



CS101 PROJECT -SYSTEM REQUIREMENT SOFTWARE

SYSTEM REQUIREMENT SOFTWARE FOR LIBRARY MANAGEMENT SYSTEM

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1. INTRODUCTION

1.1. PURPOSE

The purpose of this document is to present a detailed description of our software system viz. LIBRARY MANAGEMENT SYSTEM. It will provide a description of the software system to be developed, laying out functional and non-functional requirements.

It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli.

This document is intended for both the end member(s) and the developers of the system.

1.2. SYSTEM OVERVIEW

This program runs on both Windows and Linux interface. The system must have a compiler preferably Code::Blocks with GTKmm 3 installed.

1.3. SCOPE

The LIBRARY MANAGEMENT SYSTEM is designed to provide a systematic software for librarians to manage book records, inventory and member details. This software can be later expanded to interlink libraries across different networks by basically using the same protocols. The database size can be increased and graphical interface can be improved.

1.4. REFERENCES

- i) <https://www.google.co.in/>
- ii) <http://en.wikipedia.org/>
- iii) <http://stackoverflow.com/>
- iv) <http://www.cse.iitb.ac.in/~cs101/>
- v) Introduction to Problem Solving and Programming through C++ by Abhiram Ranade

2. OVERALL DESCRIPTION

2.1. PRODUCT PERSPECTIVE

Our software is totally independent and self-contained and does not form a component of a larger system or project

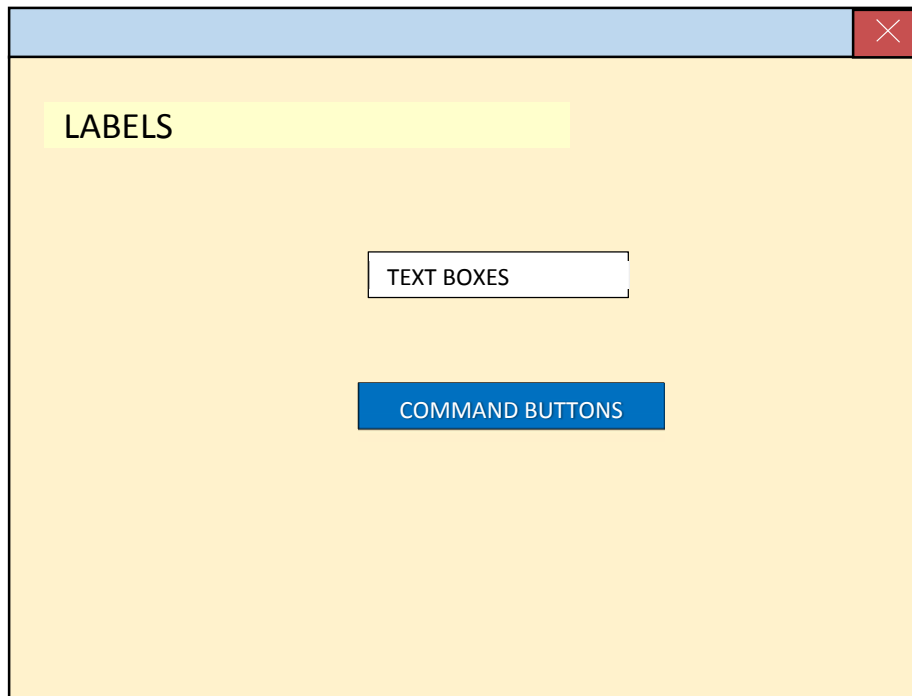
2.1.1. SYSTEM INTERFACES

The software opens a new window implemented by gtkmm which serves as mode of interaction between member and system.

2.1.2. MEMBER INTERFACES

The software uses a Graphical Member Interface (GUI) implemented using gtkmm which is an interface of GTK+ in C++.

The member interface looks like this:



2.1.3. HARDWARE INTERFACES

The software requires only the basic hardware – monitor, mouse and keyboards. Running locally the software has no special hardware requirements.

FUTURE SCOPE: Later many different networks may be connected over LAN or WAN.

2.1.4. SOFTWARE INTERFACES

- 2.1.4.1. The LIBRARY MANAGEMENT SYSTEM shall communicate with BOOK.dat to access information about books
- 2.1.4.2. The LIBRARY MANAGEMENT SYSTEM shall communicate with STUDENT.dat to access information about students

2.1.5. COMMUNICATION INTERFACES

The LIBRARY MANAGEMENT SYSTEM shall be using the libraries <fstream> and <cstdio> for communication with the .txt files containing information about books and members.

2.1.6. MEMORY CONSTRAINTS

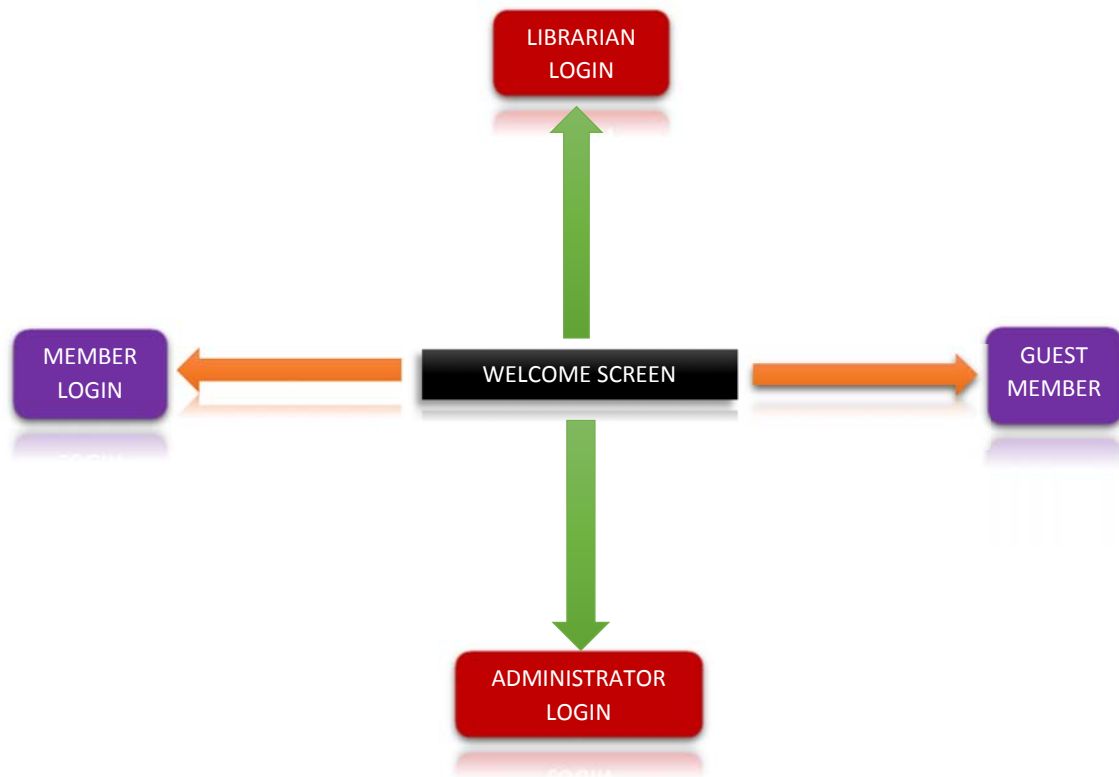
Any software involving database management involves a memory constraint. IN this case we estimate that using a decent enough machine one can have as many as 5000 records of books and members each without any memory problems.

2.2. PRODUCT FUNCTIONS

The main function of the LIBRARY MANAGEMENT SYSTEM is to maximize member comfort and minimize the time spent in bookkeeping, logging and searching.

The LIBRARY MANAGEMENT SYSTEM is meant to act as a replacement for the ordinary library management systems which depend on paper work for recording book and members' information. LIBRARY MANAGEMENT SYSTEM will provide a book search mechanism and will make it easy to borrow, insert and index a book in the library.

The structure of the software is discussed below.



2.3. MEMBER CHARACTERSTICS

The software focusses mainly on three kind of members:

- MEMBERS
 - GUEST MEMBERS
 - Can apply for an account
 - Can search for a book
 - No login required
 - REGULAR MEMBERS
 - Allows members to
 - ✓ Search for a book
 - ✓ Issue a book
 - ✓ Return a book
 - ✓ Request a book
 - ✓ Change passwords
 - Members have a unique ID and must login to access their accounts
- ADMINISTRATOR
 - Allows ADMIN to
 - Create new member
 - Remove a member
 - View the records of whole library
 - Administrator must login to access the ADMIN menu
 - Also gives other Administrator specific privileges
- LIBRARIAN
 - Gives Librarian the following privileges
 - Add a book
 - Remove a book
 - Modify book details
 - View the records of whole library
 - View Book Requests
 - Librarian must login to access the LIBRARIAN menu

2.4. CONSTRAINTS AND ASSUMPTIONS

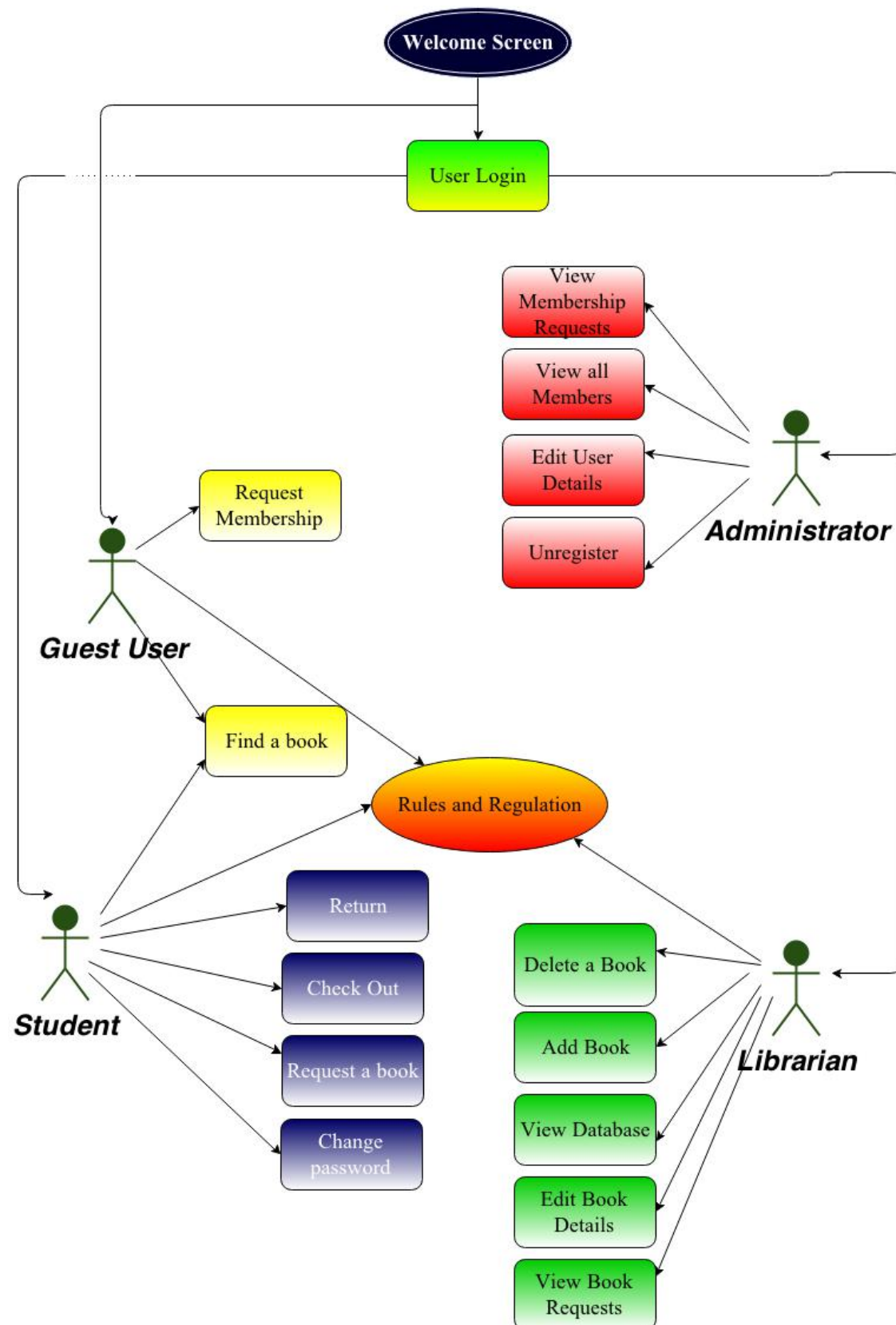
The software is developed under the following constraints and assumptions:

2.4.1. CONSTRAINTS

- 2.4.1.1. The member should not be able to change the system date i.e. there should be a highly synchronised time keeping in the library.
- 2.4.1.2. The members must have their correct member names and passwords o login into the software.

2.4.2. ASSUMPTIONS

- 2.4.2.1. The member should have working knowledge of computers
- 2.4.2.2. The member should understand English
- 2.4.2.3. The machine on which software is installed is having the minimum required hardware components



3. SPECIFIC REQUIREMENTS

3.1. EXTERNAL INTERFACE REQUIREMENTS

The software should open up a new window having Graphics Member Interface and allowing the end member to easily access and use the various functions provided.

3.2. FUNCTIONAL REQUIREMENTS

3.2.1. PROJECT FEATURES

The various features provided to the MEMBERS and the ADMINSTRATOR are provided below:

1. ADMINSTRATOR

Pre-requisite: The administrator must login to access the ADMIN menu

i)

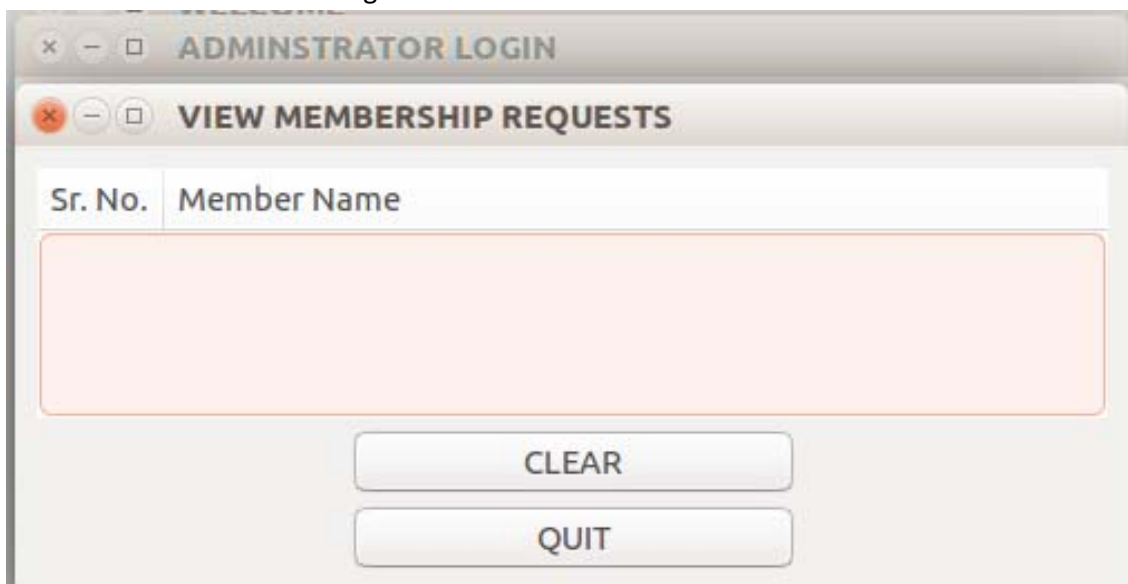
Title: CREATE NEW MEMBER

Description: Allows the administrator to create a new member of the library

ii)

Title: VALIDATE REGISTRATION

Description: Allows the administrator to approve the registration request of a guest member.



ii)

Title: MODIFY MEMBER DETAILS

Description: Allows the administrator to modify details like membership type etc. of a member.

iii)

Title: REMOVE A MEMBER

Description: Allows the administrator to remove an existing member.

iv)

Title: VIEW RECORDS

Description: Allows the administrator to view the member and book records of the library.

v)

Title: RULES AND REGULATIONS

Description: Allows the administrator to view and modify the rules and regulations of the library.

vi)

Title: CHANGE PASSWORD

Description: Allows the administrator to change password of members.



2. LIBRARIAN

Pre-requisite: The librarian must login to access the LIBRARIAN menu.

i)

Title: CREATE NEW BOOK RECORD

Description: Allows the librarian to create a new book for the library

ii)

Title: VIEW BOOK REQUESTS

Description: Allows the librarian to approve or disapprove book request made by a member.

ii)

Title: SEARCH FOR A BOOK

Description: Allows the librarian to search for a book.

iii)

Title: MODIFY BOOK DETAILS

Description: Allows the librarian to modify details of a book.

iv)

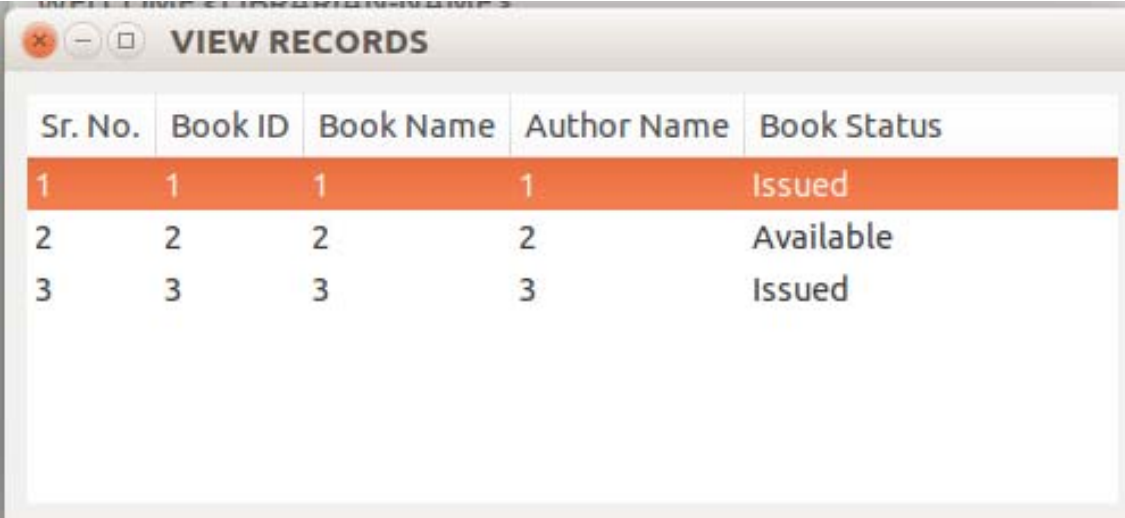
Title: REMOVE A BOOK

Description: Allows the librarian to remove a book permanently from library.

v)

Title: VIEW RECORDS

Description: Allows the librarian to view the book records of the library.



Sr. No.	Book ID	Book Name	Author Name	Book Status
1	1	1	1	Issued
2	2	2	2	Available
3	3	3	3	Issued

vi)

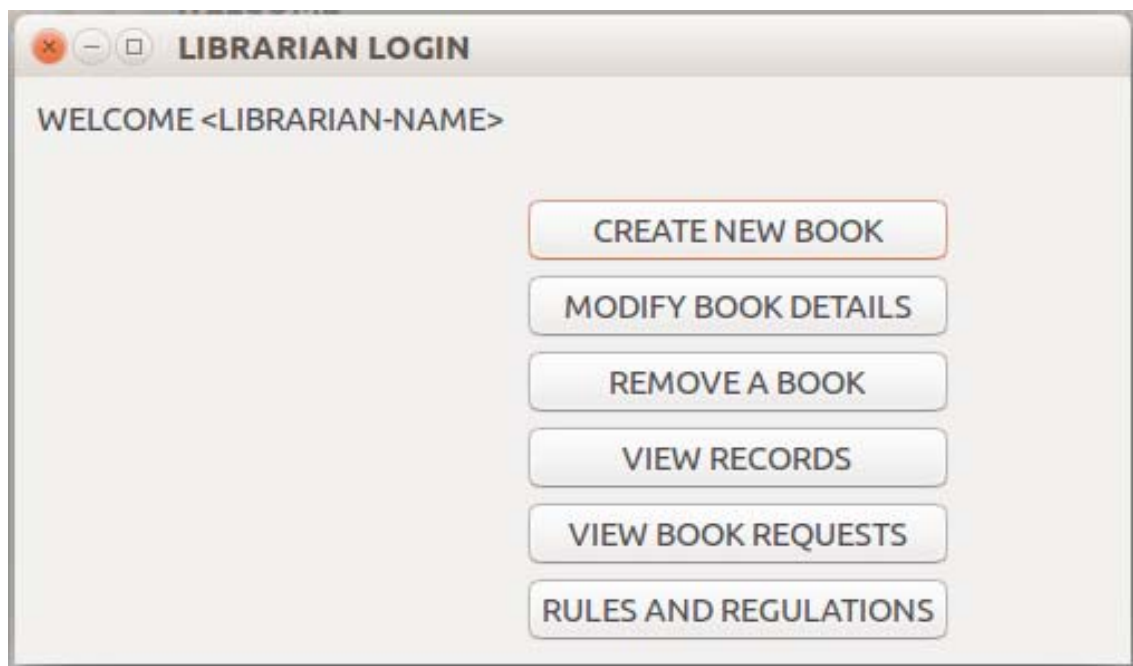
Title: RULES AND REGULATIONS

Description: Allows the librarian to view and modify the rules and regulations of the library.

vii)

Title: VIEW BOOK REQUESTS

Description: Allows the librarian to view the book requests made by the members.



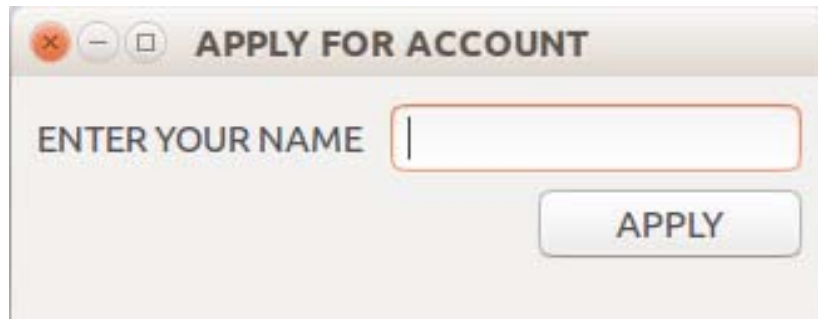
3. GUEST MEMBERS

Pre-requisite: No pre-requisites required.

i)

Title: APPLY FOR ACCOUNT

Description: Allows the guest member to apply for an account. This request further needs to be validated by administrator.



APPLY FOR ACCOUNT

ENTER YOUR NAME

APPLY

ii)

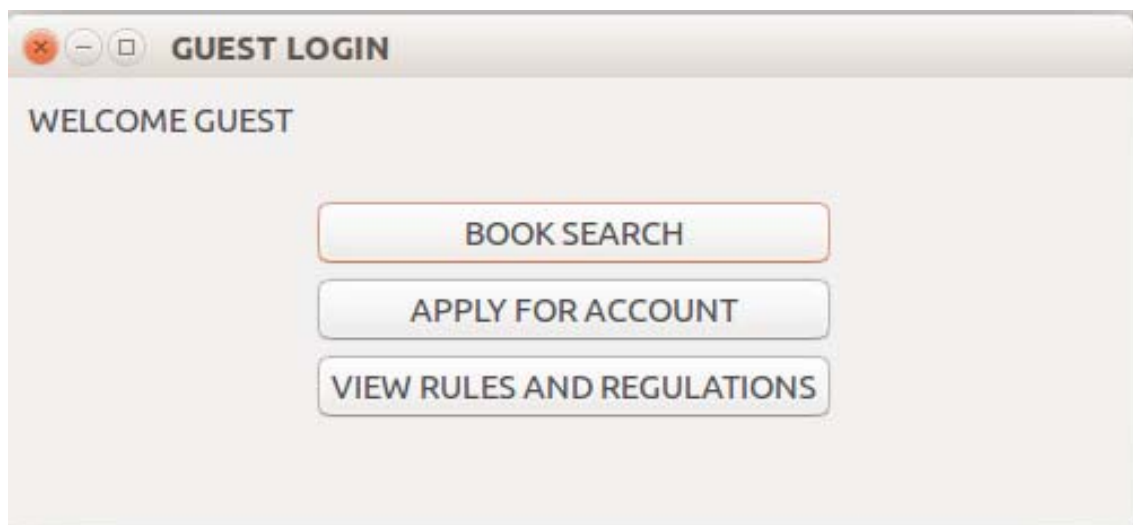
Title: SEARCH FOR A BOOK

Description: Allows the guest member to search for a book.

iii)

Title: RULES AND REGULATIONS

Description: Allows the guest member to view the rules and regulations of the library.



GUEST LOGIN

WELCOME GUEST

BOOK SEARCH

APPLY FOR ACCOUNT

VIEW RULES AND REGULATIONS

4. MEMBERS

Pre-requisite: The user must login to access the MEMBERS menu.

i)

Title: SEARCH FOR A BOOK

Description: Allows the guest member to search for a book.

ii)

Title: ISSUE A BOOK

Description: Allows the member to issue a book.

iii)

Title: RETURN A BOOK

Description: Allows the member to return an issued book.

iv)

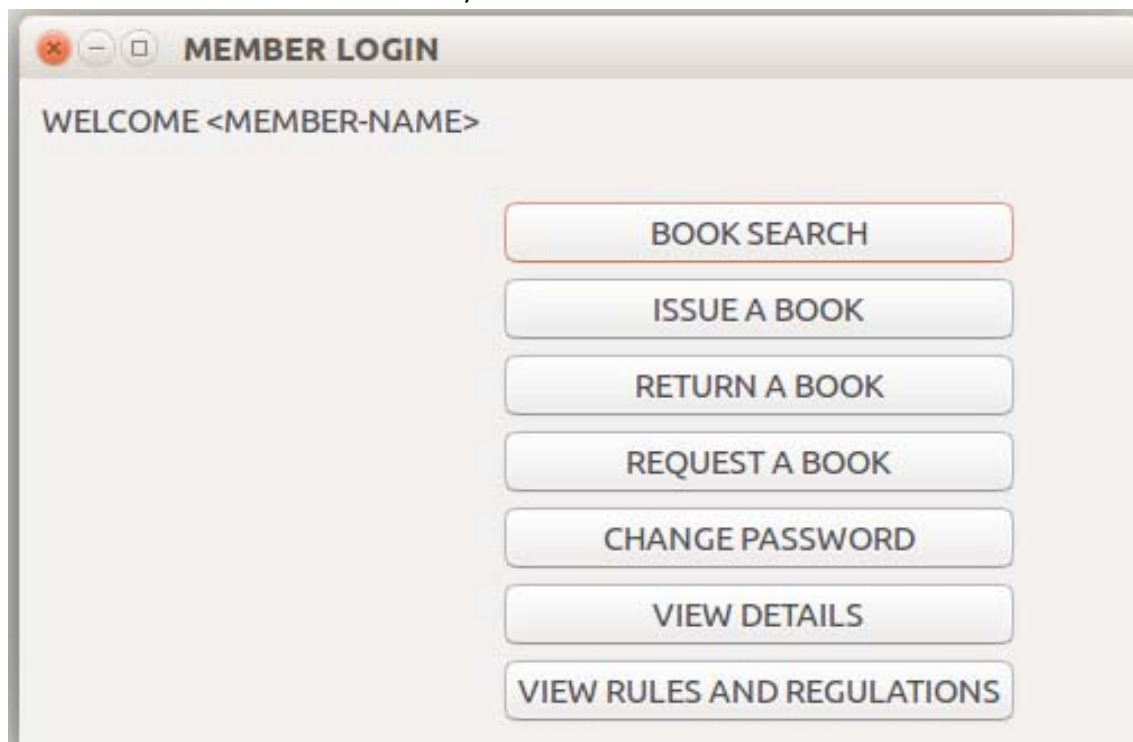
Title: REQUEST A BOOK

Description: Allows the member to request a book not present in the library.

vi)

Title: RULES AND REGULATIONS

Description: Allows the member to view the rules and regulations of the library.



PERFORMANCE REQUIREMENTS

- 3.2.2. Should run on minimum 500 MHz, 256 MB machine.
- 3.2.3. 90% of the responses should be within 2 sec, except for searching the database for which more time is acceptable
- 3.2.4. The software should support as many as 10,000 records at a time without causing any problems
- 3.2.5. The software should support only one member at a time

3.3. DESIGN CONSTRAINTS

3.3.1. REPORT FORMAT

The report format should be clear and must clearly report all the attributes associated with the entity.

3.3.2. DATA NAMING

The data naming must follow a standard naming convention and should reduce the effort needed to read and understand the code as well as enhance the source code appearance

3.4. LOGICAL DATABASE REQUIREMENT

The system must store all the member account information records. All the data shall be stored in text-based flat files. For each member account, the MEMBER ID, name, password shall be stored in one file in CSV format.

Here is an example of what the output should look like:

MEMBER ID	MEMBER NAME	MEMBER FINES	ISSUE DATE
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BOOK ID	BOOK NAME	AUTHOR'S NAME
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3.5. SOFTWARE SYSTEM ATTRIBUTES

3.5.1. RELIABILITY

The software should be bug free as far as possible. It should not crash frequently and return proper error messages wherever possible.

3.5.2. AVAILABILITY

The software is readily available for installation and other modifications whenever needed.

3.5.3. SECURITY

The MEMBER ID and passwords are secure and should not be accessible from anywhere inside the program to administrator or the members.

3.5.4. MAINTAINABILITY

The software should be low maintenance and should not require frequent upgrades. The aim is to provide a software that takes care of needs of near future as well. However the updates will be addressed and issues will be tried to be taken care of as soon as possible.

3.5.5. PORTABILITY

The program should have cross platform compatibility and should run on popular operating systems like Linux Ubuntu (All distros), Windows 7, Windows 8, Windows 8.1 .

3.6. OTHER REQUIREMENTS

The software should be licenced to IIT BOMBAY.