**Problem definition and demand analysis**

* Introduction

Researches demonstrated that, in order to satisfy the information demand of modern sociality the library transferred to automated library service model. Today, technology has been helping to manage libraries efficiently. Solutions are widely used and the software got developed is Library Management System that uses to supervise and monitor the record and all necessary requirement to handle a library’s day-to-day transactions. The system provides set of features: keep track of the books and their checkouts, the number of available books in the library, the number of books are issued or returning or renewing a book or details of an user (whose also can see the status of the item) with the respective due dates and late fine charge record. For borrowing the item from the library, any user must get registered in the system initially. It also involve maintaining a database that is useful for librarians to entering/deleting new books & recording books that have lost and update book’s catalog. At long last, this software helps for assisting the librarian to support the daily work over with a lot of ease.

* Problem Statement: a library must be able to handle other actions like; acquisition, inventory, finance, circulation, generating statistical reports, and other references. Also the system should be able to insert, remove, update, inquire, sort and count the information.
* Problem Definition:
* The Library Management system implements databases to make the existing system more structured
* A library database system is an infrastructure that allows users to search books and it’s content and select books.
* Library users require an efficient method to find a specific book or keywords within a book.
* The user can enquire about the availability of a book in which he can search by entering the author’s name or by entering a title of the book and hence issues the book if it is available.
* The user can borrow a book. He must provide the user name and the card number, which is unique and confidential to each user. By confirming the authenticity of a user, the library management system checks information about the number of books already borrowed by the user and is he allowed to borrow books respective to his limit.
* If the book has no restrictions it is issued to the user.
* When a book is to be borrowed, its barcode is read and is fed to the system.
* Providing messages to the administrator about the fine to be paid and books to be returned.
* Demand analysis

It need to accurately obtain the user requirements, thus to define system requirements.

* Objective:
* Our objective in this project is to create a Library Management System where in users can access all the features told above. Which user can use application to browse and request a desired books and allowing them to consume books on demand.

Additionally, which will provide the following capabilities:

* Provide additional flexibility and convenience to the library users.
* Provide better reliability and security of the library information.
* Provide a more productive environment for the library staff member.
* The tasks we have to do:

So, we have the two point in our system: User and Librarian

We will use the structure of binary search tree.

For now, we will focus on the following set of requirements.

Main requirements:

1. User’s account details (ID card, password, status, name, address, email, phone)
2. Search option (by author, by title, by subject, by publication date)
3. Constants (by referring to the database whether the user can borrow books or not, max books issued to a user, max lending days)

Other requirements:

1. Check-out a book (title, author, book’s format, bar code/ID card including a rack number of the item)
2. Check the book status (available, lost, reserved, loaned)
3. Loaning status (waiting, determined, canceled)
4. Cancellation procedure (remove the reservation)
5. Return a book (user details + book details, due date, (if) count fine charge, late, damaged, misplaced)
6. Renew a book (update)

* Result:
* Created Library Management System gives access to the resources in your library. A well-organized system will increase your library’s efficiency, save valuable administration time, lead to a better educational experience for students and help develop independent learning.