Software design document

LIBRARY MANAGEMENT SYSTEM

Software Design Document

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1. INTRODUCTION

1.1 Purpose

This software design document describes the architecture and system design of Library management system.

1.2 Scope

The Library Management System is a web-based online system for assisting both the students/teachers and librarian/staff in borrowing and supervising the books. The system would provide fundamental set of features for adding and/or updating members, adding and/or updating books, getting the list of books, finding out the list of books currently checked out, reserving and borrowing books.

1.3 Overview

Online Library Management System is a system which maintains the information about the books present in the library, their authors, the members of library to whom books are issued, library staff and all. This is very difficult to organize manually. Maintenance of all this information manually is a very complex task. Owing to the advancement of technology, organization of an Online Library becomes much simple. The Online Library Management has been designed to computerize and automate the operations performed over the information about the members, book issues and returns and all other operations

1.4 Reference Material

Document for further reference

IEEE Standard for Information Technology--Systems Design--Software Design Descriptions

1.5 Definitions and Acronyms

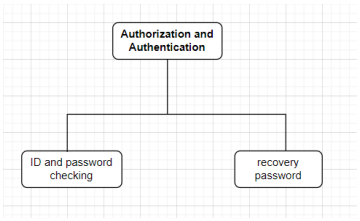
SRS – Software Requirements Specification
DFD – Data Flow Diagram
PDL – Procedural Description Language
OO – Object Oriented

2. SYSTEM OVERVIEW

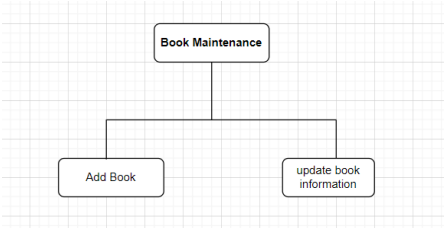
This overview will brief about the functionality and process of the library management system.

A college library management is a project that manages and stores books information electronically according to students needs. The system helps both students and library manager to keep a constant track of all the books available in the library. It allows both the admin and the student to search for the desired book. It becomes necessary for colleges to keep a continuous check on the books issued and returned and even calculate fine.

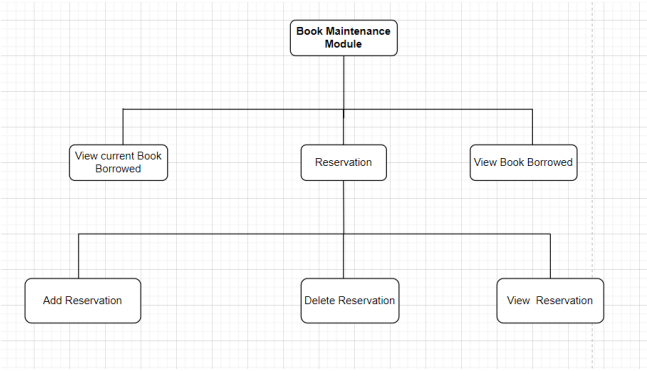
Modules:



- **Admin login:** This module is used by user which means librarian in the library.They need to login to the system using their id and password.In order to distinguish the user's level,user can access to different moduke when successfully login.



- **Add and Update Books:** The admin can add books to the system by entering the details of the books and can even update the details.
- **Student Login:** Student can login by using their id and password.student can access to different module when successfully login.
- **Search option:** Admin and Students can even search for books by entering the name of the book or search via book title,author.



- **Book Maintenance:** Book Maintenance Module allows the user to view the book currently they have borrowed and also view the book they have borrowed and also we can reserve books they can also delete their reservation and also they can view currently the book they reserve.

3. SYSTEM ARCHITECTURE

3.1 Architectural Design

• ERD (Entity Relationship Diagram): - The primary purpose of ERD is to represent the relationship between data objects. Various components of ERD are: -

1. Entity
2. Attribute
3. Relationship

• DFD (DATA FLOW DIAGRAM): -Data Flow Diagram is one of the Functional Model which are used to represent the flow of information in any computer based system.

Three Generic Functionalities: -

1. Input
2. Process
3. output

3.2 Decomposition Description

The top level view of DFD shows the main actors interacting with the system.

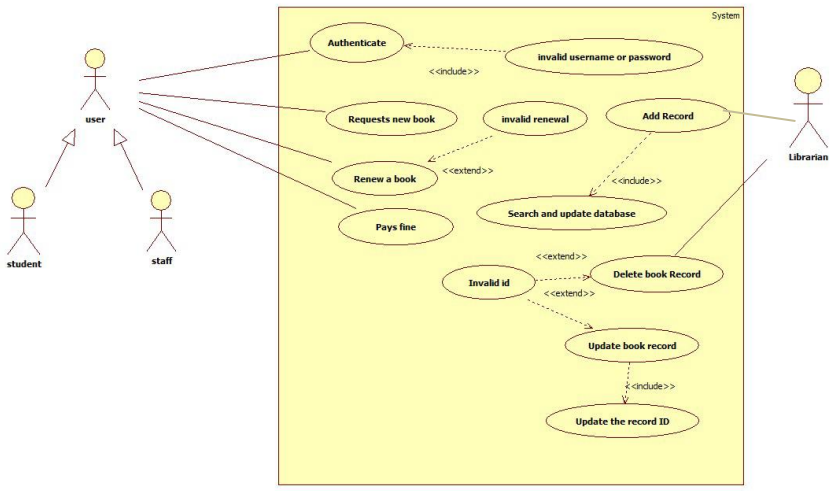
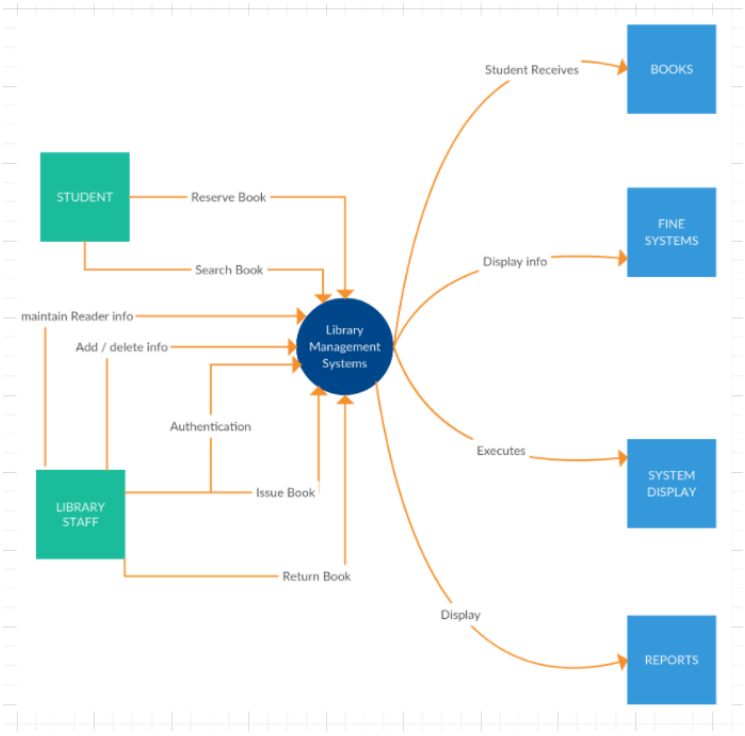
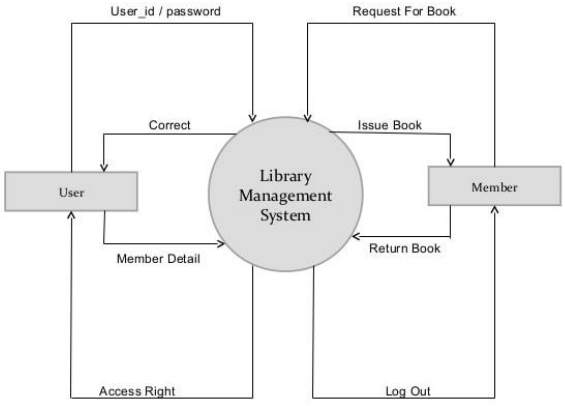


Figure:1

Top Level Data Flow Diagram(DFD):



Top Level Context Free diagram:



3.3 Design Rationale

Figure 1 describes the architectural overview chosen for the Library Management System. As seen from the diagram, the User interacts with the application services and accesses the database through the Internet service.

This three-tier architecture has its logical and physical separation of functionality. Each tier can run on a separate operating system and server platform - e.g., web server, application server, database server - that best fits its functional requirements. And each tier runs on at least one dedicated server

hardware or virtual server, so the services of each tier can be customized and optimized without impacting the other tiers.

This architecture is used as it is based on users of multiple levels and our design abstracts the non-significant details to the user and makes it user-convenient to use.

We choose this type of architecture to make the traders, brokers to feel comfortable in using our website and also to get help from our team whenever necessary.

4. DATA DESIGN

4.1 Data Description

The library management system database design will contain the database design of the library management application. A database is a collection of information or data. A database contains different tables that will have a unique identity. The data will be stored in the form of rows and columns in these tables.

4.2 Data Dictionary

1. **Student:**

Description: The Student entity is used to represent a Student in the system.

Attributes: Authenticate,renewal a book,request a book,pays fine

2. **Staff:**

Description: The Staff entity is used to represent a Staff in the system.

Attributes: Authenticate,renewal a book,request a book,pays fine

3. **librarian:**

Description: librarian is used to manage the system and has full access to system.

Attributes: add book,delete book,update book.

5. COMPONENT DESIGN

In this section, we take a closer look at what each component does in a more systematic way. If you gave a functional description in section 3.2, provide a summary of your algorithm for each function listed in 3.2 in procedural description language (PDL) or pseudocode. If you gave an OO description, summarize each object member function for all the objects listed in 3.2 in PDL or pseudocode. Describe any local data when necessary.

Here is the list of summaries provided from the functional description described for library management systems.

Here, we are going to see a few more details in a more systematic way through pseudocode.

So, there are two main functions: **Sign Up** and **Login**. Let's see the first two.

1)SignUp

Start

go to Login/SignUp Page

if Option is SignUp

Enter Username and Password along with other user informations for profile

Verification

if verification and account creation finished

finish SignUp

go to Login page

else

print Error SignUp

else if Option is Login

go to Login page

End

2) Login

Start

go to Login Page

if Username and Password exists

if Username and Password matches

finish Login

if user is Staff

go to Staff interface

else if user is Librarian

go to Librarian interface

else if user is Student

go to Student interface

else

print Error Login

else

print Error Login

End

Now let's see the subfunctions contained in the Login function.

Staff has access to the Class module and Update module.

Librarian has access to the Class module ,Update module and User module.

Student has access to the update module.

3)Class module

Start

if User is Staff

view/add/edit/delete User account

view list of books

get available books

replace books

obtain e-copy of stock invoice

else if User is Librarian

view/add/edit/delete User account

view/add/edit books

view and verify User information at any time

modify User permissions

control updates

else if User is Student

view/add/edit/delete User account

view Staff users

get and replace books based on client(Staff) permission

execute updates

End

4)Update module

Start

if Update request received

    if Update confirmed

    Get User lib_account details

    Verify All User details

    Proceed Update

    Check for proper connection

    if Update successful

        print Update Success

        finish Update

     else

        print Update failed

    else

    print Update error

else

    print Update error

End

5)User module

Start

if User logged in and SignedUp

    Can view/add/edit/delete User account information

    View update history

Raise feedback/complaints regarding System

Execute updates

Get/Replace Books

End

6. HUMAN INTERFACE DESIGN

6.1 Overview of User Interface

Describe the functionality of the system from the user's perspective. Explain how the user will be able to use your system to complete all the expected features and the feedback information that will be displayed for the user.

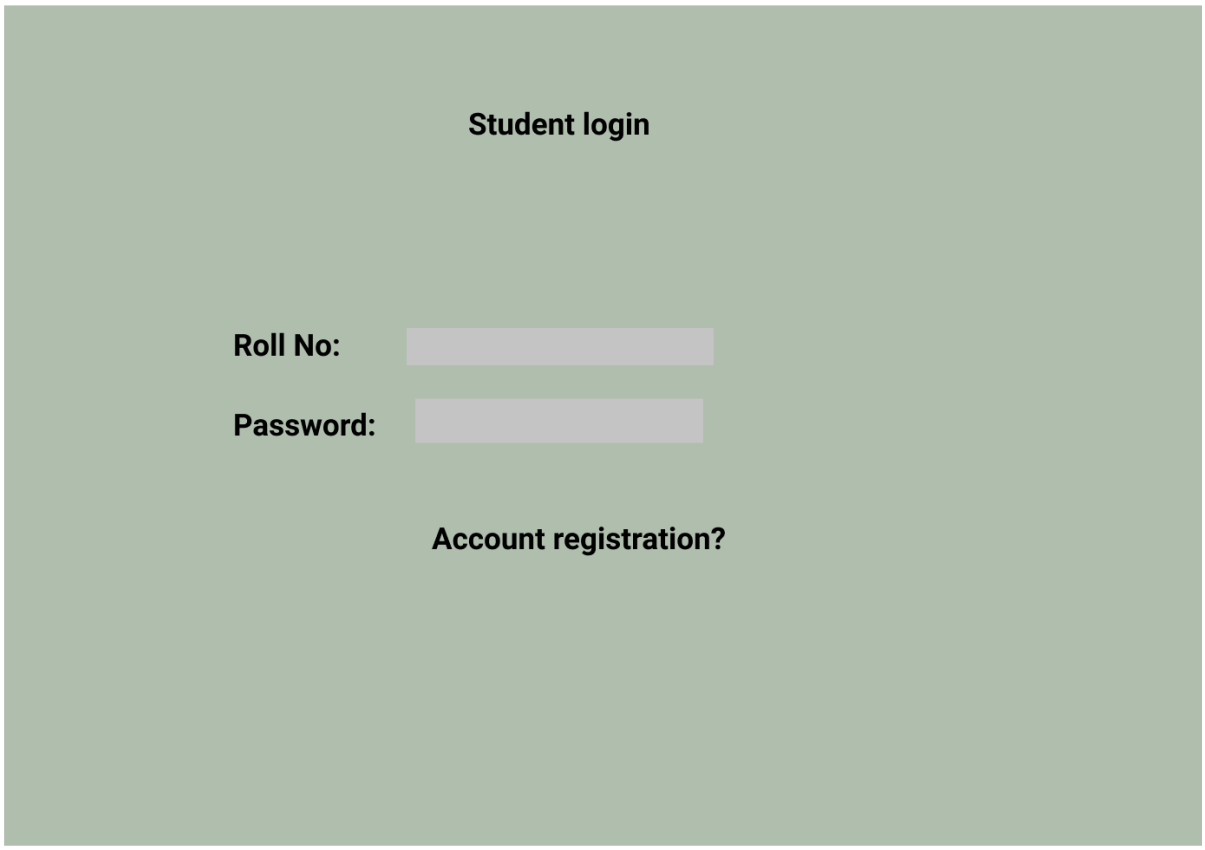
6.2 Screen Images

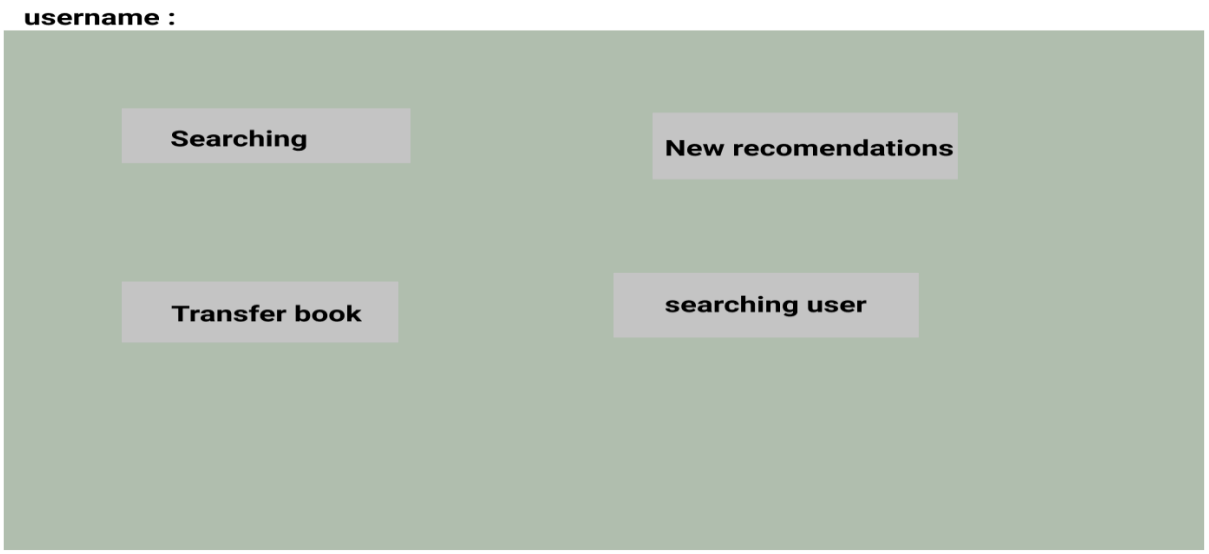
Display screenshots showing the interface from the user's perspective. These can be hand-drawn or you can use an automated drawing tool. Just make them as accurate as possible. (Graph paper works well.)

Library managemnet system

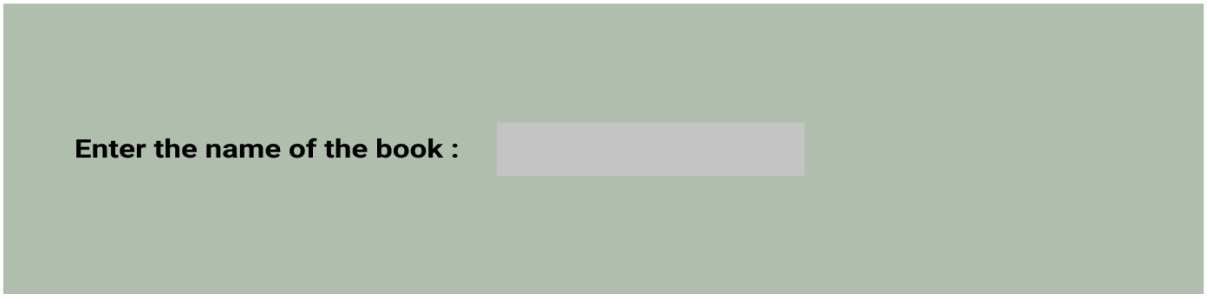
student

staff


Student login
Roll No:
Password:
Account registration?

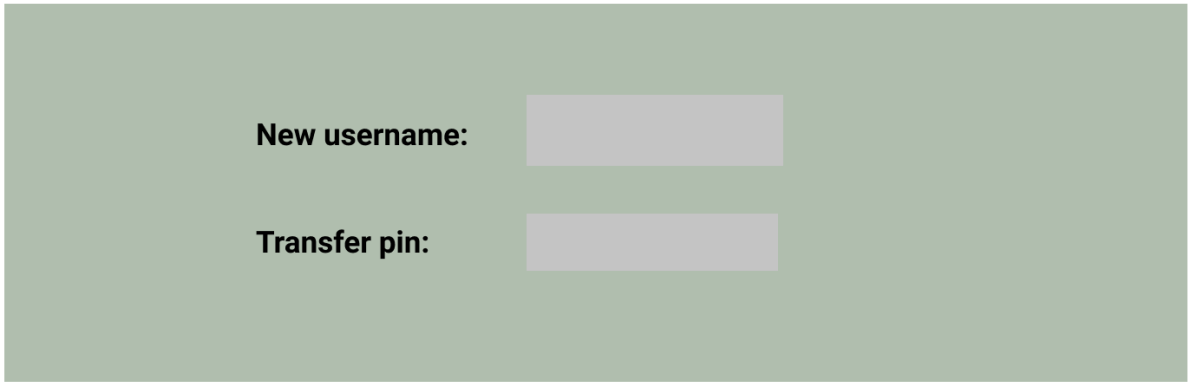

username :
Searching
New recomendations
Transfer book
searching user

Searching book:



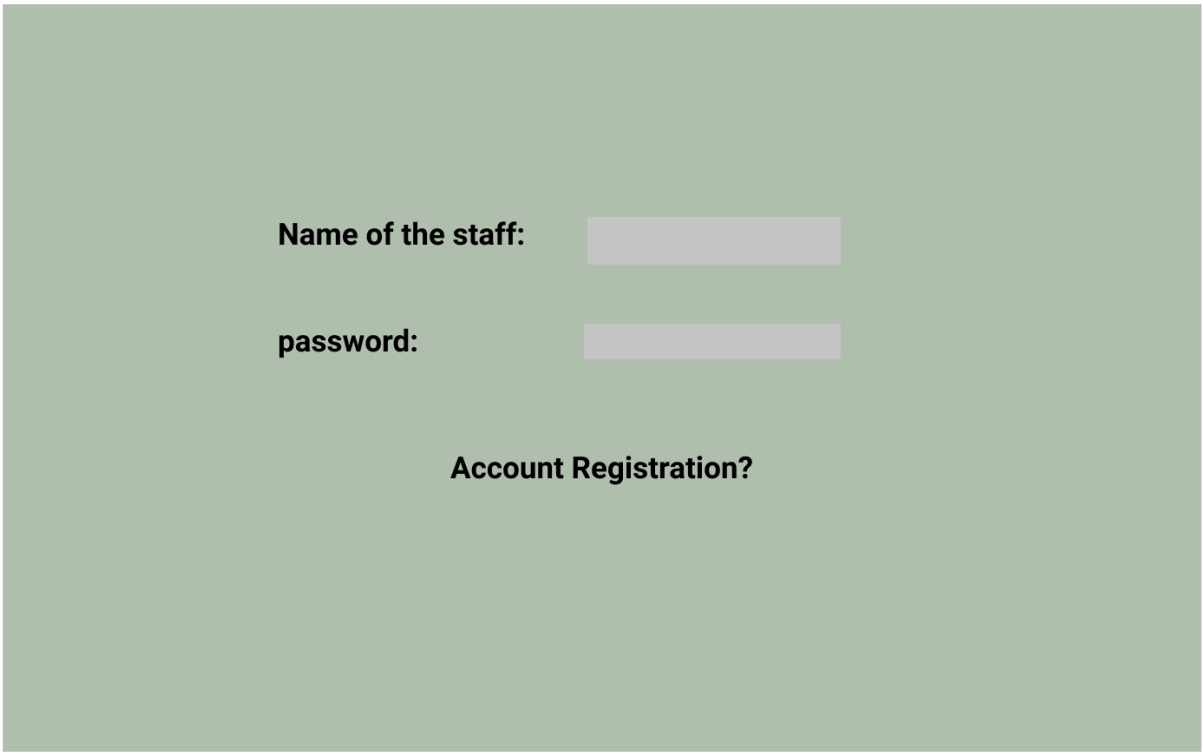
output:

Transfer book:

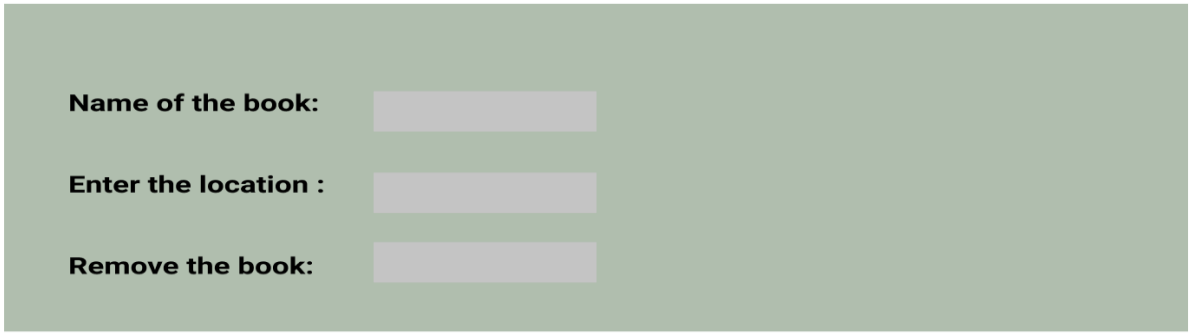


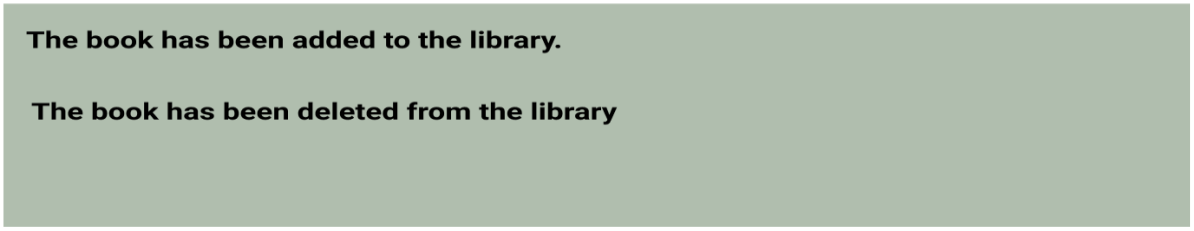
Search User:

STAFF LOGIN:



Update books:





Borrowing book:

6.3 Screen Objects and Actions

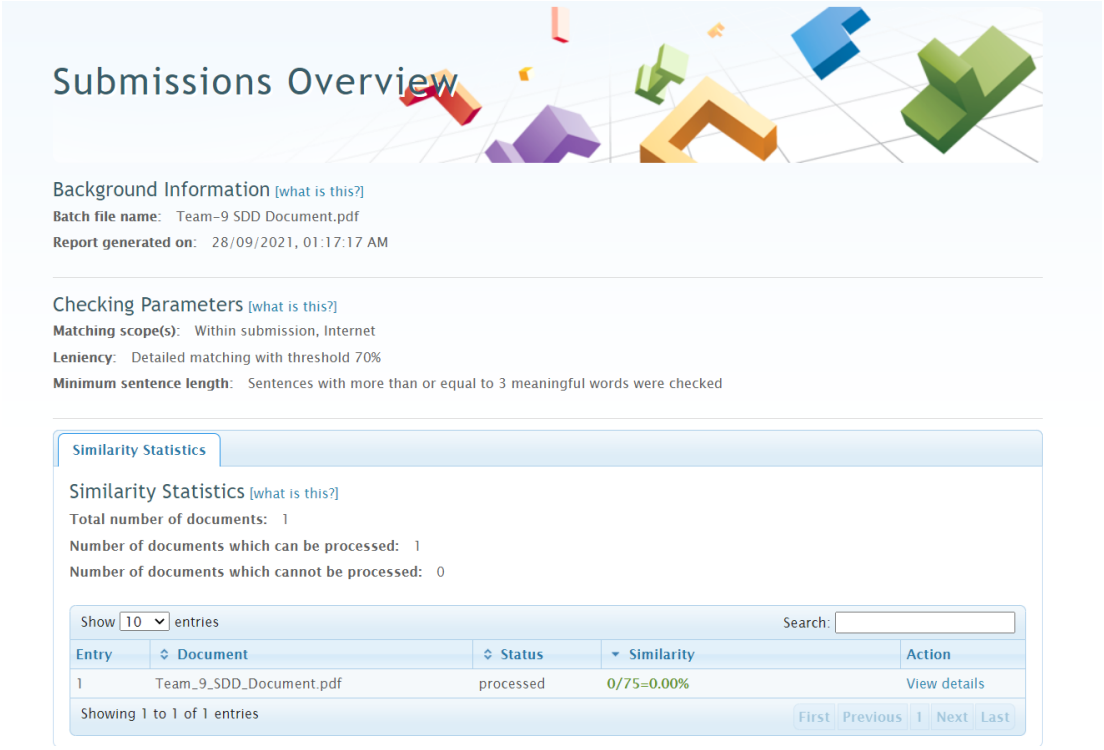
A discussion of screen objects and actions associated with those objects.

7. REQUIREMENTS MATRIX

Which system components satisfy each of the functional requirements from the SRS.

S.NO	System Components	Functional Requirements
1	Search Books	Searching for the books
2	Manage Books	Managing the books and its details in the library
3	Manage users	Managing the user details
4	Passage of books	Passing books between the users
5	Recommendation	Book recommendation

Plagiarism Report:



Submissions Overview

Background Information [what is this?]

Batch file name: Team-9 SDD Document.pdf

Report generated on: 28/09/2021, 01:17:17 AM

Checking Parameters [what is this?]

Matching scope(s): Within submission, Internet

Leniency: Detailed matching with threshold 70%

Minimum sentence length: Sentences with more than or equal to 3 meaningful words were checked

Similarity Statistics

Similarity Statistics [what is this?]

Total number of documents: 1

Number of documents which can be processed: 1

Number of documents which cannot be processed: 0

Show 10 entries Search:

Entry	Document	Status	Similarity	Action
1	Team_9_SDD_Document.pdf	processed	0/75=0.00%	View details

Showing 1 to 1 of 1 entries First Previous 1 Next Last