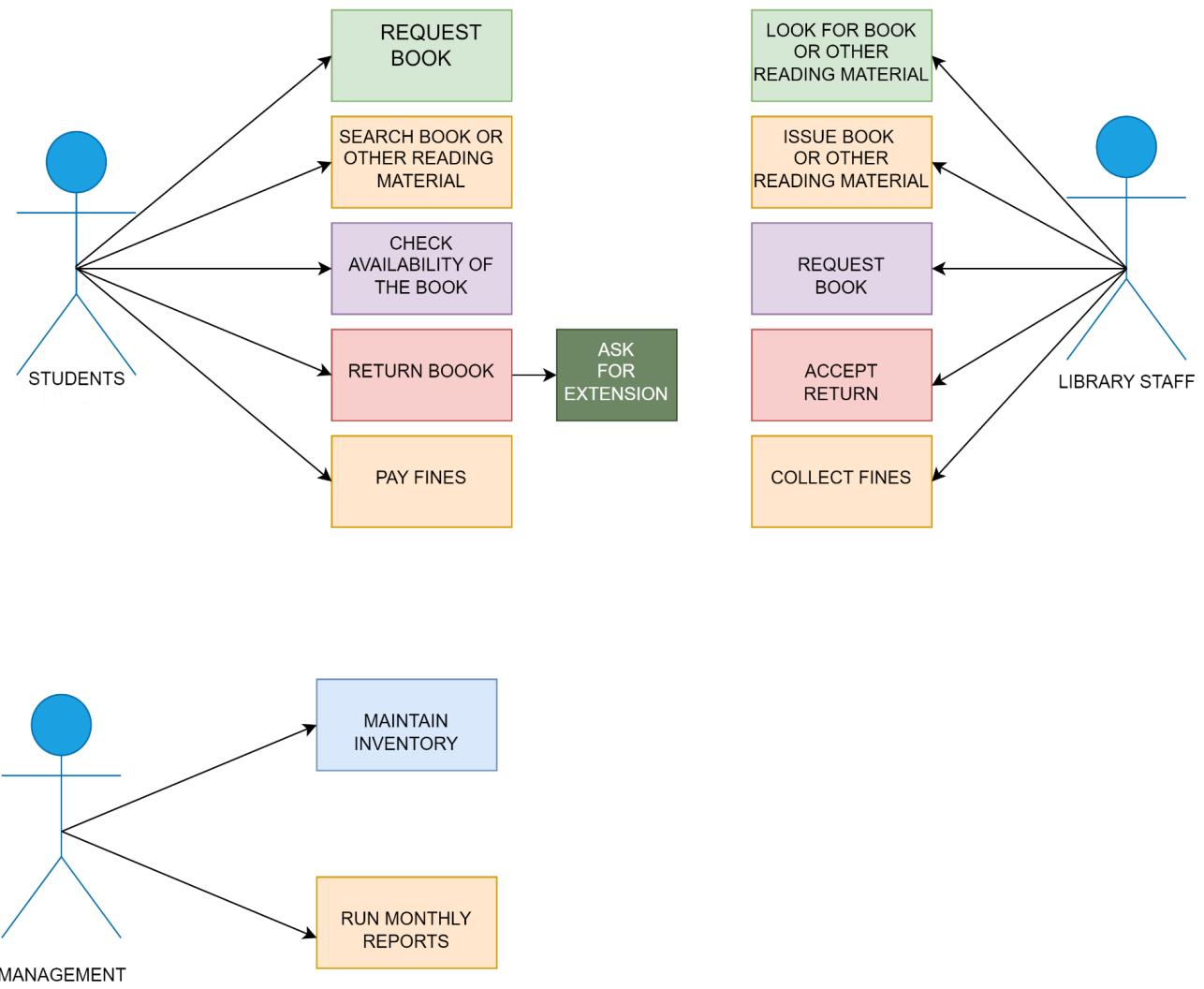


## Future Process Map



## 5.Find out the scope of the Library Management System Using Case Diagram (UML)

### SCOPE OF THE LIBRARY SYSTEM



## **6. Write down the main features that need to be developed.**

**The main features which need to be developed are as follows:**

- User registration and logging on the Library Management System.
- The LMS should keep records of different categories of material available in the library like books, magazines, research papers, journals, and newspapers.
- The books should be classified subject wise in the software.
- Each category like books, magazines, research papers, journals, and newspapers will have different issuing periods. For example, a book can be issued for 3 weeks but a magazine only for 1 week. Newspapers cannot be issued for use outside the library and so on.
- Every reading material available shall have a RFID tag on it. The record of the same will be stored in the database. For each reading material record information like author, book name, publisher name, book edition, date and year of publication, cost of the book, and date of purchase of the book.
- When a student wants a reading material from the library, they will select the material and go to the checkout counter. The library staff will use a RFID reader to capture the details of the book. The student's name is tagged along with the book they borrowed.
- System will record the issue date and return date of the book.
- System shall do an automatic calculation of fines in case of delayed return of books.
- Library staff should be able to search for books on the LMS by search criteria like name of the book or author.
- Students should be able to access the library system online to know the return date. They should be able to access it via the web or mobile interface.
- System shall send automated emails to the students 3 days before the return date to avoid late return of books.
- Access to free e-journals and e-books through the software.
- Anti-theft detection: RFID readers are placed at the exit gate of the library and the RFID reader tracks books to a range of 2 meters and would trigger the alarm with a loud sound in case anyone tried to pass through the gate with an unissued book.
- Book drop box stations to be installed outside the library: Students can return books at any time in the RFID enabled book drop box station.

Student's loan is immediately canceled once the student deposits the book in the drop box.

- Management would like the following reports:
  - Which books are most rented?
  - Records of issued and unissued materials in the library (management will decide whether to stock them or not)
  - Amount of fine collected in a day, week, and month.
  - Number of lost books
  - Report on total number of books, journals, etc.
  - Age of books, that is, which books are more than 20 years old. College generally would prefer not to have very old books since new versions come up every few years.

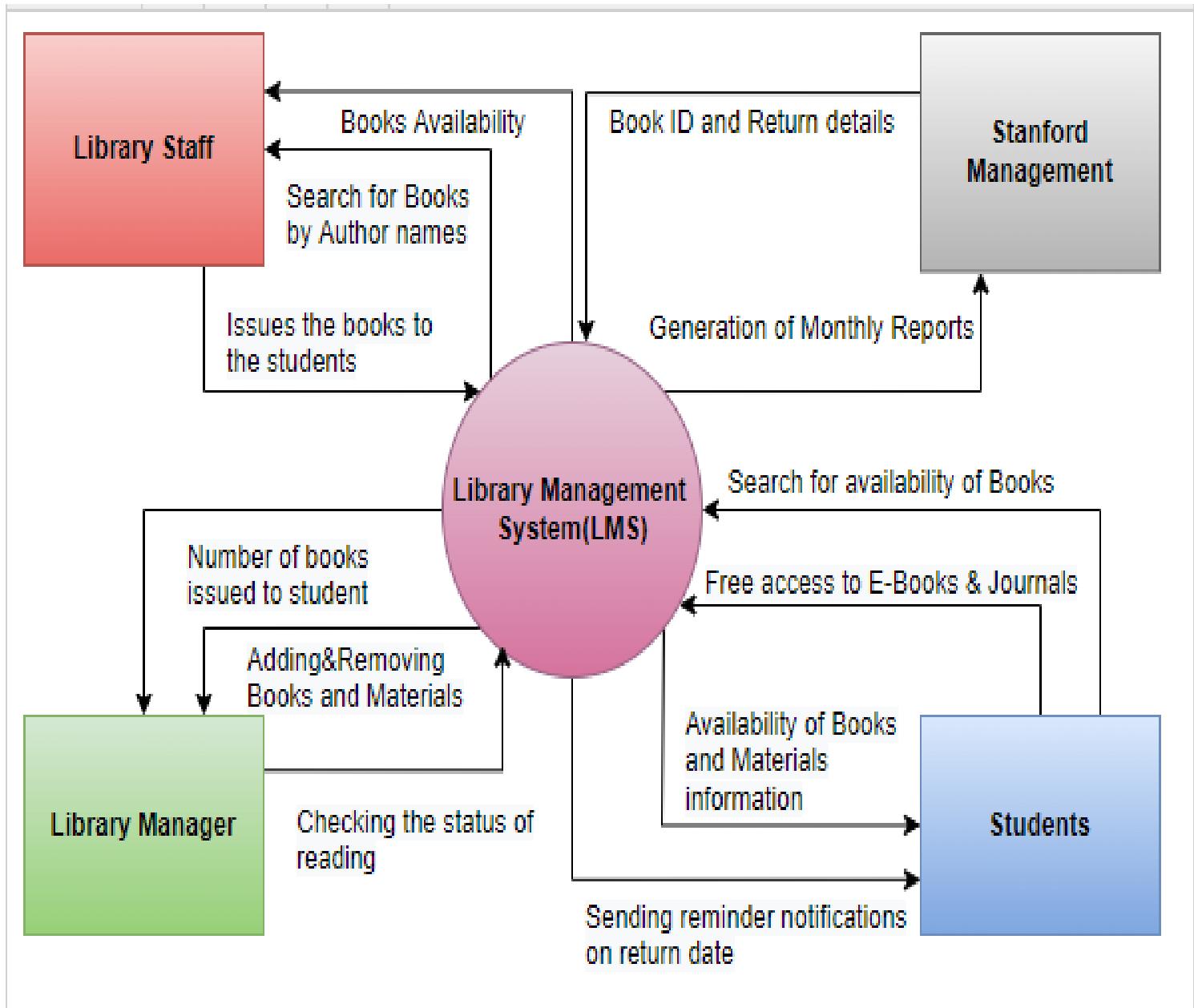
## 7. Write the in-scope and out-of-scope items for this software.

**In-scope model identifies a boundary as seen from inside, as well as the elements contained by that boundary. Out-of-Scope is the model that identifies a boundary as seen from outside, as well as the elements that are not contained by that boundary.**

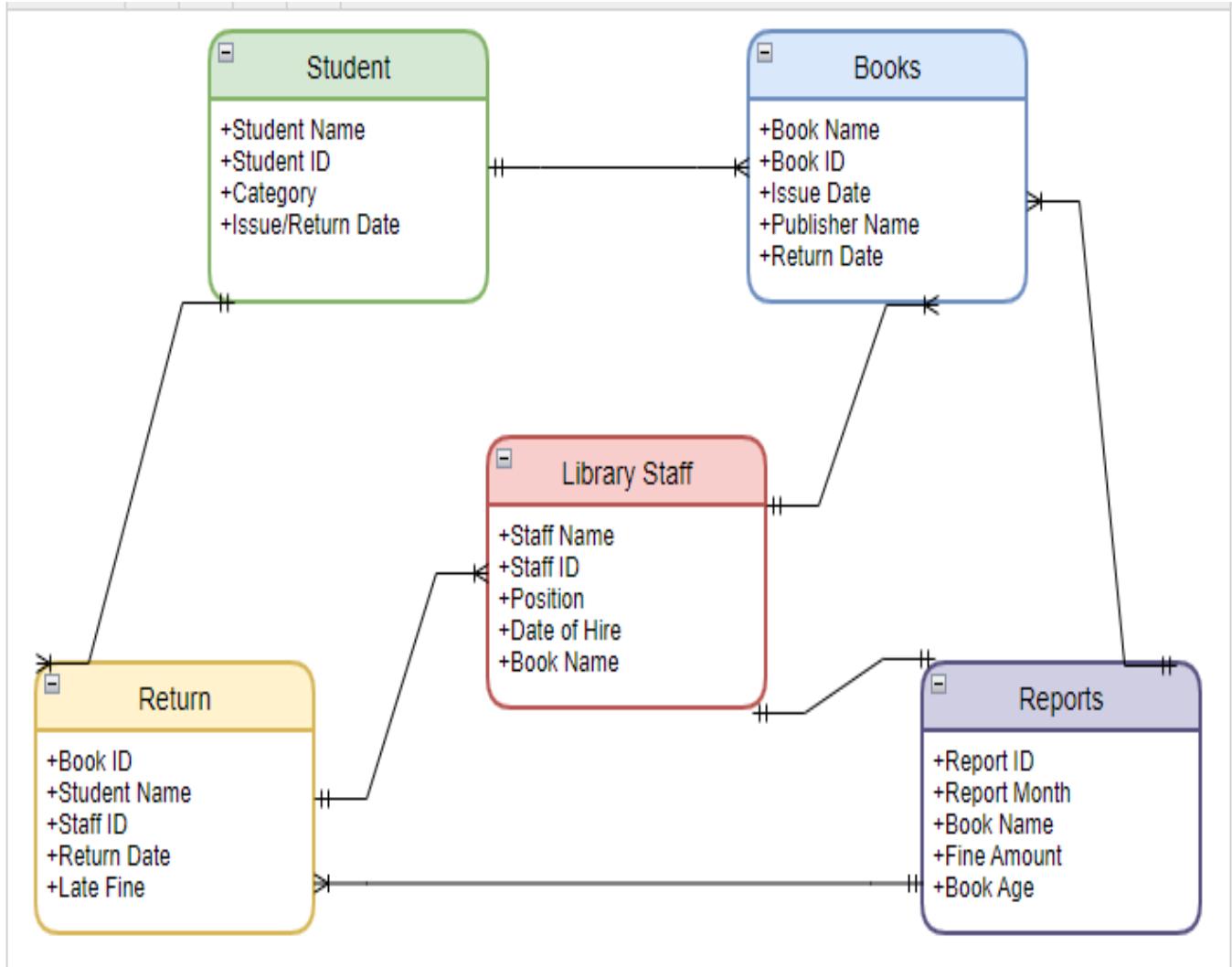
In-scope	Out-scope
<ul style="list-style-type: none"><li>• Students can login with user ID and password any time, anywhere on web or mobile app</li><li>• Students Can check the availability of a book in the library.</li><li>• Students Can check the return date to avoid late fee</li><li>• Management gets auto generated reports from the system on a daily basis.</li><li>• Easy to search books with different search criteria.</li><li>• Reminder email and messages sent to students to return or reissue books and materials.</li><li>• As LMS tells the location of books, it saves time searching for books in the library.</li><li>• Students can return any time in the RFID enabled drop box which will record the return date of the book against the student.</li></ul>	<ul style="list-style-type: none"><li>• Access for outsiders.</li><li>• No login for non-registered students or staff.</li><li>• Books for sale.</li><li>• Books for donations.</li><li>• Take away books without issuing them.</li><li>• Student or staff information.</li></ul>

## 8. Draw a data flow diagram for the system.

### Data Flow Diagram for the system:



## 9. Draw an ER diagram of the system.



## 10. Functional and Non- Functional Requirements

Functional	Non-Functional
<ul style="list-style-type: none"><li>• User should be able to create accounts, login and order food online</li><li>• The system should keep records of different categories of material available in the library like books, magazines, research papers, journals, and newspapers</li><li>• Students should be able to access online system to the books availability, issue date and return date</li><li>• System will record the issue date and return date of the book.</li><li>• The system should be created using a Java program.</li><li>• Library staff should be able to search for books on the LMS by search criteria like name of the book or author.</li></ul>	<ul style="list-style-type: none"><li>• This library management system is required to support a volume of more than 20,000 students</li></ul>

## 11. Draw wireframes or mock screens

### Registration page

The screenshot shows a web browser window for the Stanford University registration page. The address bar displays the URL <https://library.stanford.edu/registration>. The page title is "Stanford University". A large red banner at the top says "Stanford University". Below it, a blue banner says "LIBRARIES". On the left, there is a decorative circular logo. The main content area is titled "Register User" and contains fields for First Name, Last Name, Registered Campus ID, Password, Confirm Password, Email ID, and Phone Number. Each field has a corresponding input box. At the bottom, a note states: "Use of this system is subject to Stanford University's rules and regulations. See the [Stanford Administrative Guide](#) for more information."

Stanford LIBRARIES

Stanford University

Register User

First Name

Last Name

Registered Campus ID

Password

Confirm Password

Email ID

Phone Number

Use of this system is subject to Stanford University's rules and regulations. See the [Stanford Administrative Guide](#) for more information.

## Login Page

