LIBRARY MANAGEMENT SYSTEM

Business Requirements Document

Simplilearn Project-2

By

R. Goutham Ravi Kumar

Glossary

1. 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.

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.

2. Problem Statement Overview.

The paper based maintaining, organizing, and handling of countless books in the library becomes a nightmare.

Problems with manual library:

- A lot of time is wasted managing the manual library.
- The number of employees needed to manage the library is high.
- Fine calculation is a tedious and time-consuming affair.
- No reports could be generated on books issued due to the manual system.
- It is difficult to manage 4 million books present in the library.
- Students could deposit the books only in the library timings.

a. Solution Overview

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 efforts.
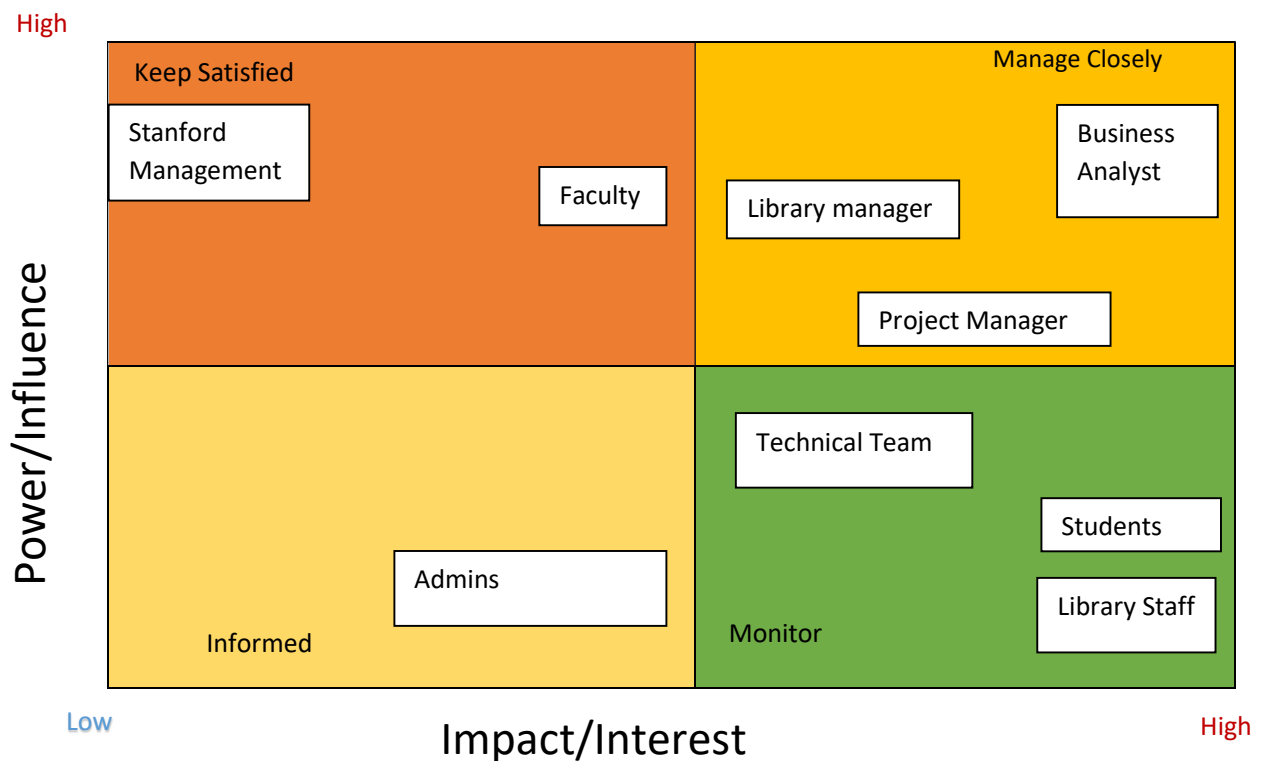
3. Business objectives of LMS

Advantages of Library Management System:

- Reduce overheads and increase productivity of library staff.
- Cost reduction.
- Up-to-date records of all books, research papers, magazines, and other materials available in the library.
- Improve student engagement in the library.
- It will generate dynamic reports for better decision-making.

4. Stakeholders

Keep satisfied	Manage closely	Monitor	Keep Informed
University Management	Business Analyst	Library Staff	Technical team
	Library Manager	Students	Inventory Suppliers
	Project Manager	Faculty	

4.1 Stakeholder Matrix

5.1. Current system process map

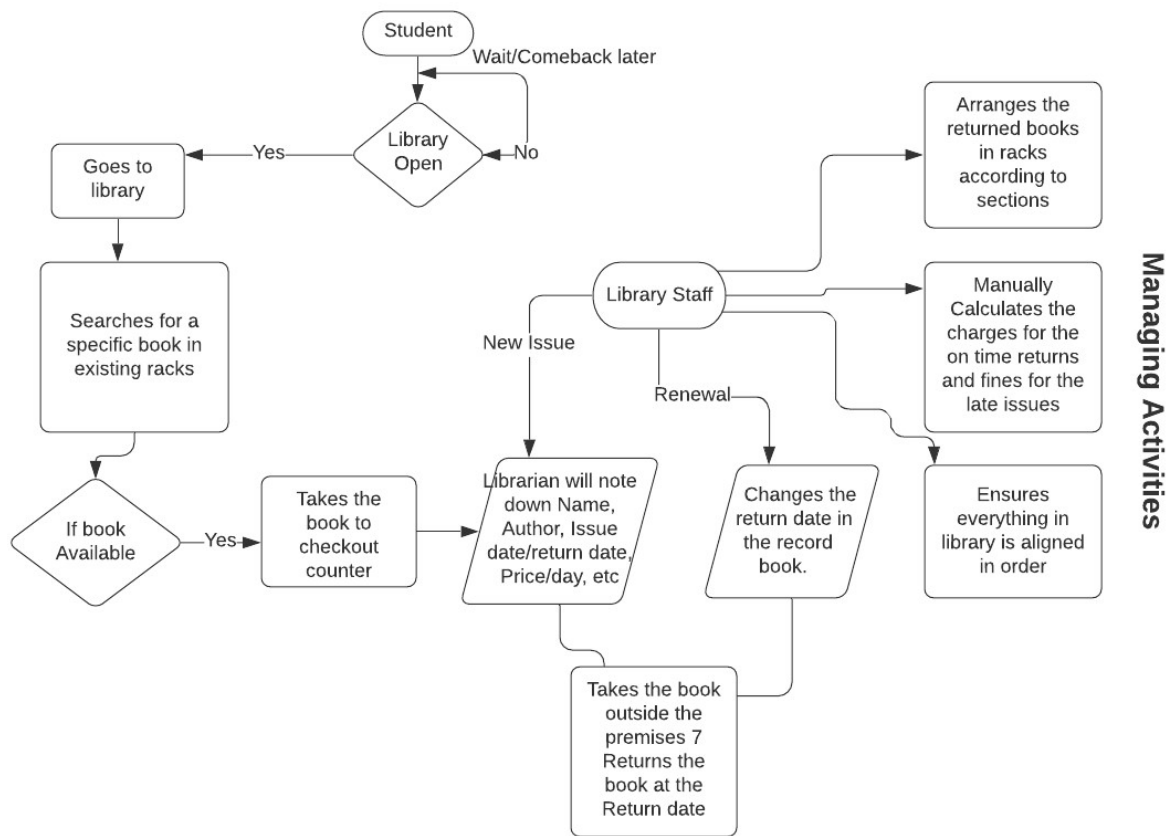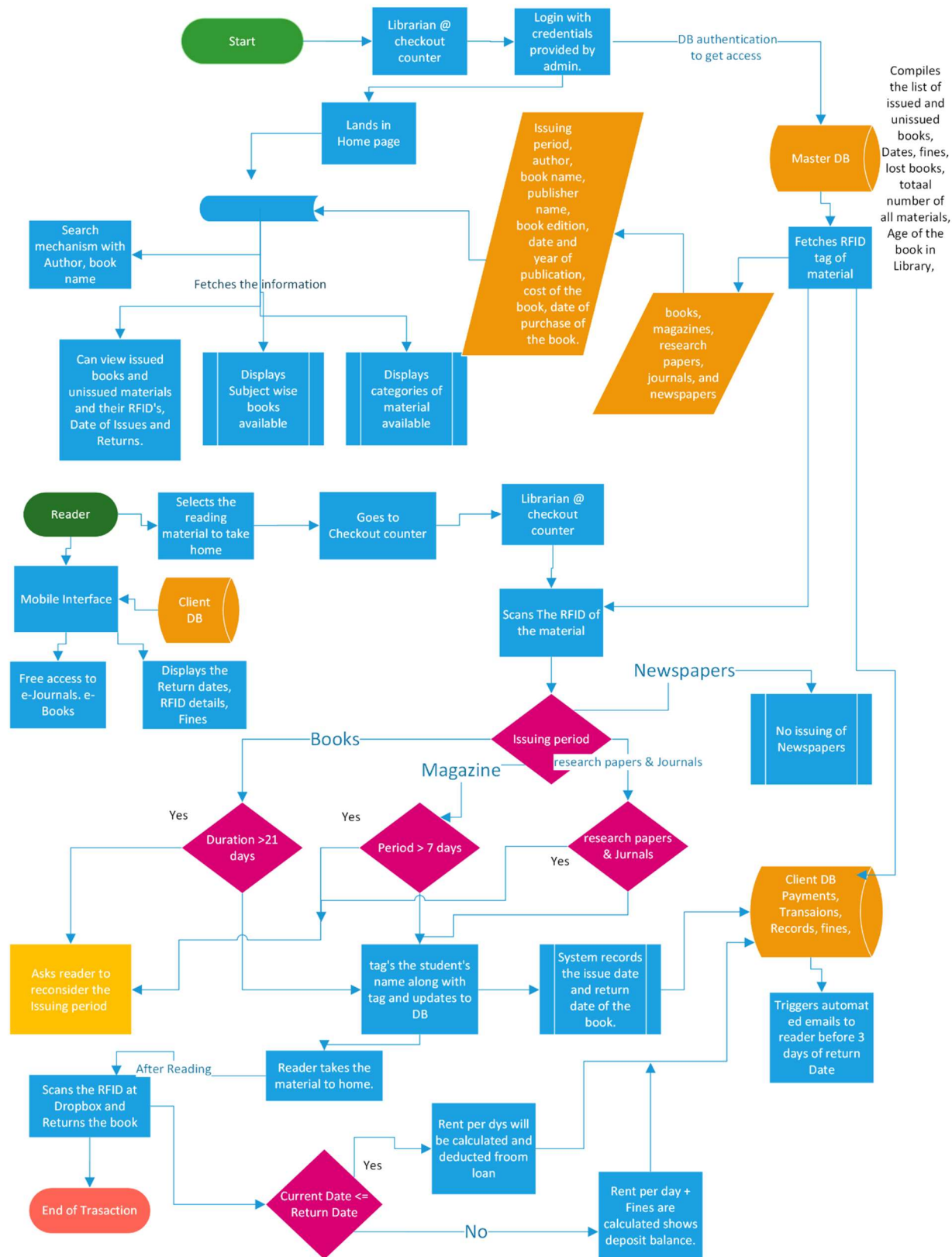*Figure1: Represents the current system of functioning of Library at Stanford University.*
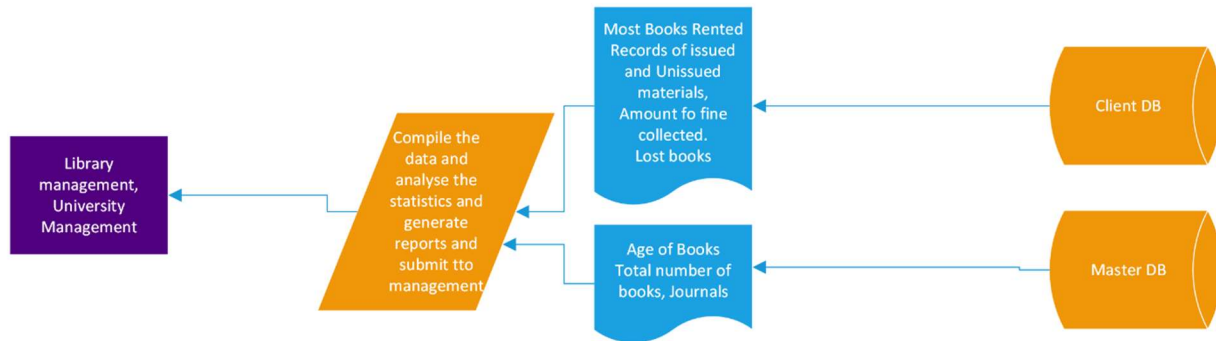
5.2 Future State Process Map

```mermaid
flowchart TD
    Start((Start)) --> Librarian1[Librarian @ checkout counter]
    Librarian1 --> Login[Login with credentials provided by admin.]
    Login -->|DB authentication to get access| MasterDB[(Master DB)]
    Login --> Home[Lands in Home page]

    MasterDB --> Fetches[Fetches RFID tag of material]

    Home --> Bar[ ]
    Bar --> Search[Search mechanism with Author, book name]
    Bar --> View[Can view issued books and unissued materials and their RFID's, Date of Issues and Returns.]
    Bar --> Subject[Displays Subject wise books available]
    Bar --> Category[Displays categories of material available]

    Issuing[/Issuing period, author, book name, publisher name, book edition, date and year of publication, cost of the book, date of purchase of the book./]

    Materials[/books, magazines, research papers, journals, and newspapers/]
```

Compiles the list of issued and unissued books, Dates, fines, lost books, totaal number of all materials, Age of the book in Library,

```mermaid
flowchart TD
    Reader((Reader)) --> Selects[Selects the reading material to take home]
    Selects --> Checkout[Goes to Checkout counter]
    Checkout --> Librarian2[Librarian @ checkout counter]
    Librarian2 --> Scans[Scans The RFID of the material]

    Reader --> Mobile[Mobile Interface]
    Mobile --> ClientDB[(Client DB)]
    Mobile --> Free[Free access to e-Journals. e-Books]
    Mobile --> Display2[Displays the Return dates, RFID details, Fines]

    Scans --> Issuing2{Issuing period}
    Issuing2 -->|Books| Duration{Duration >21 days}
    Issuing2 -->|Magazine| Period{Period > 7 days}
    Issuing2 -->|research papers & Journals| Research{research papers & Jurnals}
    Issuing2 -->|Newspapers| NoIssue[No issuing of Newspapers]

    Duration -->|Yes| Reconsider[Asks reader to reconsider the Issuing period]
    Period -->|Yes| Reconsider
    Research -->|Yes| Tag

    Tag[tag's the student's name along with tag and updates to DB] --> SystemRec[System records the issue date and return date of the book.]
    SystemRec --> ClientDB2[(Client DB Payments, Transaions, Records, fines,)]
    ClientDB2 --> Triggers[Triggers automated emails to reader before 3 days of return Date]

    Tag --> ReaderTakes[Reader takes the material to home.]
    ReaderTakes -->|After Reading| ScansDrop[Scans the RFID at Dropbox and Returns the book]
    ScansDrop --> End((End of Trasaction))

    CurrentDate{Current Date <= Return Date} -->|Yes| Rent[Rent per dys will be calculated and deducted froom loan]
    CurrentDate -->|No| RentFines[Rent per day + Fines are calculated shows deposit balance.]
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Figure2: Represents the future system process map of Library at Stanford University.

6. Scope of New System

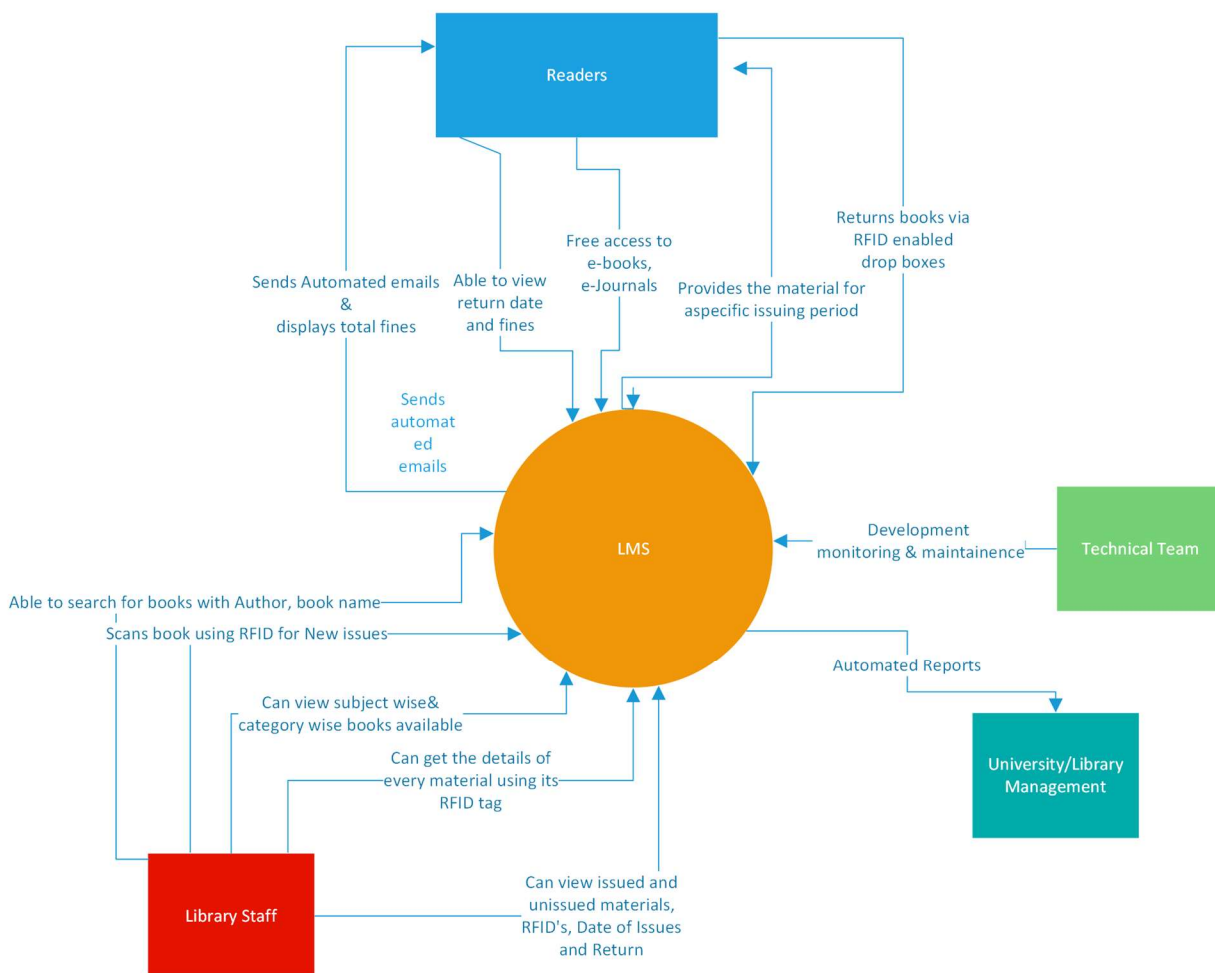## 6.a Context diagram for Proposed LMS.

Figure3: Depicts the context diagram which shows the interaction of different stakeholders with the New system.

7. In-Scope and Out-of-Scope Requirements

7.1 In-Scope Requirements:

Database requirements
1. Should be able to keep records of books, magazines, journals, newspapers.
2. Subject wise books should be classified in the system.
3. The record of every RFID tagged material should be stored in database.
4. Detailed information of every reading material must be stored.
Operational Requirements
1. Every reading material shall have RFID tag on it.
2. RFID readers are placed at the exit gate of library for Anti-theft detection.
3. RFID enabled drop box station should be installed outside of library.
4. Issuing periods should be different for different categories of materials.

7.2 Out-Of-Scope requirements

1. Newspapers shall not be allowed to be issued.

8 Business Requirements

Functional Requirements
Home page requirements
1. Library staff should be able to search for book on LMS using book or Author name.
2. Staff should be able to use RFID tag to capture details of the book for new issues.
3. Records of all types of materials should be categorized accordingly.
4. Books should be classified subject wise.
5. Should get the report of age of the books more than 20 years old.
Issues requirements
1. Should be able to do the task new issue of book.
2. Library staff should be able to use a RFID reader to capture details of the book.
3. Renewal of book should be done with just RFID tag.
4. Should be get the data of unissued books or available books in library.
New Record creation

1. Should have the RFID tag attached to the material.
2. Staff should be able to scan or enter the tag ID to get the details of the book
3. System shall record the issue date and return date of the book mandatorily.
Mobile Interface requirements
1. Students should be able to login using their college ID and mobile number or else register using them.
1. Students should be able to access the library system online to know the return date.
2. They shall receive automated emails 3 days before return date.
3. Access to e-books, e-journals shall be given to students.

Non-Functional Requirements
System requirements
1. LMS can be used on any Windows and Mac OS run computers
2. Users will need an active internet connection.
3. It will be RFID ready (NCIP 2.0 HTTP server available)
4. Auto scheduled tasks like emails and database maintenance
5. Data should be stored in cloud
6. Highly secure, scalable, and reliable
Usability Requirements
1. The screens should be self-explanatory and very user friendly.
Environment Requirements
1. Program development and maintenance in Java.

9. Activity Diagram for the system
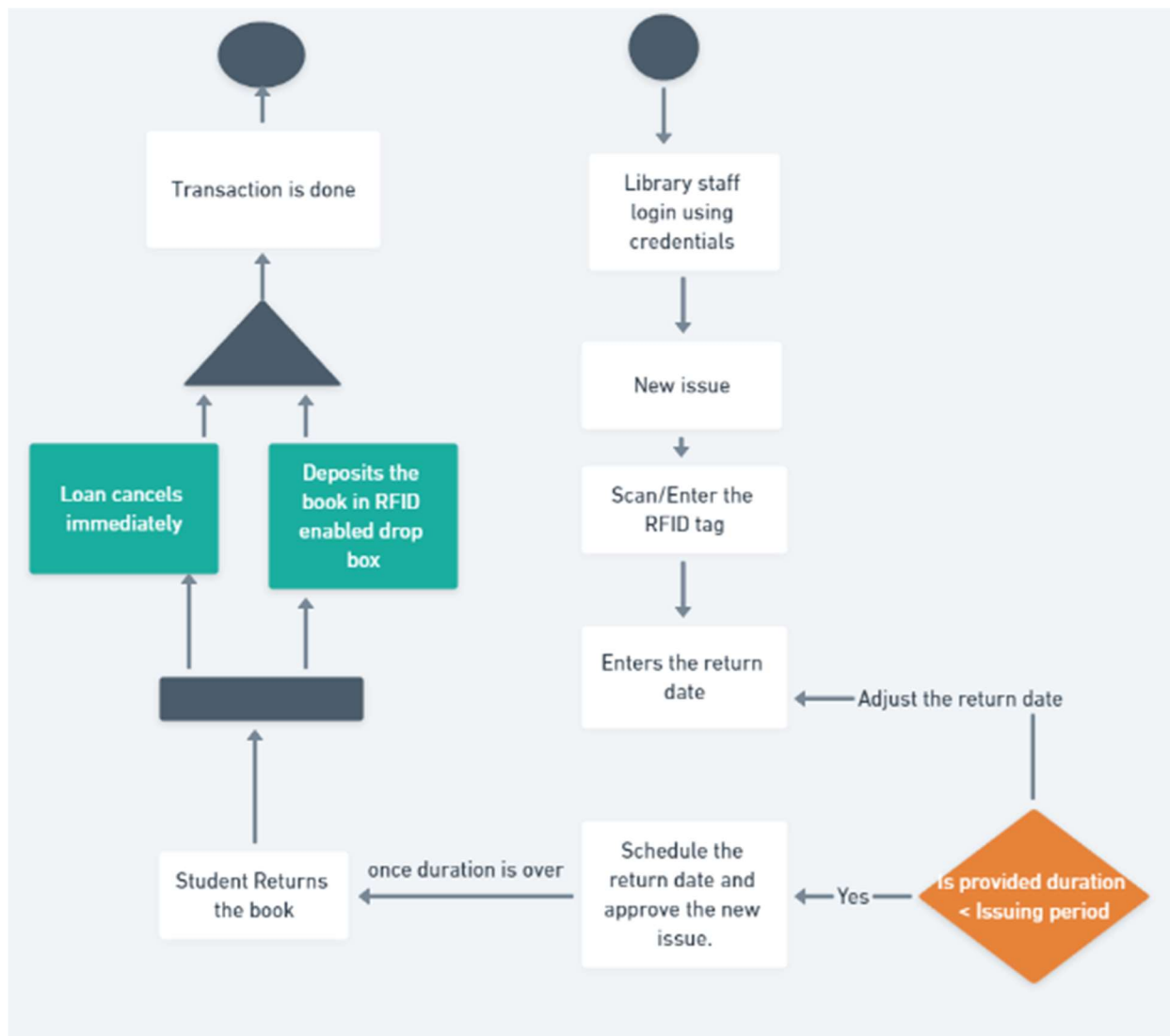
Figure4: Shows the Activity diagram where control flow is drawn from one operation to another.

10. ER diagram for the System
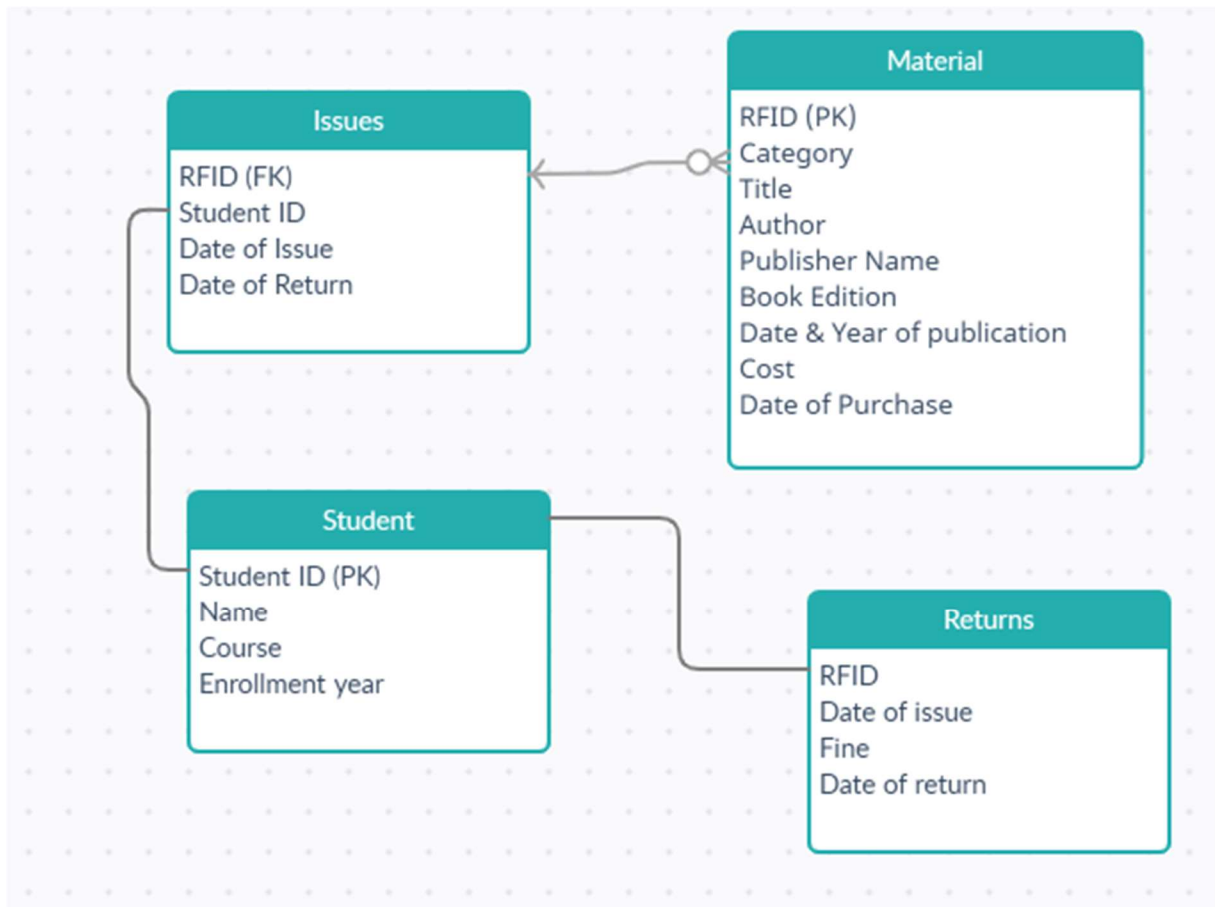
Figure5. Entity Relationship diagram displays the relationship of entity sets stored in database.

11. Environment

Program should be created and maintained in Java.

12.Mock Screens for the features.

12.1: HomePage
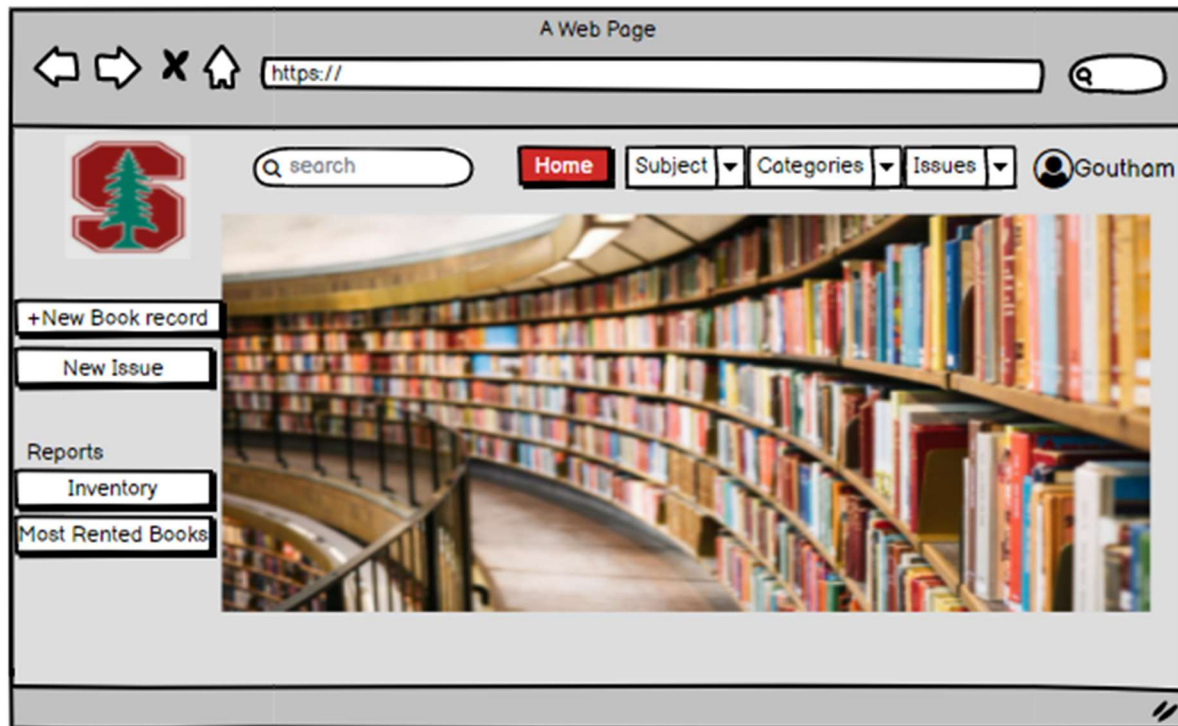
12.2: New Record creation page

A Web Page

https://

search   Home   Subject ▾ Categories ▾ Issues ▾   ⊙Goutham

New Record Information   Add

RFID

Title

Author

Publisher

Edition

Publication Year

Publication Date   / /   📅

Cost

Submit   Cancel

12.3: New Issue Page