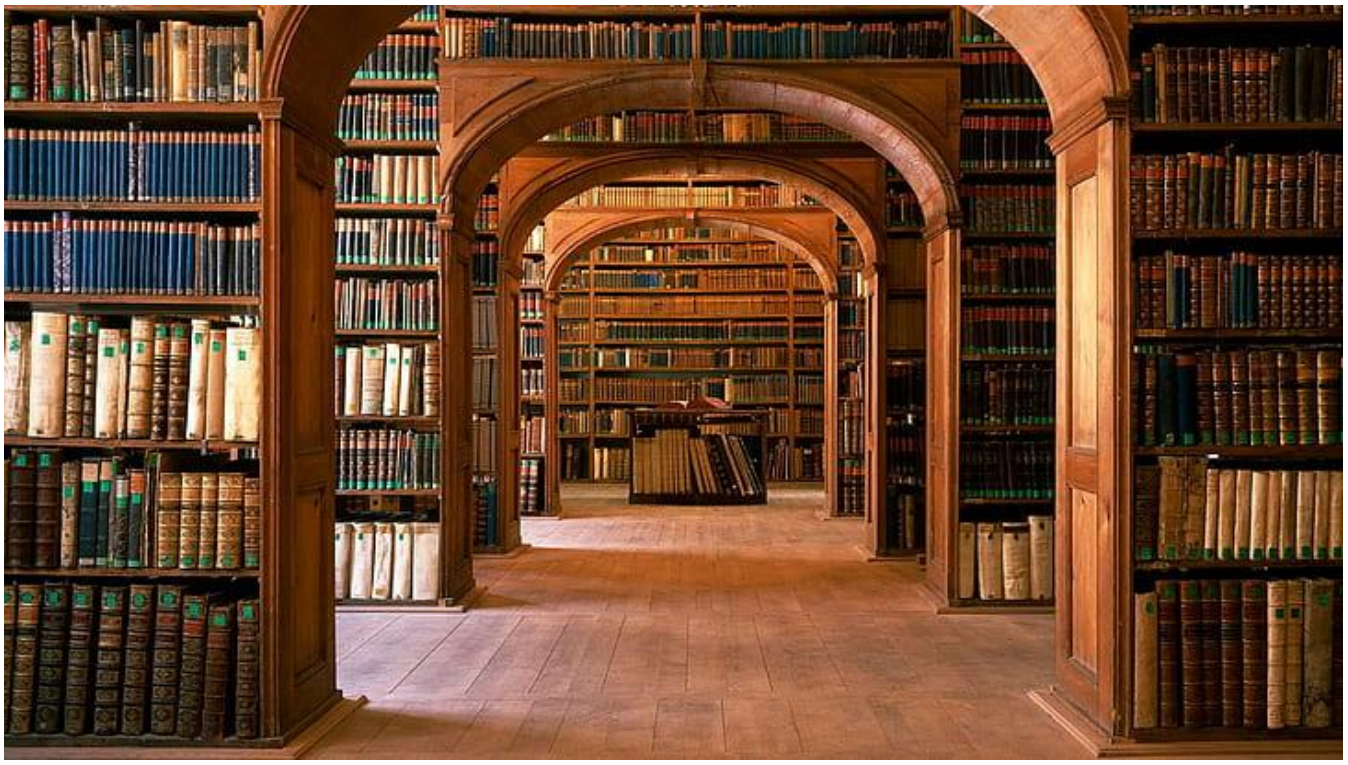
Library Management System

for

Stanford University



Project

by

Puneet Suresh Khamborkar

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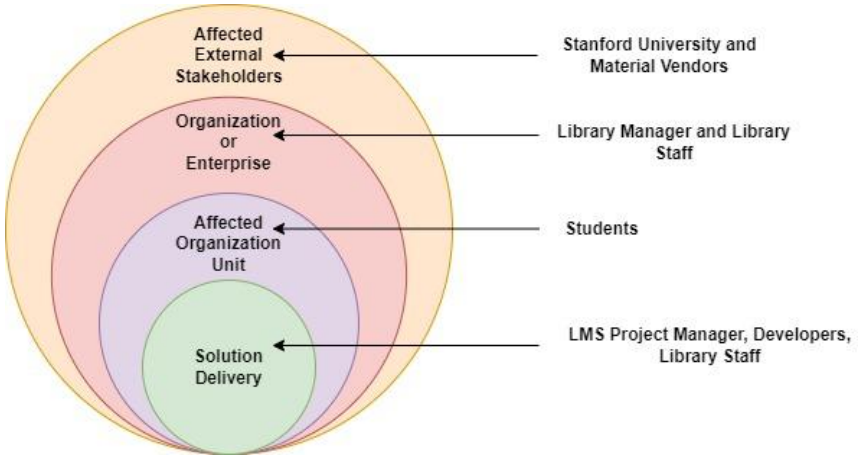
1. Identifying stakeholders

Internal Stakeholders	External Stakeholders
Business Analyst **The Business Analyst from Simplilearn Team** - He/She/They are responsible for gathering overall requirements and proposing the most reliable solution.	
Domain SME **Library Manager** - He/she/they are responsible for the overall library management.	**Customer** **Stanford University** - It is responsible for running the Library.
Implementation SME **Library Staff** - He/She/They are responsible for providing books to the students and taking them back.	**End User** **Students** - They are responsible for using the new library management system (LMS).
Project Manager **LMS Project Manager** - He/She/They are responsible for the smooth working of the LMS.	**Sponsor** **Stanford University Library Management** - They are responsible for setting up new LMS, to reduce the trouble of paper handling.
Operational Support **Developers** - They are responsible for building the LMS as per Stanford University's requirements.	**Supplier** **Vendors** - They are responsible for supplying the Materials and RFIDs to the LMS.
Tester **Library Staff and Developers** - They are responsible for testing the LMS	**Regulator** **Library Staff** - They are responsible for calculating and collecting fines

Onion Diagram



2. Identifying the problem statement in this system

Problem Statement:

The library of Stanford University contains more than 4 million books in it. Hence, the paper-based maintaining, organizing, and handling of countless books have become a nightmare. The University wants 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. The following points are problems faced by the Library Management using the current system:

- 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 the 4 million books present in the library.
- Students could deposit the books only in the library timings.

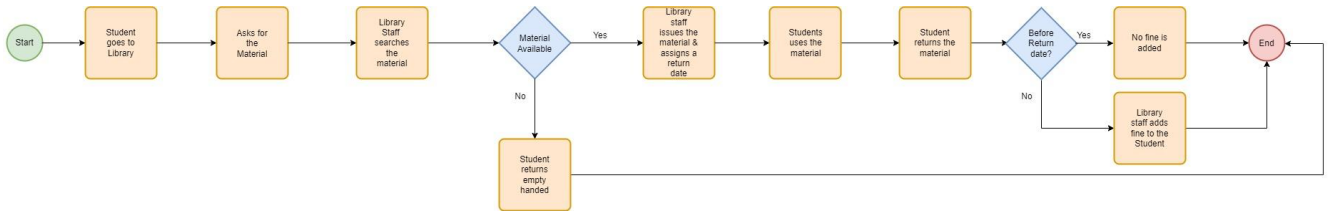
3. Identifying the advantages of the new Library Management System

Advantages of LMS are the following:

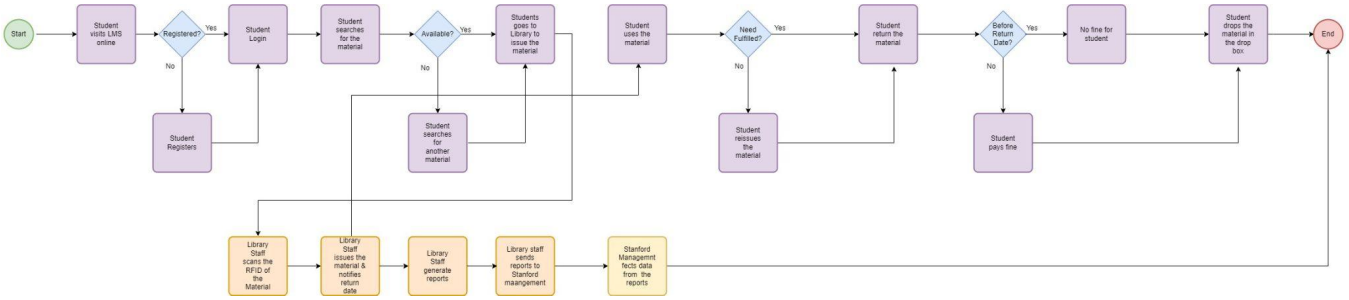
- It will reduce overheads and increase the productivity of library staff.
- It will help in cost reduction.
- It will keep up-to-date records of all books, research papers, magazines, and other materials available in the library.
- It will improve student engagement in the library.
- It will generate dynamic reports for better decision-making.

4. Creating as-is and future process maps (using flowcharts)

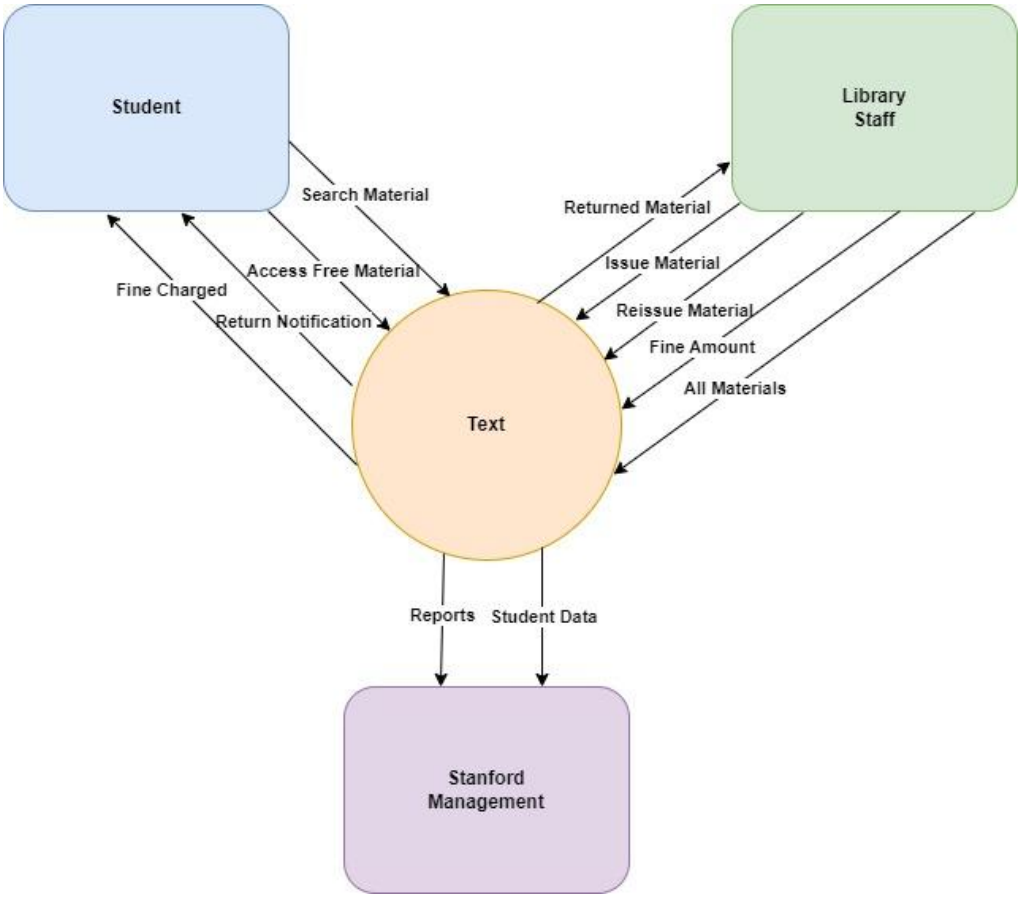
As-is Flowchart



Future Flowchart



5. Creating the scope of the LMS



6. Writing down the main features that need to be developed

- User Registration
- Student Login
- Staff Login
- Change Password
- Manage Profile
- Add Material
- Delete Material
- Update Material
- Search Material
- Issue Material
- Reissue Material
- Return Material
- Material Issued/Returned Status
- Calculate/Know Fine Amount
- Scan RFID
- Generate Reports for
    - Most rented Material
    - Records of issued and unissued Materials in the library
    - Amount of fine collected in a day, week, and month
    - Number of Materials lost
    - Report on the total number of Materials (i.e., books, journals, etc.)
    - Age of book

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

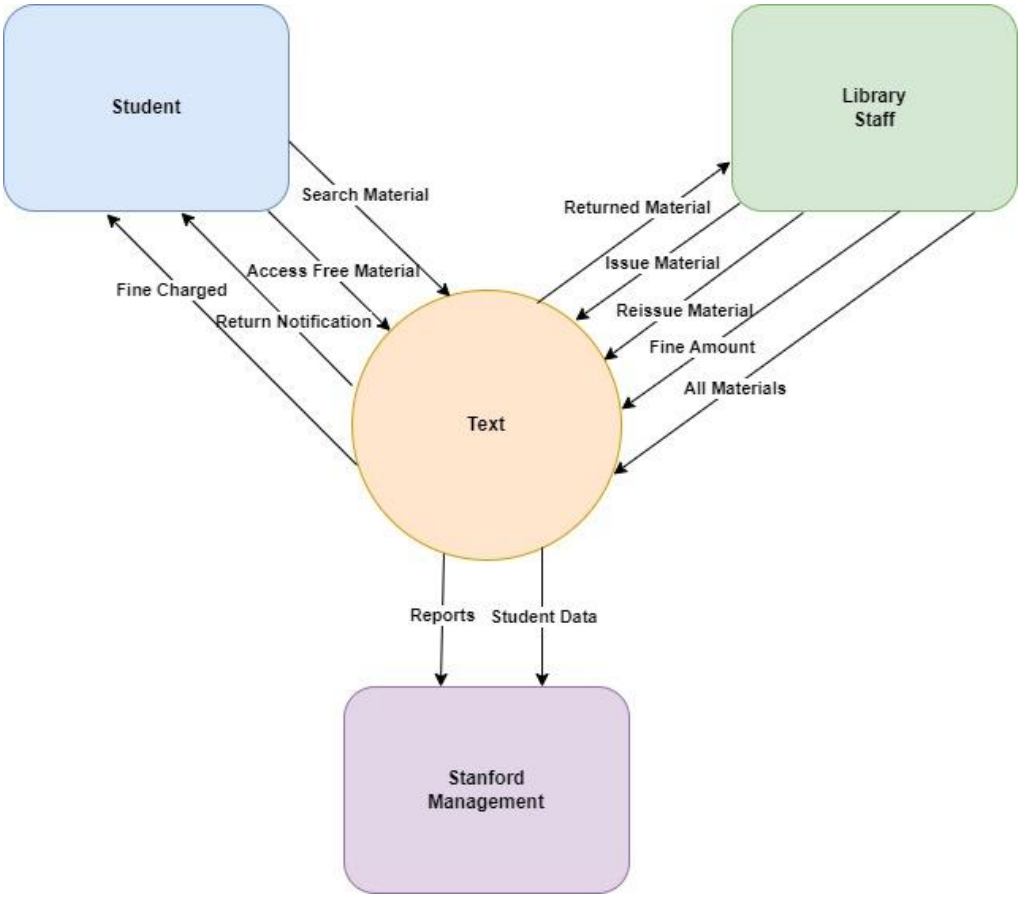
In-scope Items

- User registration/login to the library management system
- Availability status of all Materials (i.e., Books, Magazine, Newspaper, Research papers, Journals etc.)
- Subject wise Material classification
- Create, read, update and delete Material details
- Issue/reissue/return Material
- Online access of LMS through Web or Mobile
- Notifications for the return date
- Free access to e- journals/e-books
- Installation of RFID-enabled Material drop box station
- Automatic loan cancellation
- Automatic Fine Calculation
- Cloud Storage
- Windows and MacOS-supported LMS
- Auto-scheduled tasks like emails and database maintenance
- Generation of the following reports:
    - Record of most rented books
    - Record of issued and unissued materials in the library
    - Amount of fine collected in a day, week, and month
    - Number of lost books
    - Report on the total number of Materials (i.e., books, journals, etc.)

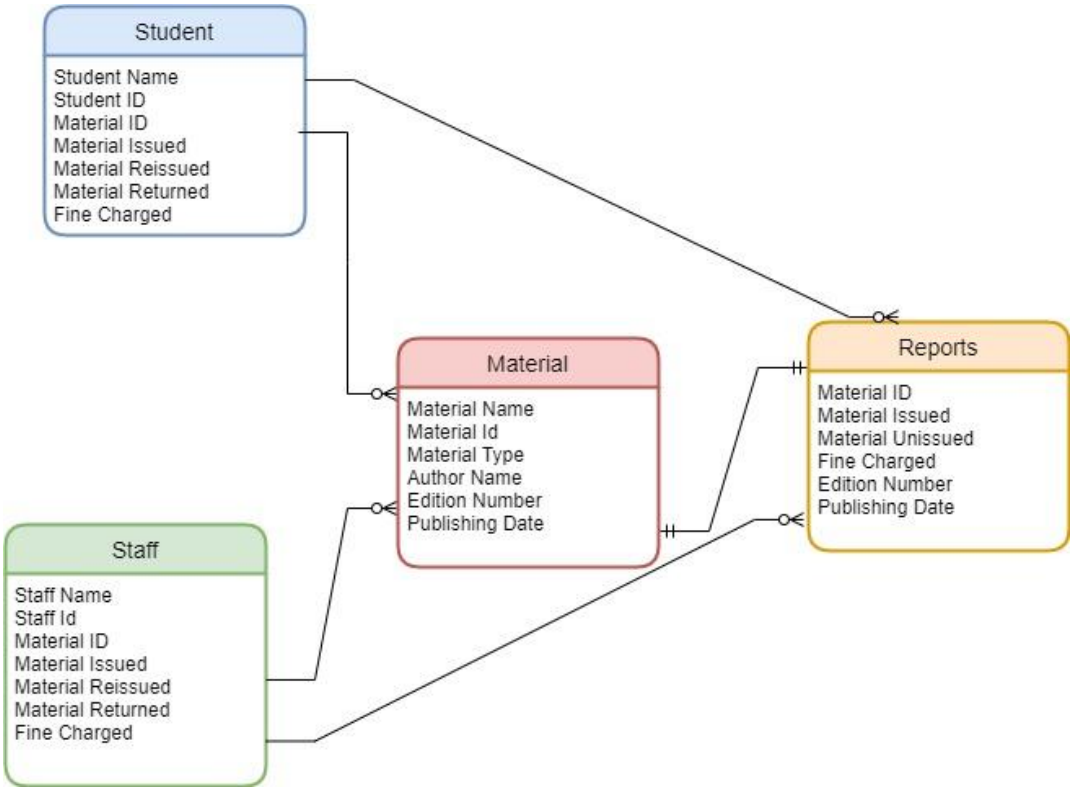
Out-of-scope Items

- Materials for sale
- Material supplier notification
- Access for Outsiders
- Memberships
- User donation of Books
- Issue/Return Daily Newspaper
- Library staff or Student information
- Reading Room Timings

8. Drawing a data flow diagram for the system



9. Drawing an ER diagram of the system



10. Writing out the Business Requirements, both Functional and Nonfunctional Requirements

Functional Requirements

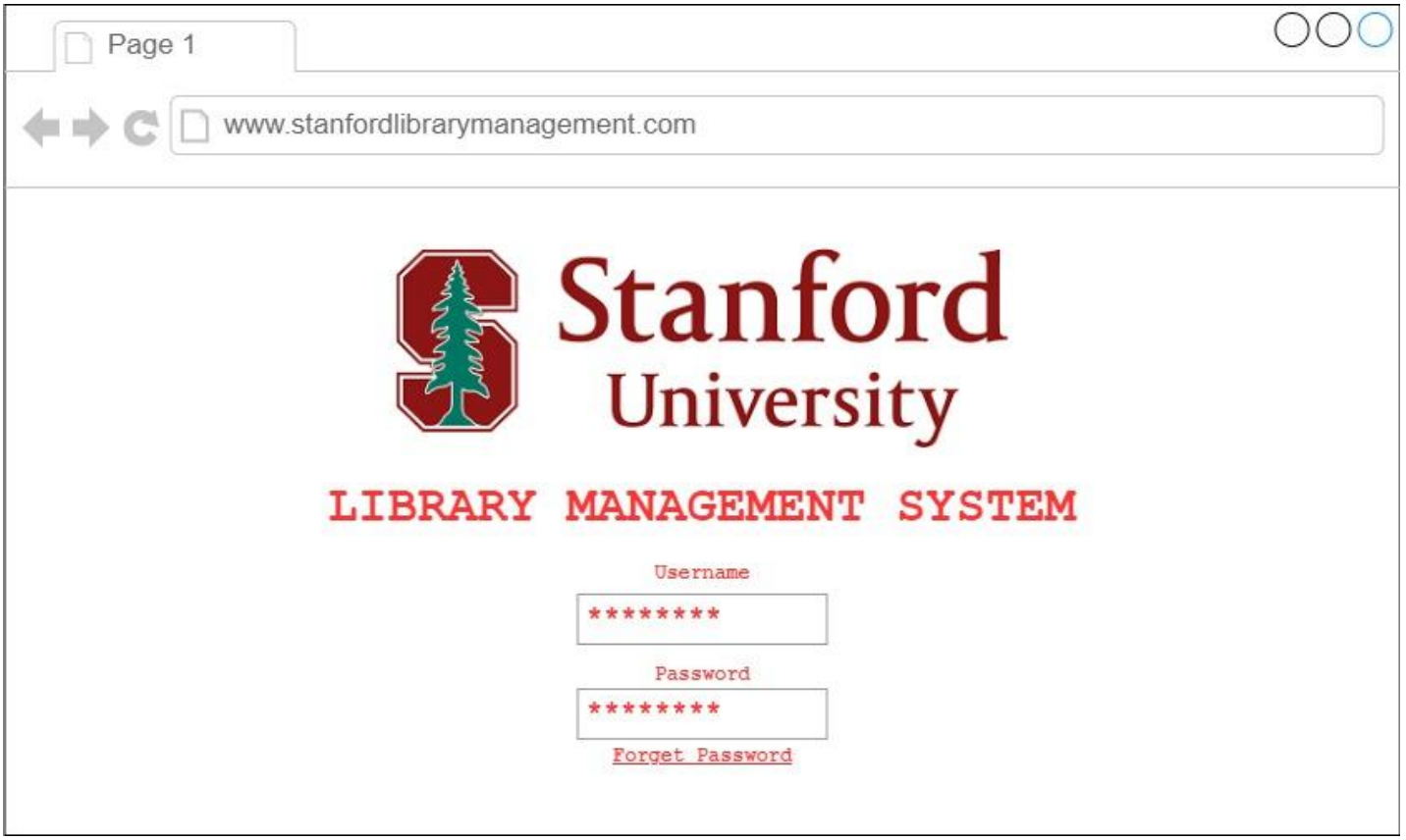
- The LMS shall be able to keep records of different categories of Material available in the library like books, magazines, research papers, journals, and newspapers.
- The Material shall be classified subject-wise in the LMS.
- Each category like books, magazines, research papers, journals, and newspapers shall have different issuing periods.
- Every reading Material available shall have an RFID tag on it.
- The Material records shall be stored in the database.
- The records shall include information like author, book name, publisher name, book edition, date and year of publication, cost of the book, and date of purchase of the Material.
- The students shall select the material in the LMS and go to the checkout counter whenever they want it from the library.
- The library staff shall use an RFID reader to capture the details of the Material.
- The student's name shall be tagged along with the Material they borrowed.
- The LMS shall record the issue date and return date of the Material.
- The LMS shall do an automatic calculation of fines in case of delayed return of the Materials.
- The library staff shall be able to search for the Materials on the LMS by search criteria like name, author, etc.
- The students shall be able to access the LMS online via the web or mobile interface to know the return date.
- The LMS shall send automated emails to the students 3 days before the return date to avoid a late return of books.
- The LMS shall have access to free e-journals and e-books.
- The RFID readers shall be placed at the exit gate of the library.
- The RFID reader shall track the Materials to a range of 2 meters and shall trigger an alarm with a loud sound, in case anyone tries to pass through the gate with an unissued Material.
- The Material drop box stations shall be installed outside the library.
- The students shall return the Materials at any time in the RFID-enabled Material drop box station.
- A student’s loan shall be immediately cancelled once the student deposits the Material in the drop box.
- The following reports shall be generated in the LMS:
    - Record of most rented books
    - Record of issued and unissued materials in the library
    - Amount of fine collected in a day, week, and month
    - Number of lost books
    - Report on the total number of Materials (i.e., books, journals, etc.)

Non-functional Requirements

- Scalability & Performance: The LMS shall be scalable for a volume of more than 20,000 students at a time
- Availability: The LMS webpage shall be available on the intranet and the internet
- Usability: The LMS shall be user-friendly and self-explanatory
- Maintainability: Java OS shall be used to develop the LMS to be easy-to-maintain in the future.
- Portability: The LMS shall run on both Windows and Mac Operating Systems.
- Functionality: The LMS shall be able to calculate the fines precisely.

11. Drawing wireframes or mock screens for any 2 of the features

Login Page



Profile Page