



System Requirement Specification

GROUP 1

Online Library Management System

(LiMS)

Security Classification: **Confidential**

Approval Page

Decision Approved Rejected

Name:

Signature/Date:

Revision History

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21/10/2021	0.1.16	TrangLT	Update UC02 mockup screens and screen description

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1. INTRODUCTION

1.1 Purpose

The Software Requirement Specifications will:

- ❖ Define the scope of business objectives, business functions, and organizational units covered,
- ❖ Identify the business processes that the solution must facilitate,
- ❖ Facilitate a common understanding of what the functional requirements are for all parties involved,
- ❖ Establish a basis for defining the acceptance tests for the solution to confirm that what is delivered meets requirements.

The purpose of the document is to collect and analyse all assorted ideas that have come up to define the system, its requirements with respect to consumers. Also, we shall predict and sort out how we hope this product will be used in order to gain a better understanding of the project, outline concepts that may be developed later, and document ideas that are being considered, but may be discarded as the product develops.

1.2 Glossary and Abbreviations

2. HIGH LEVEL REQUIREMENTS

This project is aimed at developing an online Library Management System (LiMS) for the college library. This is an Intranet based application that can be accessed throughout the campus. This system can be used to search for books/magazines, reserve books, find out who is having a particular book, put in requests to buy a new book etc. This is one integrated system that contains both the user component and the librarian component. There are features like email notifications/reminders and report generators in this system.

2.1 High Level Business Process

2.1.1 Flowchart

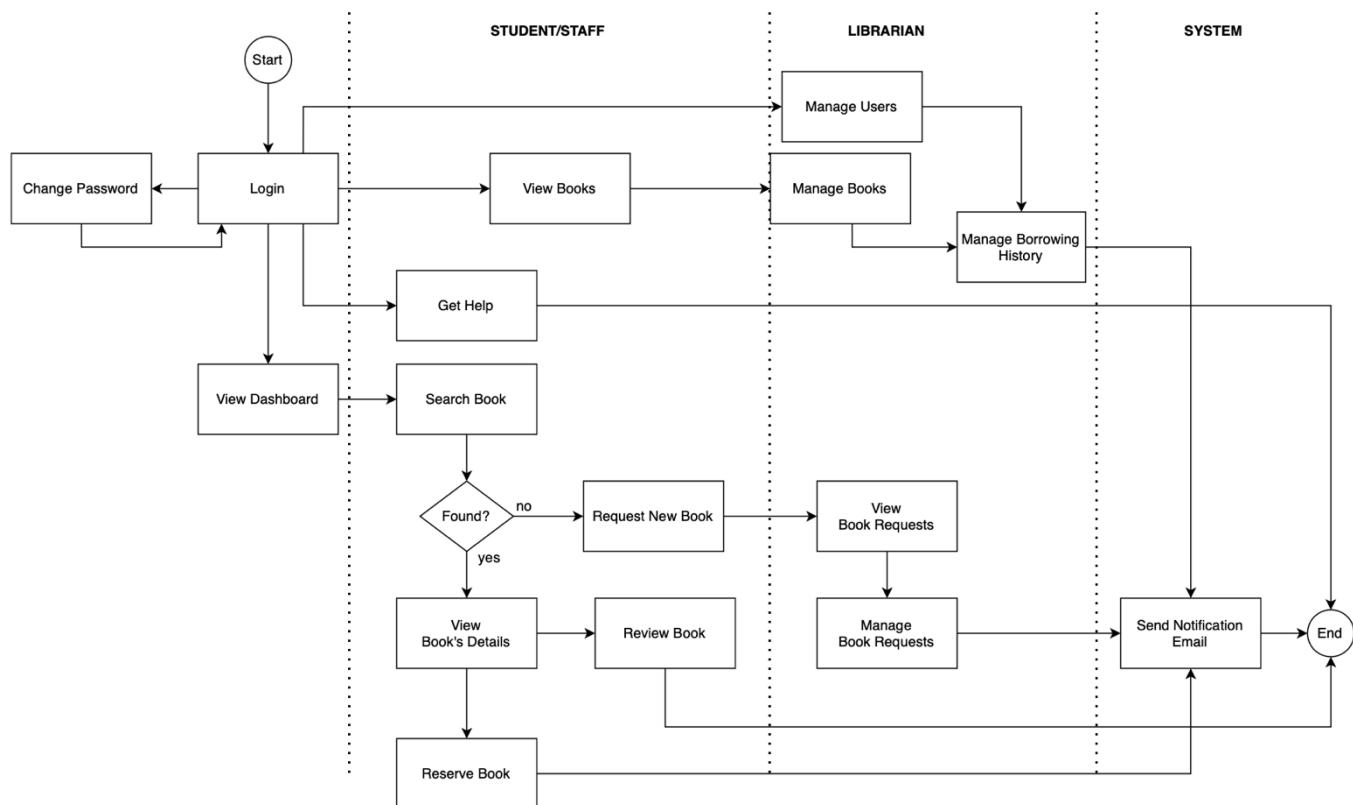


Figure 2.1-1: High-level flowchart

2.1.2 Swim Lane Flow Chart

2.1.2.1 Login

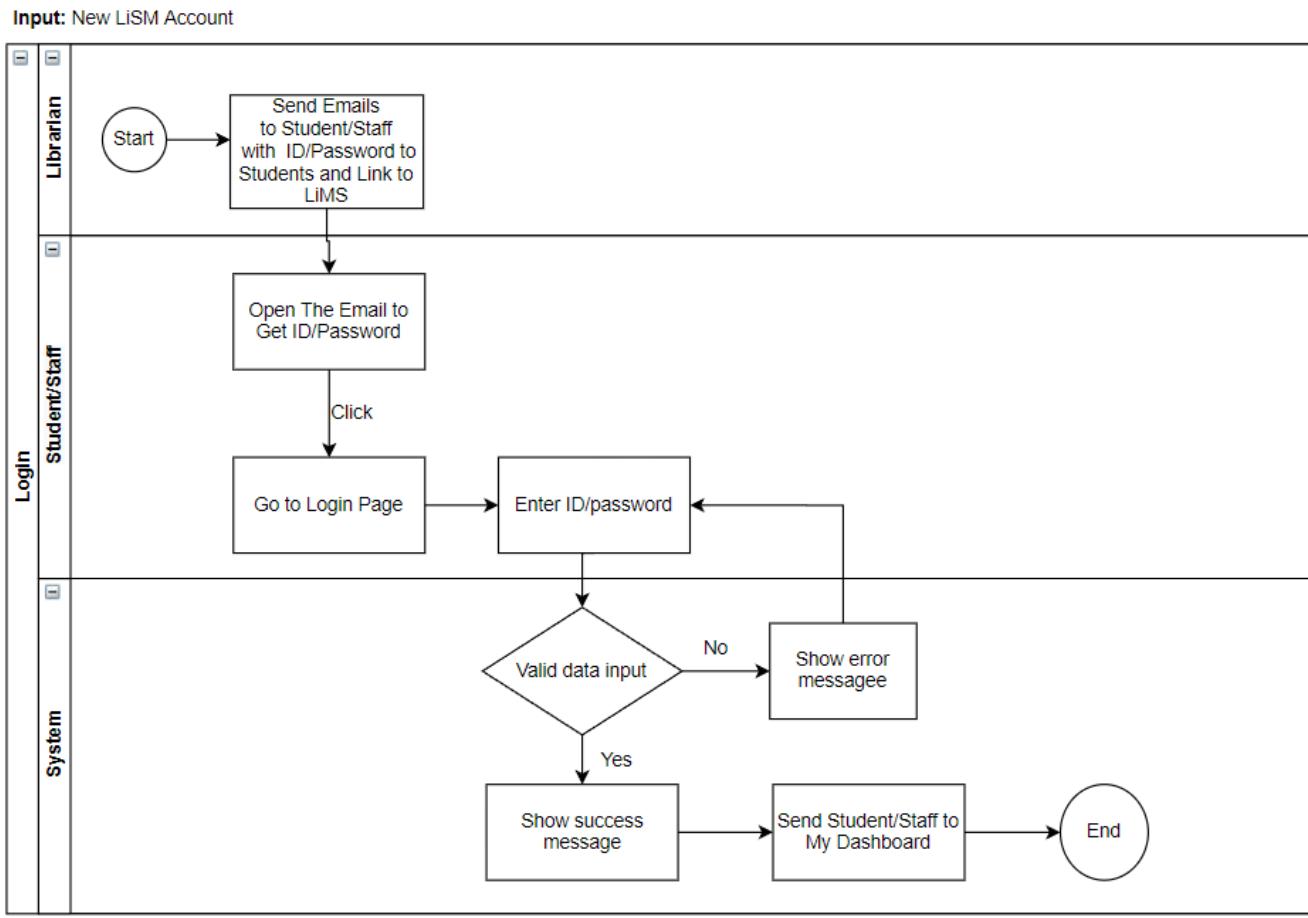
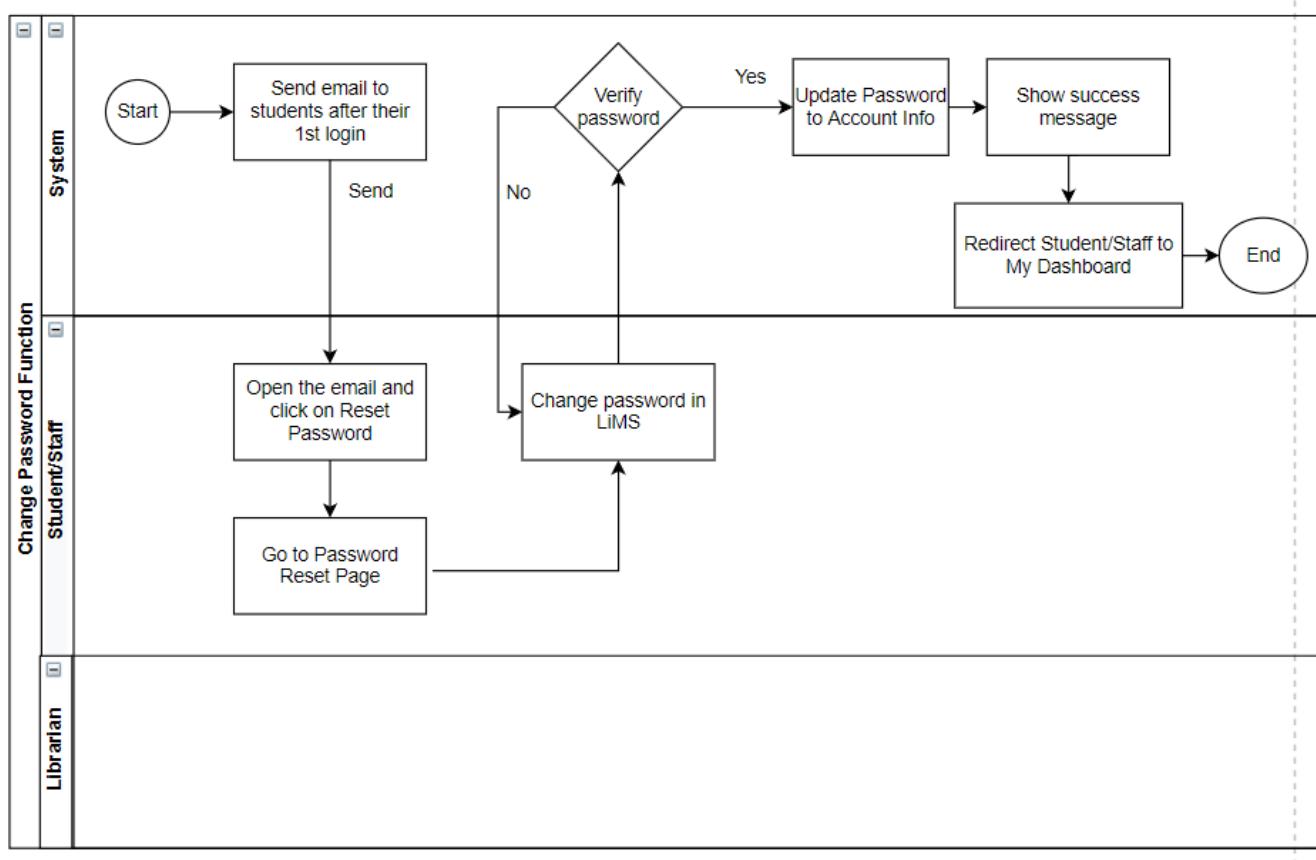


Figure 2.1-2: Swim lane diagram - Login

2.1.2.2 Change Password

Input: Successful 1st-time Login

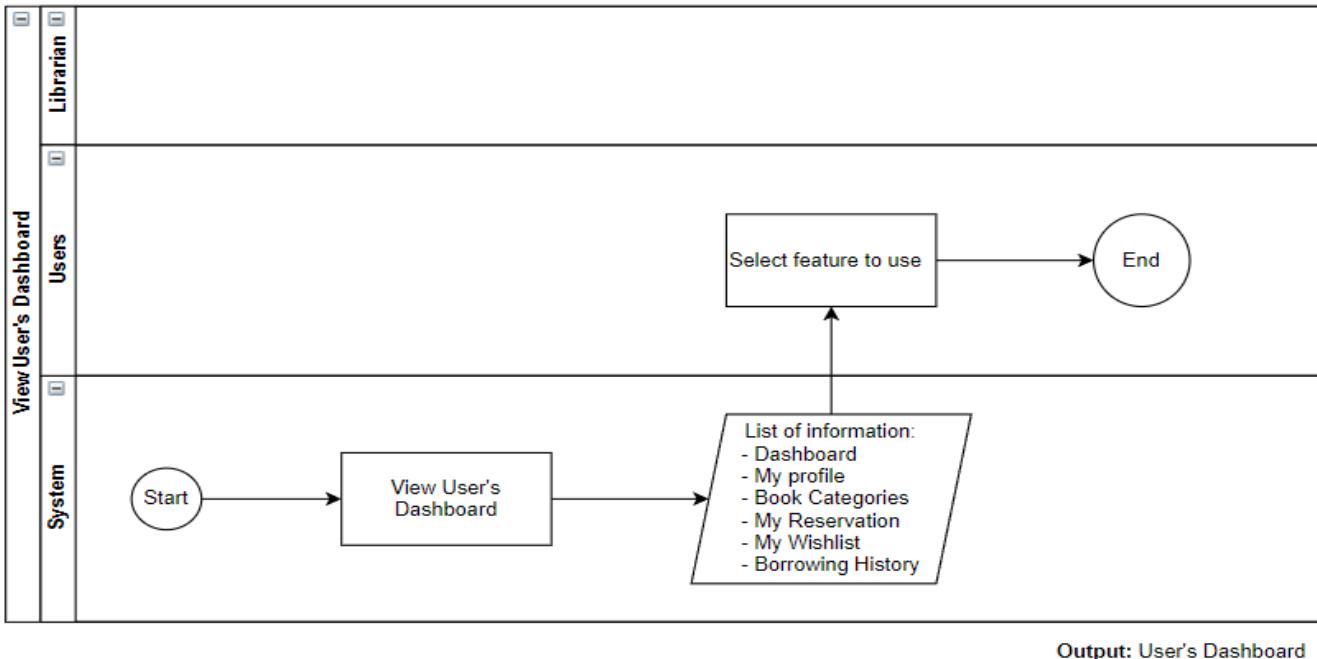


Output: Successful Password Change

Figure 2.1-3: Swim lane diagram - Change Password

2.1.2.3 View User's Dashboard

Input: Successful Login

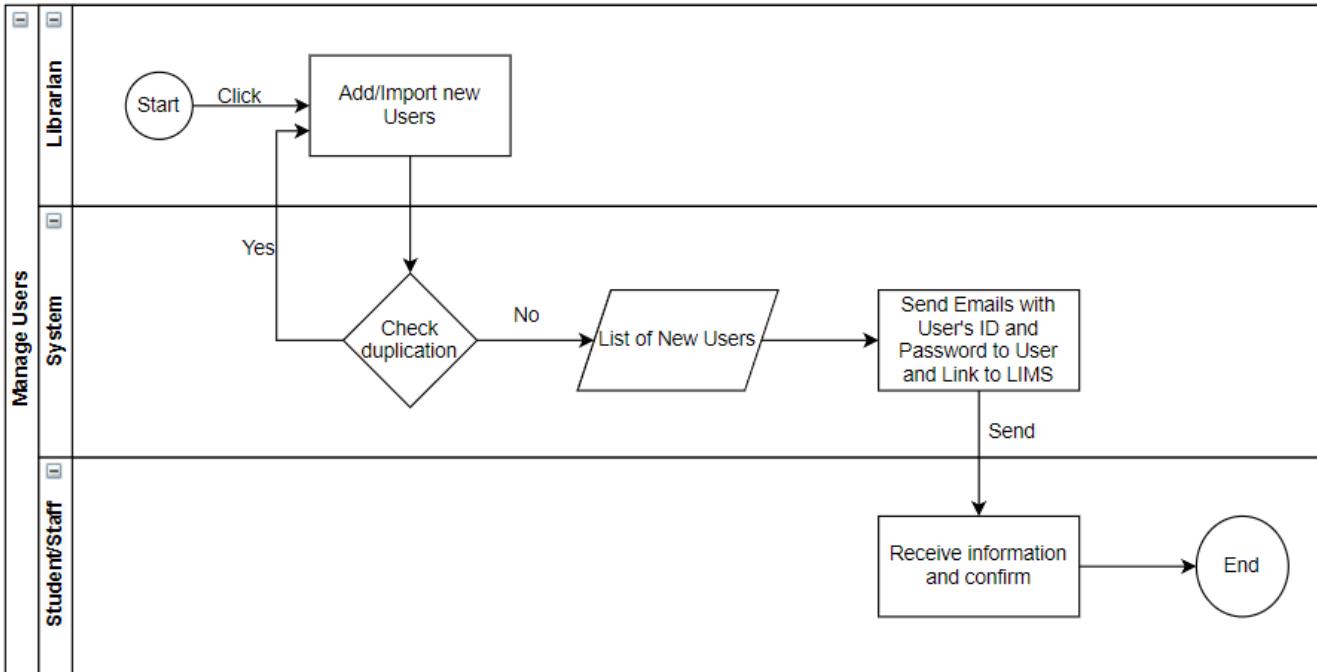


Output: User's Dashboard

Figure 2.1-4: Swim lane diagram - View User's Dashboard

2.1.2.4 Manage Users

Input: Successful Login



Output: New Users

Figure 2.1-5: Swim lane diagram - Manage Users

2.1.2.5 Search

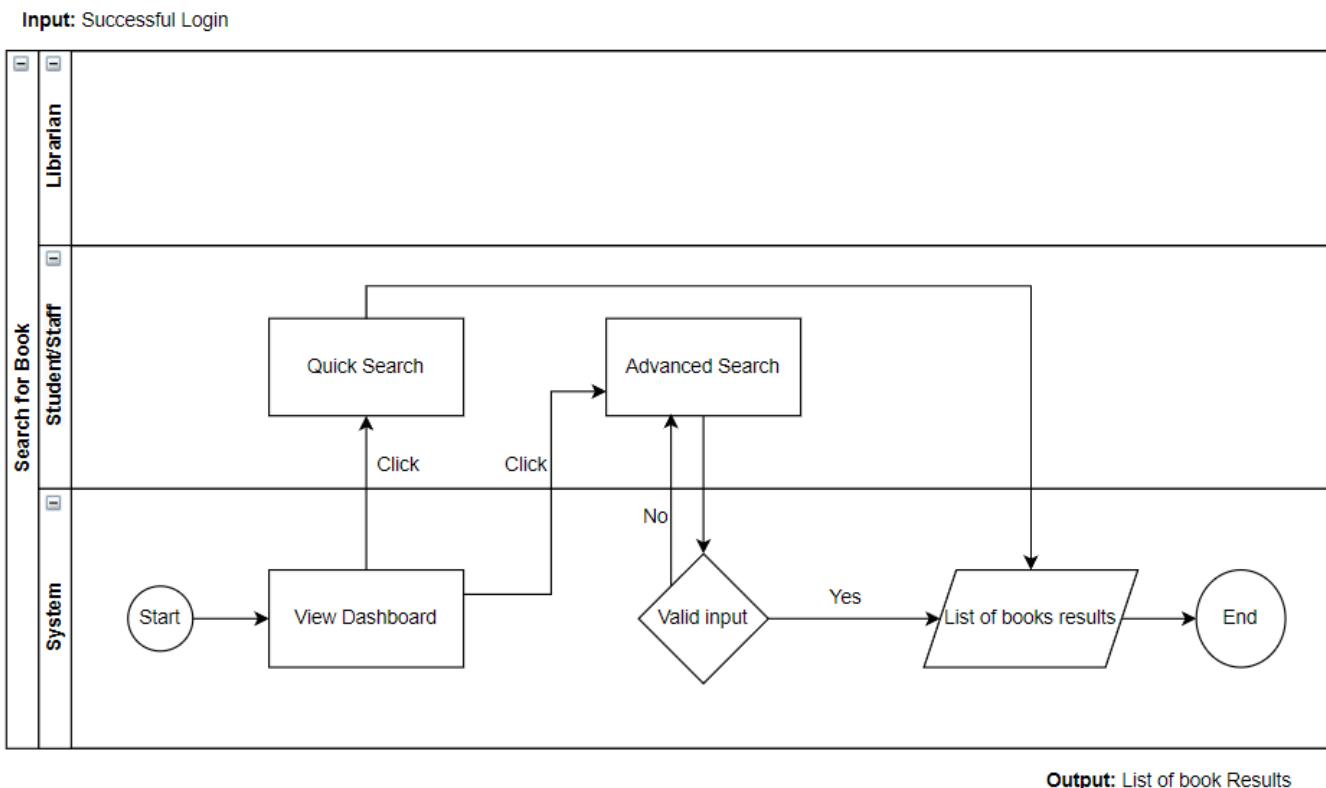
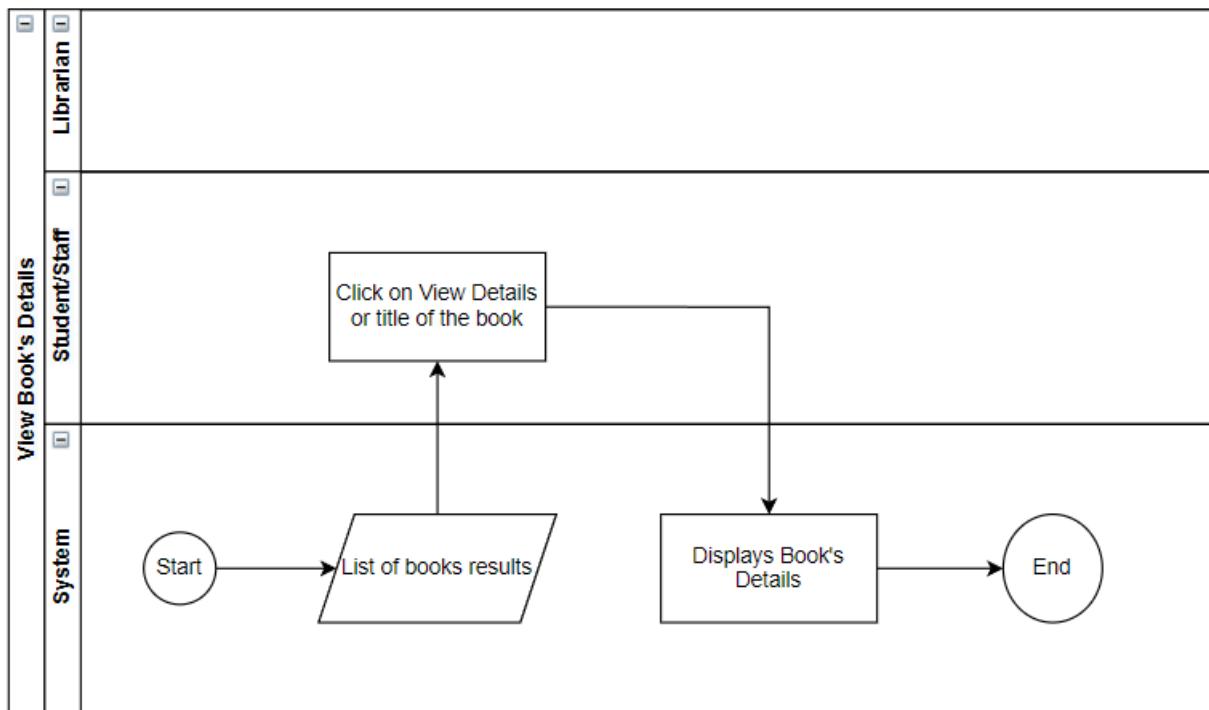


Figure 2.1-5: Swim lane diagram - Search Book

2.1.2.6 View Book's Details

Input: List of books results

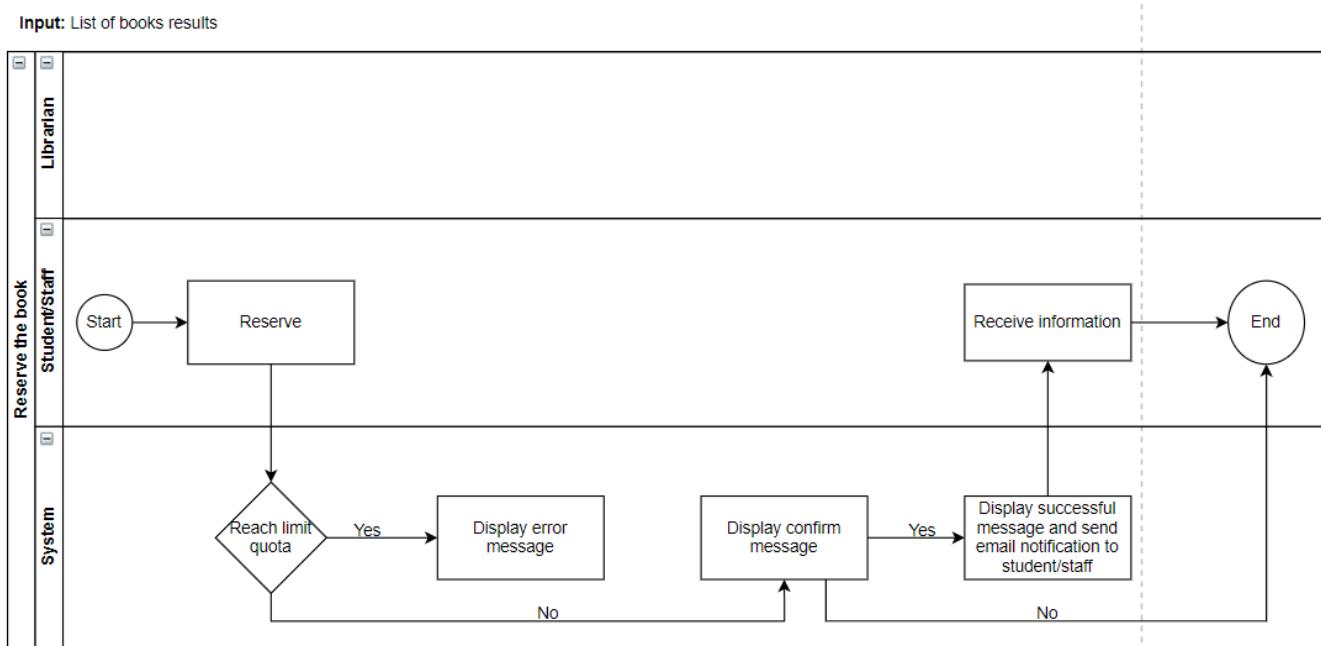


Output: Book's Details

Figure 2.1-6: Swim lane diagram - View Book's Information

2.1.2.7 Reserve Book

Input: List of books results



Output: Successful Book Reservation

Figure 2.1-7: Swim lane diagram - Reserve Book

2.1.2.8 Request New book

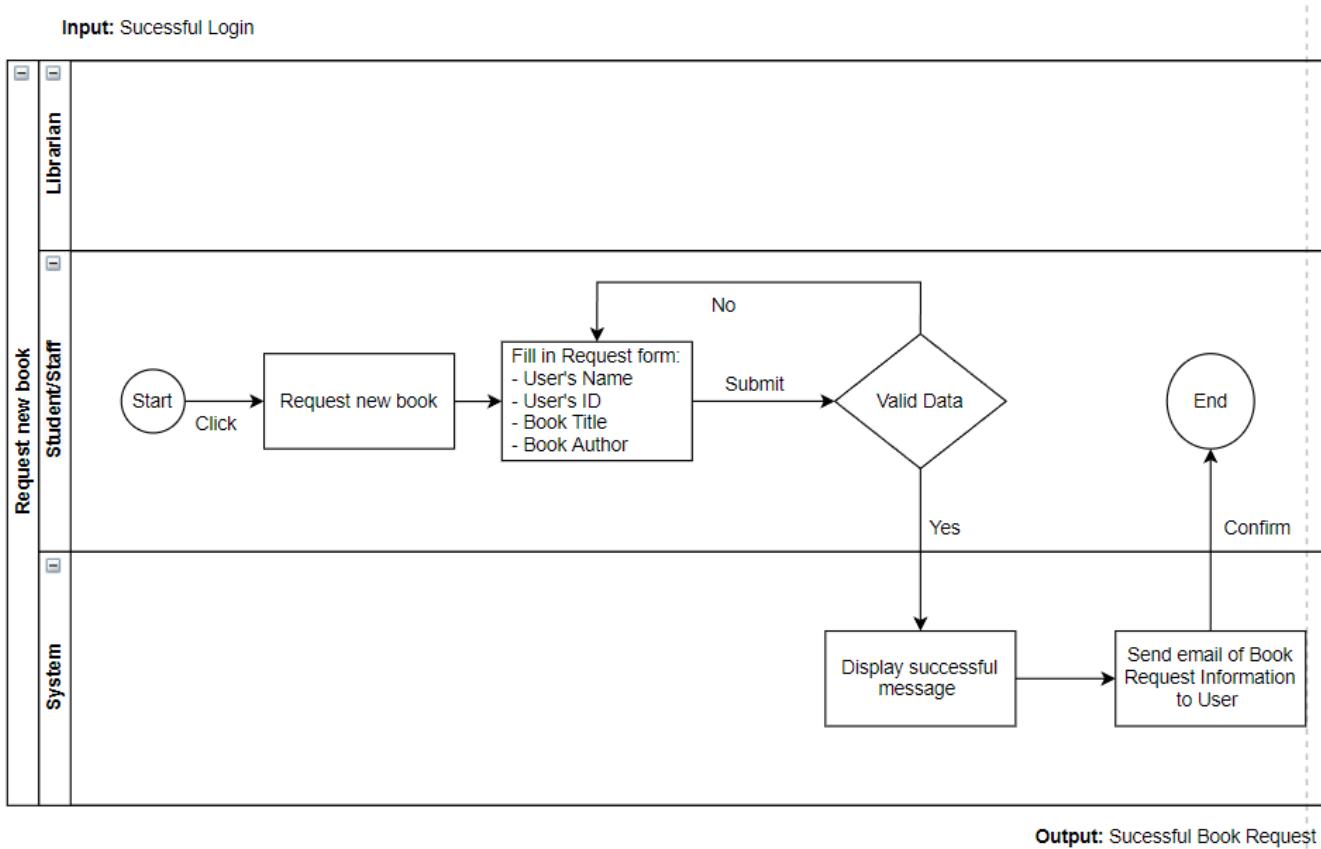


Figure 2.1-8: Swim lane diagram - Request New Book

2.1.2.9 Manage Book Request

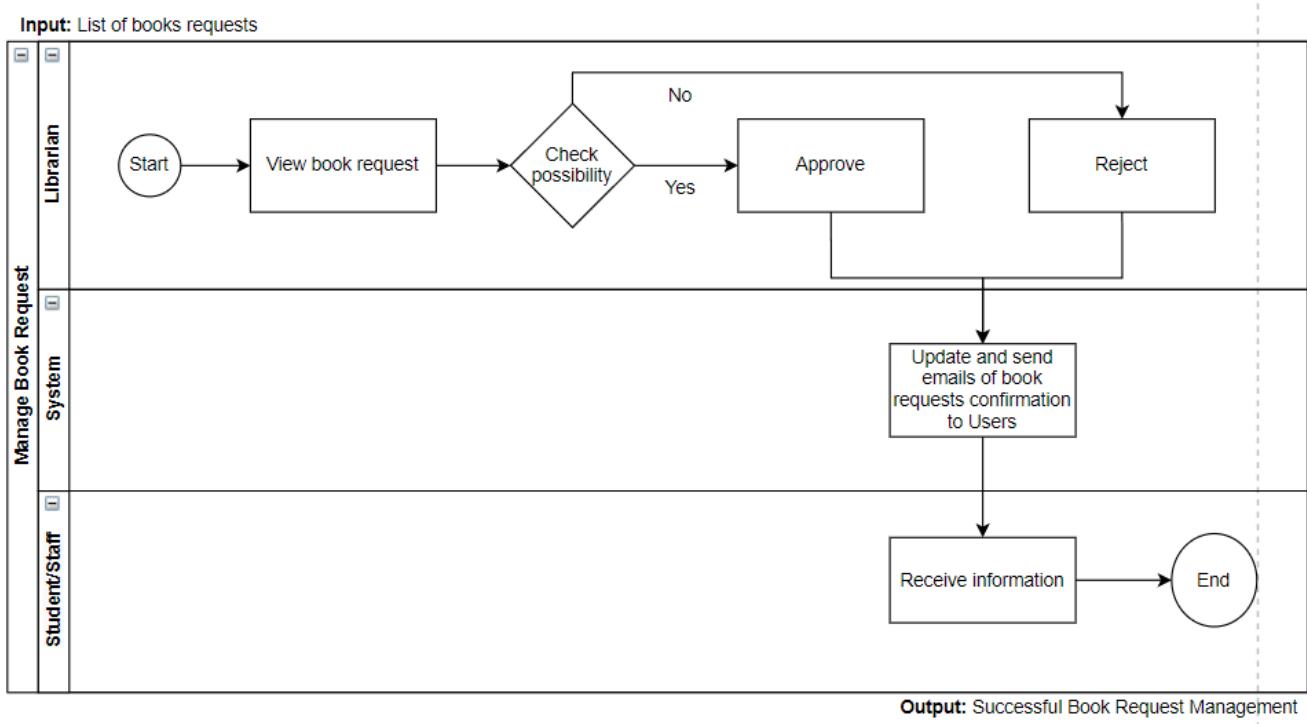
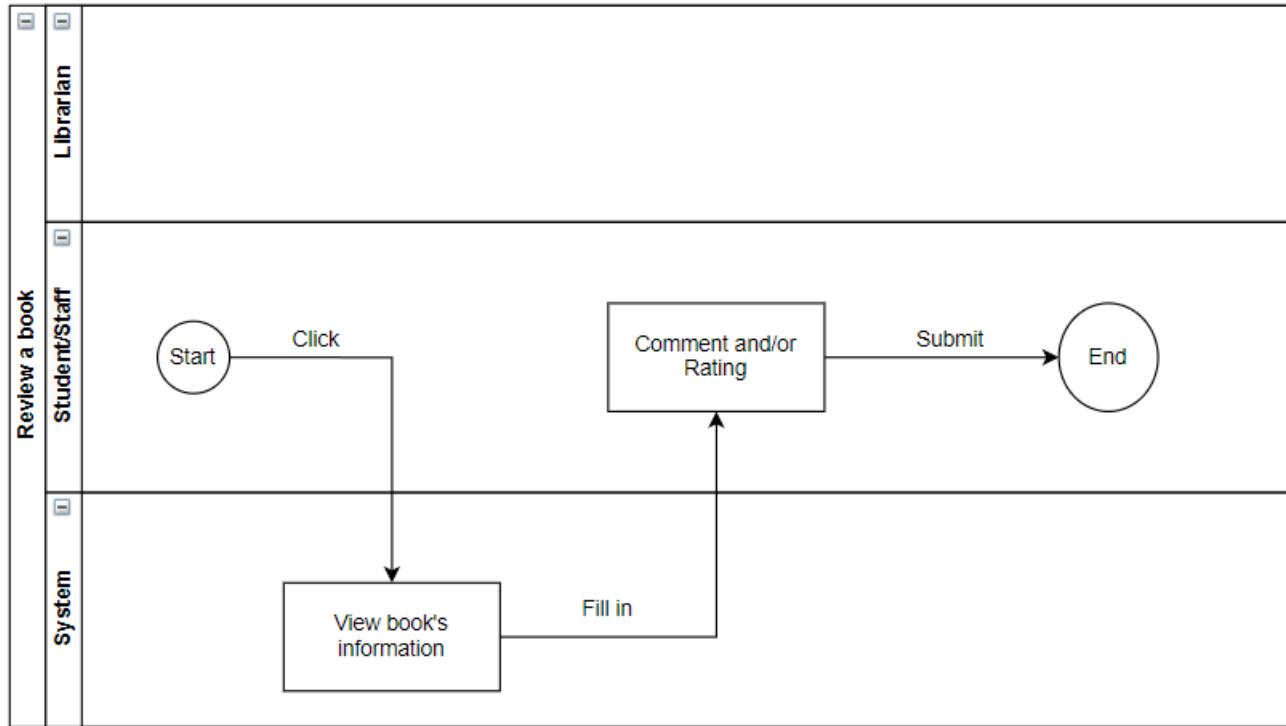


Figure 2.1-9: Swim lane diagram - Manage Book Request

2.1.2.10 Review Book

Input: List of book results

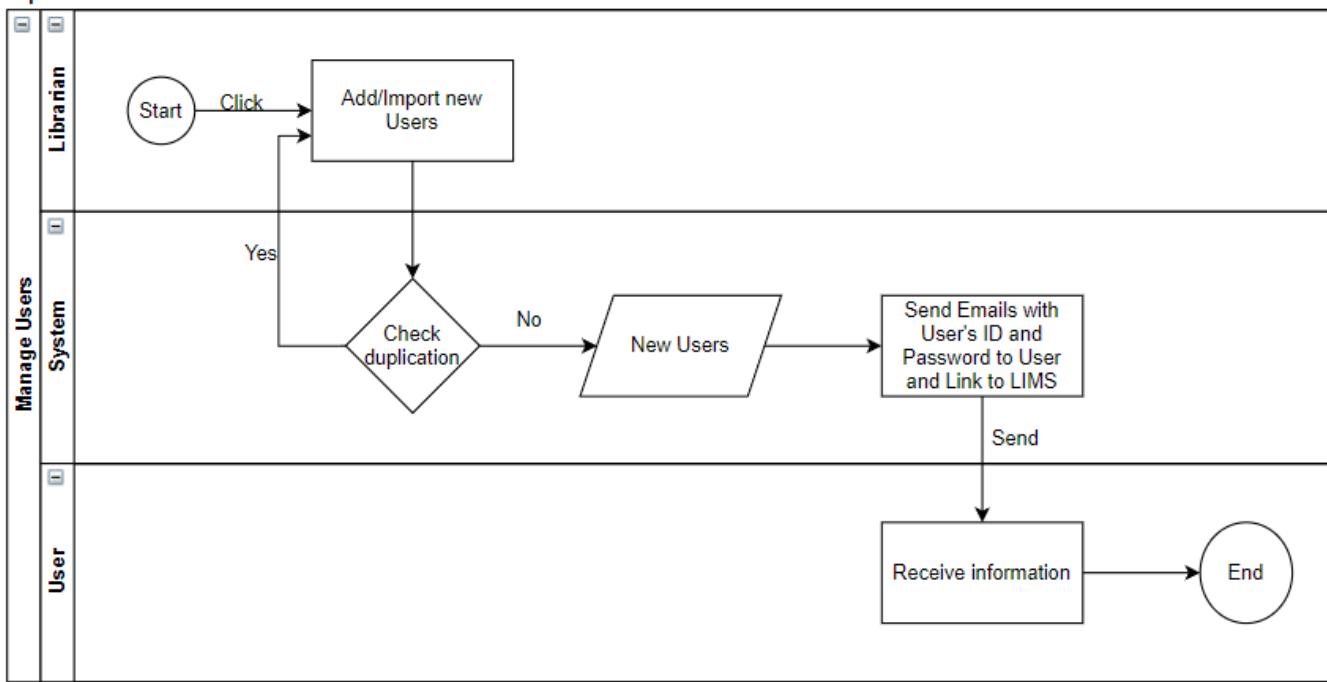


Output: Book Review and Rating

Figure 2.1-9: Swim lane diagram - Review Book

2.1.2.11 Manage Users

Input: List of book results

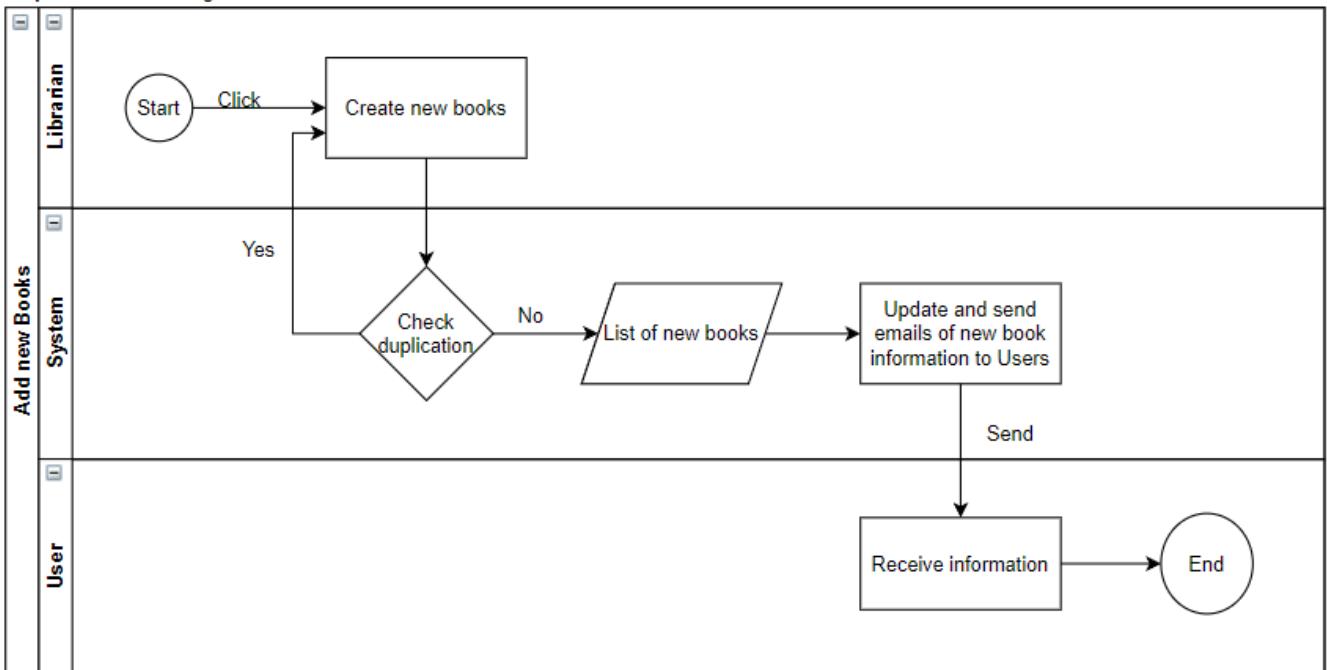


Output: New Users

Figure 2.1-10: Swim lane diagram - Manage Users

2.1.2.12 Add New Books

Input: Successful Login



Output: New Books

Figure 2.1-12: Swim lane diagram - Add New Book

2.1.2.13 Remove Book

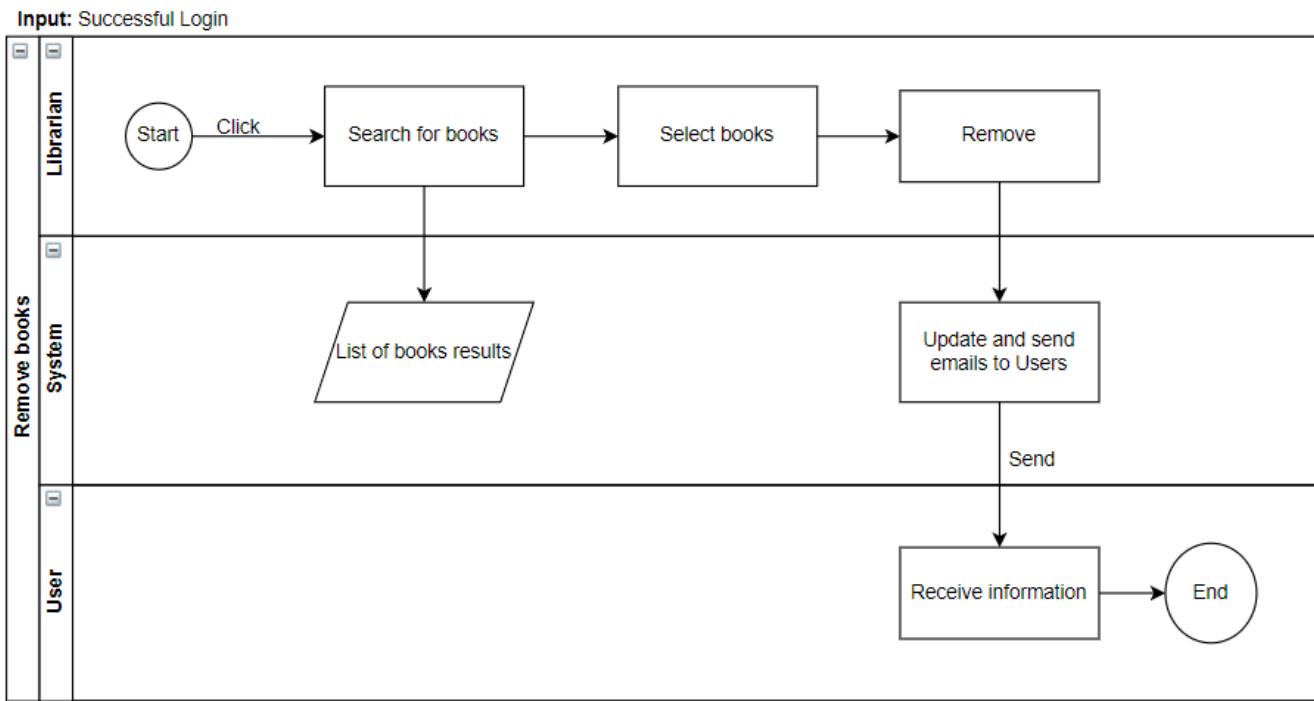


Figure 2.1-13: Swim lane diagram - Remove Book

2.1.2.14 Get Help

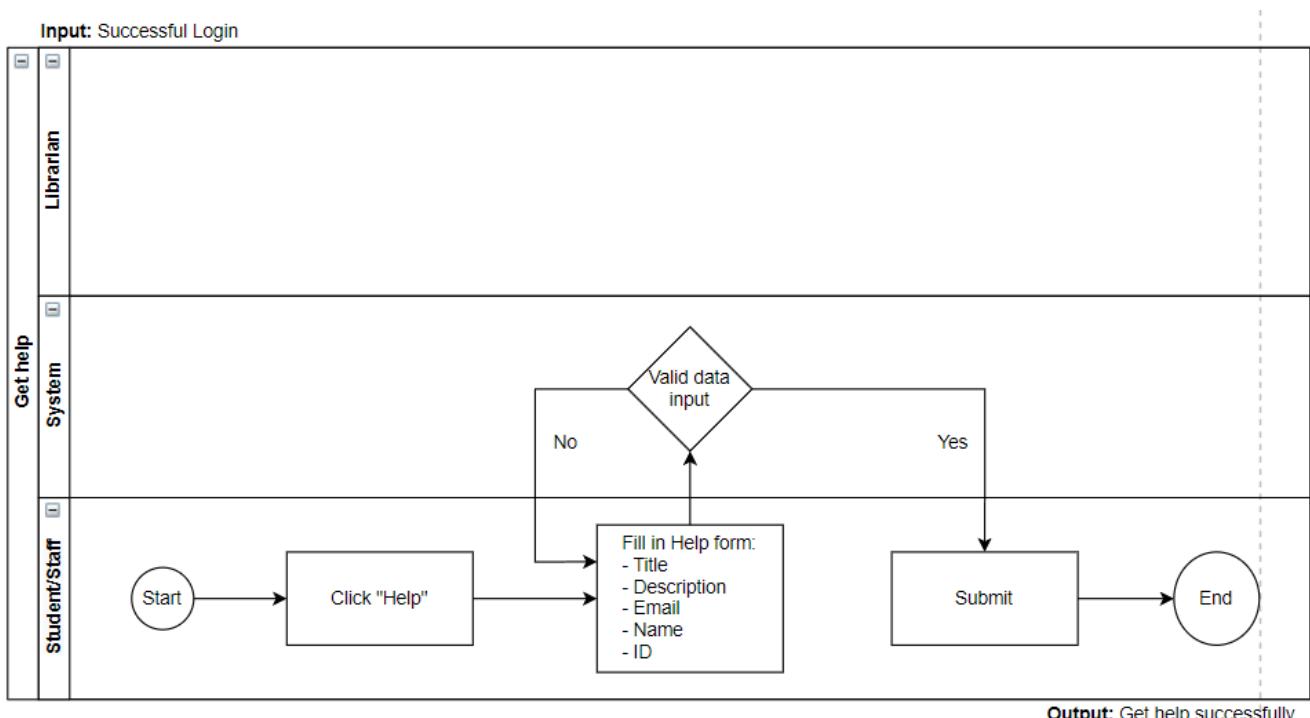


Figure 2.1-14: Swim lane diagram - Get Help

2.1.2.15 View Dashboard

Input: Successful Login

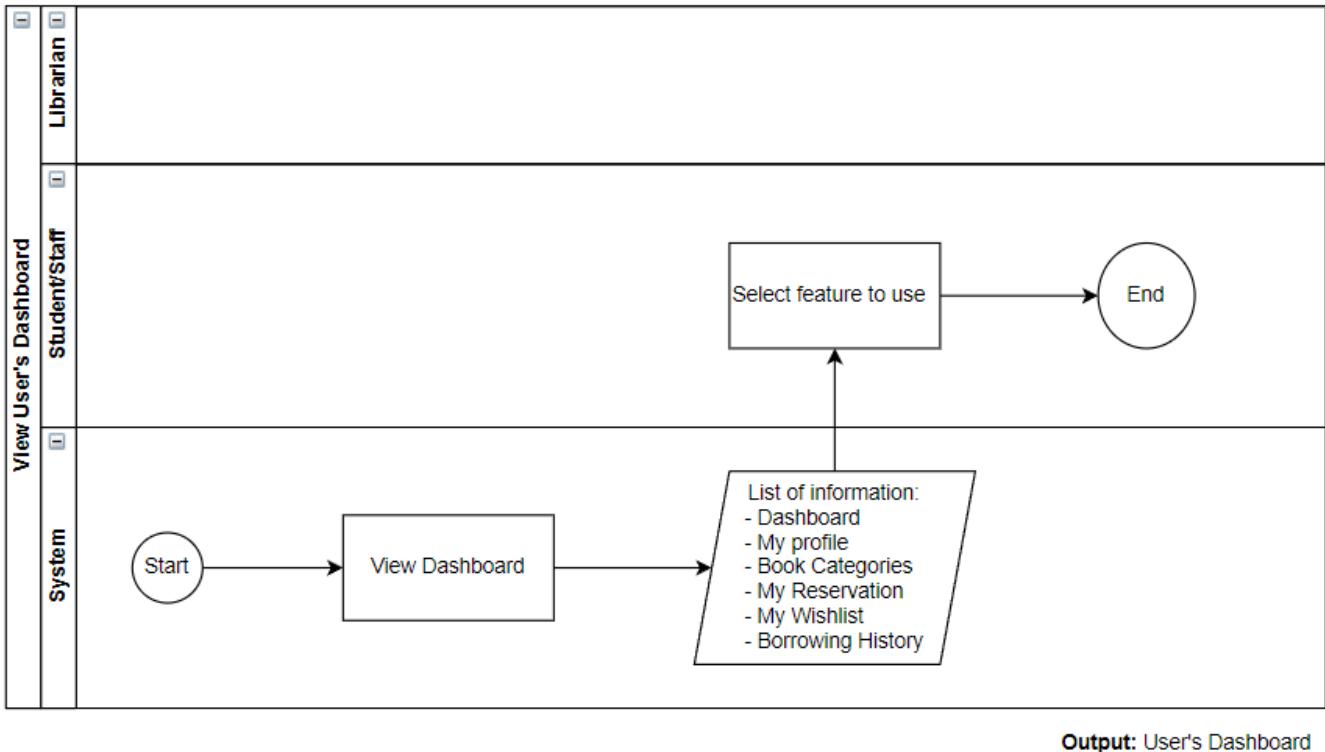


Figure 2.1-16: Swim lane diagram - View Dashboard

2.2 Actor

Actors	Description
Student	Students can use LiMS to reserve a book, search for books, review and check their borrowing history and request new books.
Staff	Staffs include lecturers, tutors, teaching assistants, experts, and other staffs of the university. Staff user role can have more privileges than student user role, such as longer book borrowing period, can borrow and reserve more books than student user role.
Librarian	Librarians are responsible for the management of the library including the process of borrowing and returning books, manage student and staff accounts, manage books, manage book requests and generate reports.
Administrator	Administrator who has all privileges in LiMS system can edit user's roles.

2.3 Use Case Catalogue

UC ID	UC Name	Description
UC01	Login	This function allows users to log in to LiMS.
UC02	Reserve Book	This function allows users to reserve a book.

UC03	Add New Book	This function allows librarians to include a book in the inventory
UC04	Advanced Search	This function allows users to search for books with multiple criteria and options.

3. USE CASE SPECIFICATIONS

This section covers the system's functional requirements which details what the system must do in terms of input, behavior and the expected output. It elicits the interaction between the actor(s) and the system, the system's behavior and the results of their interactions.

3.1 UC01 Login

3.1.1 Overview

ID and Name	UC01 Login
Description	User must login using their university meail account before they can view any page and use the functions of LiMS.
Actor	Student, Staff, Librarian, Administrator
Trigger	User opens the homepage or enter the URL of Login page.
Pre-condition	All accounts were created successfully and users already remember the account.
Post-condition	After logging in sucessfully, user is redirect to "My Dashboard" automatically.

3.1.2 Activity Flow

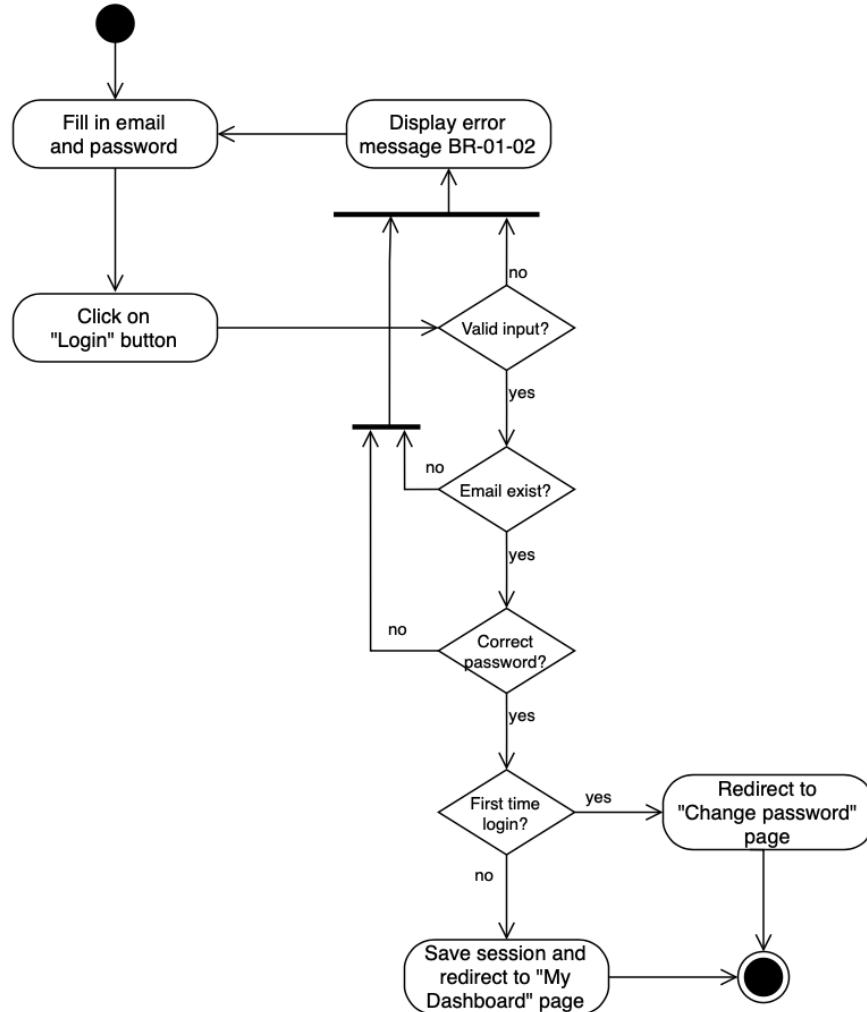


Figure 3.1-1: Activity diagram - Login

3.1.3 Business Rules

Business Rule ID	Business Rule Description
BR-01-01	Login information is sent to users's school email when their account is created on LiMS. A User has to use that given login information to login the system for the first time and will be asked to change password after first time login.
BR-01-02	Error occurs if: 1. User enters invalid email data type Output: Error message " <i>Invalid email form</i> " displays under email input field. 2. User enters incorrect email (email does not exist in the database) Output: Error message " <i>This email address does not exist</i> " displays under email input field. 3. User enters incorrect password (password field does not match email field in database) Output: Error message " <i>Password is not correct</i> "
BR-01-03	If user enters wrong email or password for 5 times, user must wait for 15 minutes before login again. Output: Error message " <i>You have enter wrong email or password for more than 5 times. Please wait 15 minutes before login again.</i> "

3.1.4 Flow of Events

3.1.4.1 Basic Flow

Step	Description
	User open or is redirected to Login page.
	User enters the valid and correct email address and password. User may check on "Keep me logged in".
	User clicks on Login button.
	User is logged in successfully and redirected to "My Dashboard".

3.1.4.2 Alternative Flow – First time login

Step	Description
	User opens Login Page by clicking on the link in email or open Home page or Login page.
	User enters the valid email and password. User may check on "Keep me logged in".
	User clicks on Login button.
	User is redirected to "Change Password" page <BR-01-01>.

3.1.4.3 Alternate Flow – Enter wrong login information

Step	Description
	User enters invalid email input type or incorrect email or incorrect password
	System displays error message <BR-01-02>.
	User re-enters the valid and correct email address and password. User may check on "Keep me logged in".
	User clicks on Login button.
	User is logged in successfully and redirected to "My Dashboard".

3.1.4.4 Exceptional Flow – Enter wrong login for 5 times

Step	Description
	User enters incorrect email or password for 5 times.
	System displays error message <BR-01-03>.
	User must wait for 15 minutes to login again.

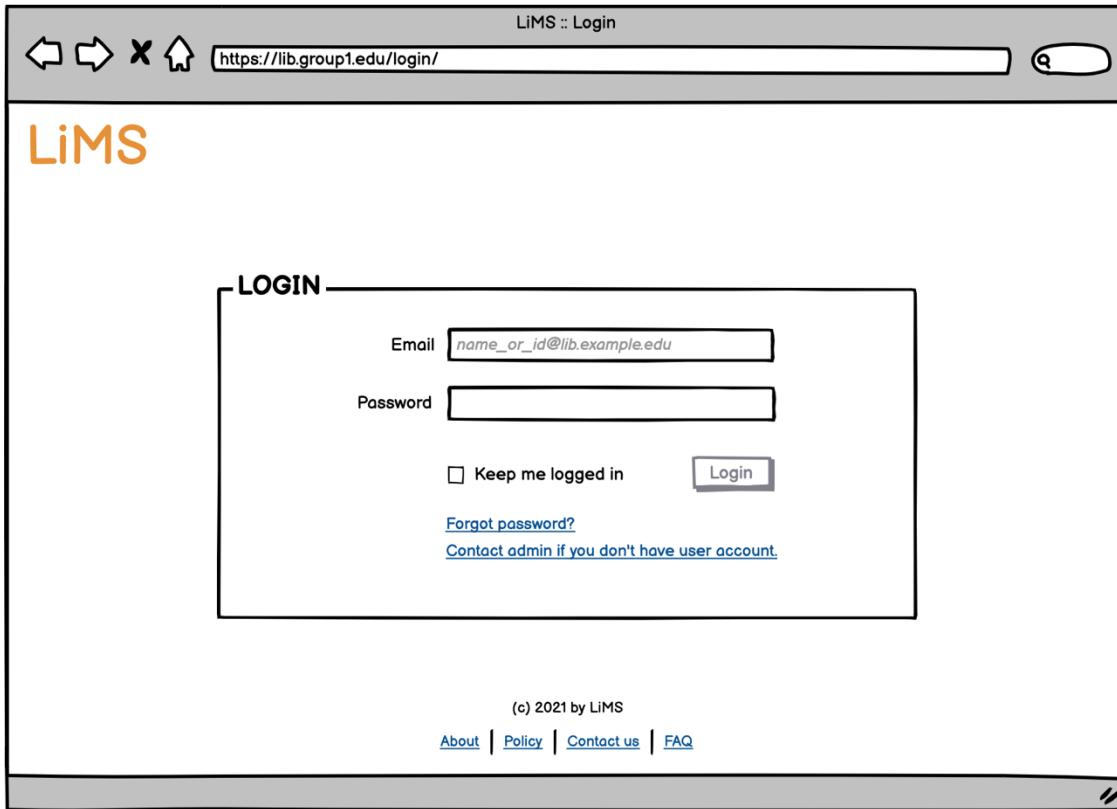
3.1.4.5 Exceptional Flow – User doesn't have account

Step	Description
	User doesn't have an account or does not receive login information via email.
	User click on "Contact admin if you don't have user account" link.

3.1.4.6 Exceptional Flow – User forgets password

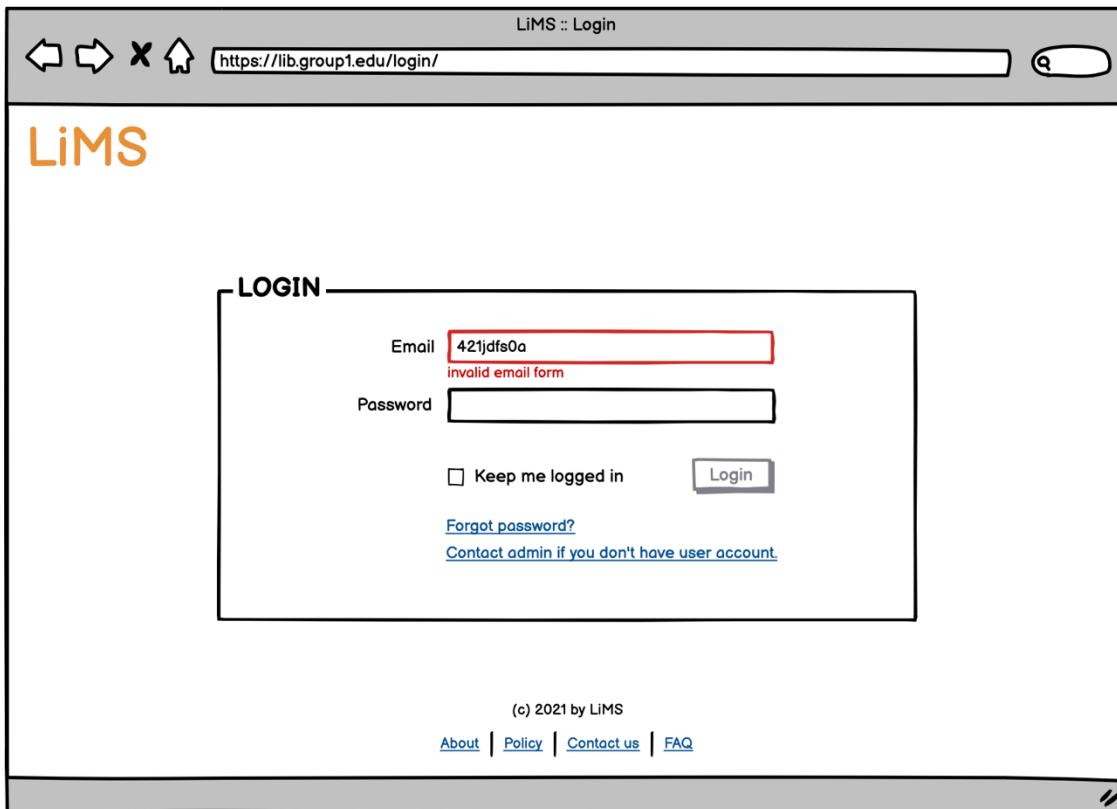
Step	Description
	User does not remember email or password.
	User click on "Forgot password?" link.

3.1.5 Mock-up Screen



The image shows a web browser window with the title "LiMS :: Login". The URL bar contains "https://lib.group1.edu/login/". The main content area features the "LiMS" logo at the top left. Below it is a "LOGIN" form. The form includes fields for "Email" (containing "name_or_id@lib.example.edu") and "Password". There is a checkbox labeled "Keep me logged in" and a "Login" button. Below the form are links for "Forgot password?" and "Contact admin if you don't have user account.". At the bottom of the page, there is a copyright notice "(c) 2021 by LiMS" and navigation links for "About", "Policy", "Contact us", and "FAQ".

Figure 3.1-2: Login screen 1 (Blank login form)



The image shows a web browser window with the title "LiMS :: Login". The URL bar contains "https://lib.group1.edu/login/". The main content area features the "LiMS" logo at the top left. Below it is a "LOGIN" form. The "Email" field contains "421jdfs0a" and has a red border, indicating an error. The error message "invalid email form" is displayed below the field. The "Password" field is empty. There is a checkbox labeled "Keep me logged in" and a "Login" button. Below the form are links for "Forgot password?" and "Contact admin if you don't have user account.". At the bottom of the page, there is a copyright notice "(c) 2021 by LiMS" and navigation links for "About", "Policy", "Contact us", and "FAQ".

Figure 3.1-3: Login screen 2 (Error - Invalid input data type)

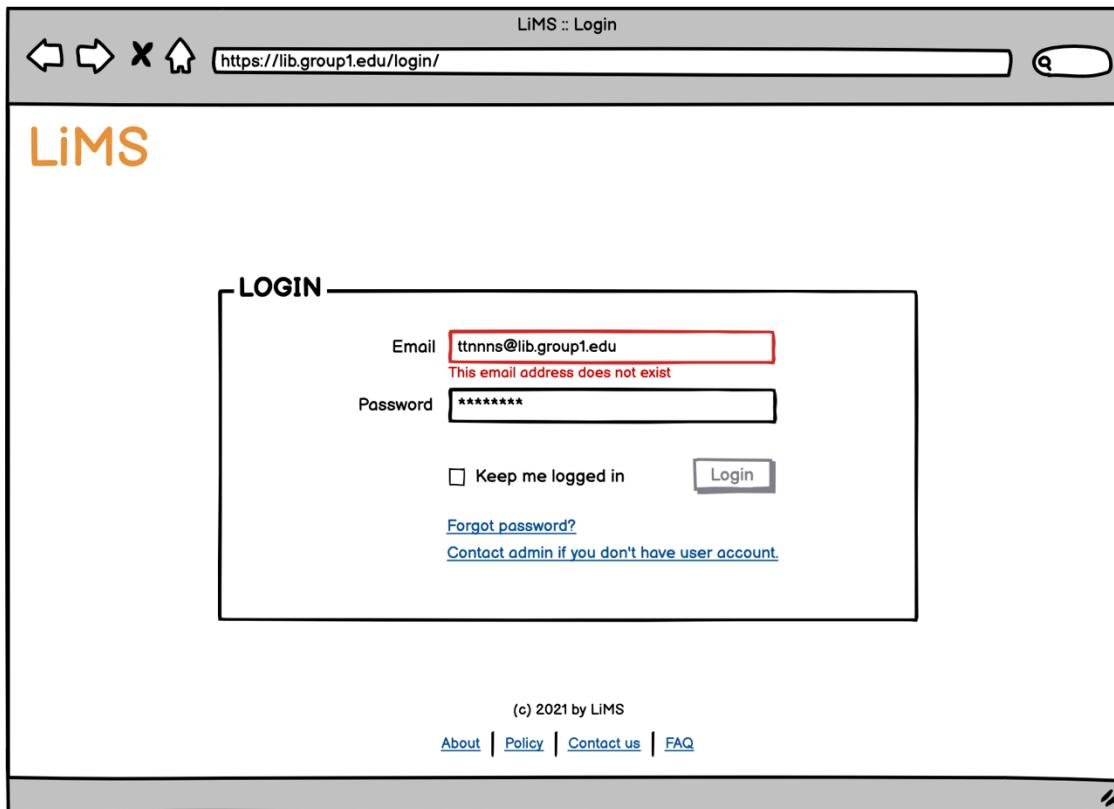


Figure 3.1-4: Login screen 3 (Error - Incorrect email)

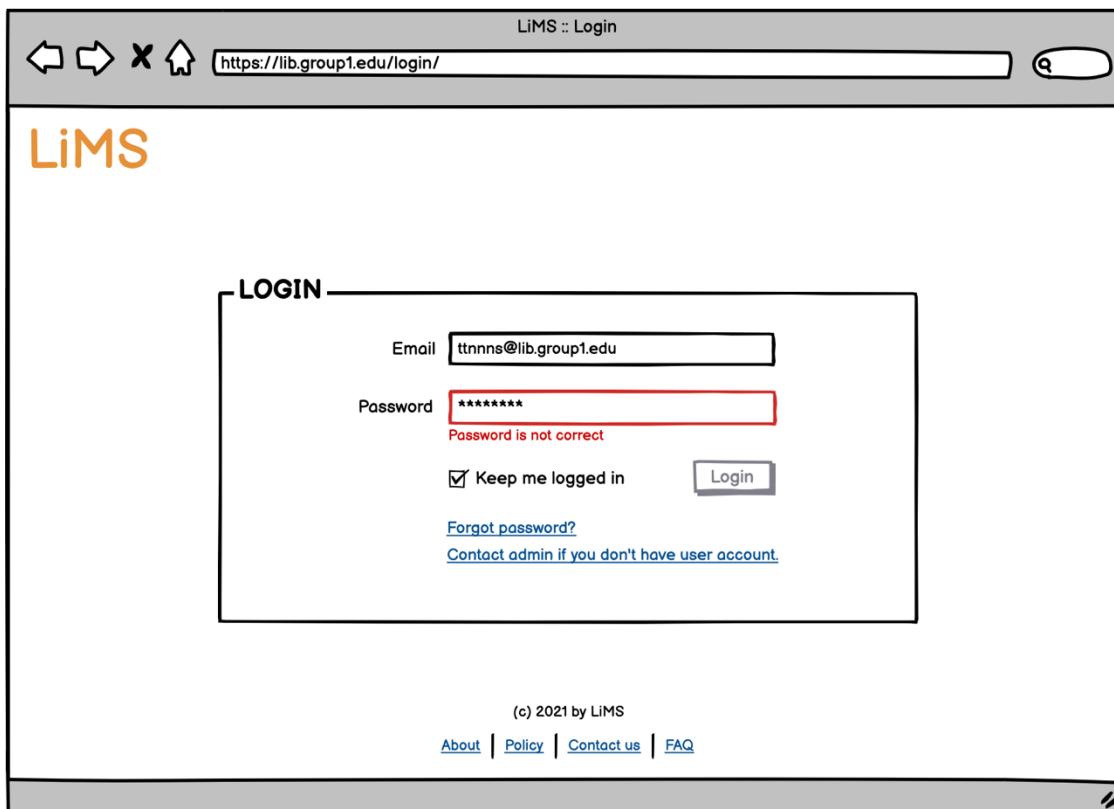


Figure 3.1-5: Login screen 4 (Error - Incorrect password)

The screenshot shows a web browser window with the title "LiMS :: Login". The URL in the address bar is <https://lib.group1.edu/login/>. The main content area displays the "LOGIN" form. The "Email" field contains "ttnnns@lib.group1.edu" and the "Password" field contains "*****". A checked checkbox labeled "Keep me logged in" is next to a "Login" button. Below the form are links for "Forgot password?" and "Contact admin if you don't have user account.". At the bottom of the page, a footer section includes the text "(c) 2021 by LiMS" and links for "About", "Policy", "Contact us", and "FAQ".

Figure 3.1-6: Login screen 5 (Valid data input)

The screenshot shows a web browser window with the title "LiMS :: My Dashboard". The URL in the address bar is <https://lib.example.edu/dashboard/>. The main content area displays the "My Dashboard" page. On the left is a sidebar with links: "General", "My Profile", "Book Categories", "My Reservation", "My Wishlist", and "Borrowing History". The main area has sections for "STATISTICS" and "NOTIFICATION". The "STATISTICS" section lists: "Account valid time: 05/09/2020 - 30/06/2024", "Number of books borrowed: 20", "Books in reservation: 2", "Books reviewed: 5", and "Books currently borrowed: 3". The "NOTIFICATION" section has two subsections: "Books are overdue" (listing "Data Science from Scratch: First Principles with Python" due 11/10/2021) and "Books are due soon" (listing "A Tour of Data Science: Learn R and Python in Parallel" due 15/10/2021, "Data Science" due 16/10/2021, and "Data Science for Mathematicians" due 16/10/2021). At the bottom of the page, a footer section includes the text "(c) 2021 by LiMS" and links for "About", "Policy", "Contact us", and "FAQ".

Figure 3.1-7: My Dashboard (After successful login)

3.1.6 Screen Description

REF	Field Name	Control Type	Data Type	Default Value	Mandatory	Editable	Description
Header							
1	Logo	Image	N/A	N/A	Y	N	Use LiMS default logo or logo requested by the University.
Body							
2	Login border	Text	N/A	N/A	Y	N	A field holder for entering login information
3	Email	Label	N/A	N/A	Y	N	Label describes the data input must be email account
4	Email field	Textbox	Text	N/A	Y	Y	User enters email account value here, showing suggestion in the input field: name_or_id@lib.example.edu
5	Password	Label	N/A	N/A	Y	N	Label describes the data input is password
6	Password field	Textbox	Text	N/A	Y	Y	User enters password here, each input character is masked by *, not allowed to password to be shown as plain text
7	Save login	Checkbox	Boolean	Unchecked	N	Y	User checked on "Keep me logged in" if they don't want to login again when they reopen LiMS web app
8	Forgot password	Hyperlink	N/A	N/A	N	N	User can click "Forgot password?" link to go to "Forgot password" page to begin reset password process
9	Contact admin	Hyperlink	N/A	N/A	N	N	If user doesn't have email or their school's email does not exist in LiMS, they can contact librarian staff via the link "Contact admin if you don't have user account." to request creating an account.
10	Login	Button	N/A	N/A	Y	N	User click on "Login" button to login the system.
Footer							
11	Copyright	Text	N/A	N/A	Y	N	This section shows copyright information "(c) 2021 by LiMS".
12	Footer menu	Hyperlink	N/A	N/A	Y	N	This section display a link bar for quick access to "About", "Policy", "Contact us", "FAQ" page.

3.2 UC02 Reserve Book

3.2.1 Overview

ID and Name	UC02 Reserve Book
Description	User can reserve a book if all copies of that book is in loan
Actor	Student, Staff
Trigger	Click on the button "Reserve" under the book title.
Pre-condition	<ul style="list-style-type: none"> - User must login before they can reserve a book. - User can only reserve a book if all the copies of a book are in loan and all reservation slots have not been occupied.
Post-condition	"Reserve" button change to "Cancel Reservation" under the reserved book title.

3.2.2 Activity Flow

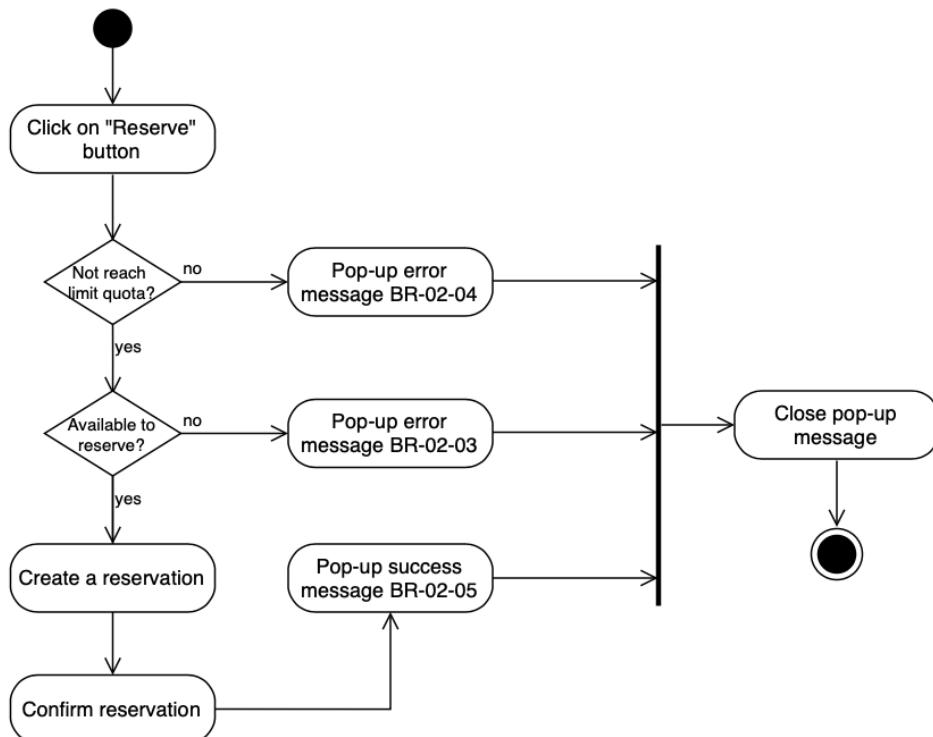


Figure 3.2-1: Activity diagram - Reserve Book

3.2.3 Business Rules

Business Rule ID	Business Rule Description
BR-02-01	<p>When a user click on "Reserve" button, user must confirm the reservation to avoid accidentally clicking on the button.</p> <p>Output: Confirmation message "Are you sure you want to reserve <<book title>>?"</p> <p>Note: <<book title>> is dynamic text retrieve from database.</p>
BR-02-02	When a user reserves a book successfully.

	<p>Output: Success message "You already reserved the book successfully. Please check your email to check the reservation information. You will receive a reminder message when the book is available."</p>
BR-02-03	<p>1. Reserve button should not be displayed on the screen if the book cannot be reserved. 2. In case a book can be reserved but the reservation for that book has exceed possible number of reservation, user cannot reserve the book.</p> <p>Output: Error message "The maximum number of reservation for this book has reached. Please add this book to your Wishlist so you will be notified when this book is able to reserved."</p>
BR-02-04	<p>Student can have maximum 5 books, staff can have maximum 10 books in the current reservation.</p> <p>User cannot reserve a book if he reaches maximum quota of reservation.</p> <p>Output: Error message "You already reached the maximum reservation quota. You can go to My Reservation page to cancel other reservation."</p>

3.2.4 Flow of Events

3.2.4.1 Basic Flow

Step	Description
	User clicks on the button "Reserve" under the book title when viewing books list, search results or a book's details.
	User confirm the reservation by accept the confirmation pop-up message <BR-02-01>.
	System display pop-up success message <BR-02-02>.
	User closes pop-up message.

3.2.4.2 Exceptional Flow – Reserve book not available

Step	Description
	User clicks on the button "Reserve" under the book title when viewing books list, search results or a book's details.
	System shows pop-up error message when the maximum number of reservation for that book has reached <BR-02-03>.
	User closes pop-up message.

3.2.4.3 Exceptional Flow – User's quota limit exceeded

Step	Description
	User clicks on the button "Reserve" under the book title when viewing books list, search results or a book's details.
	System shows pop-up error message when the quota of reservation for a user has reached <BR-02-04>.
	User closes pop-up message.

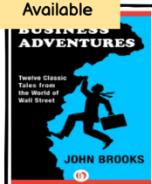
3.2.5 Mock-up Screen

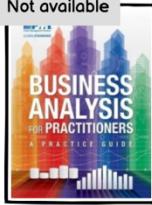
LIMS :: Search Results
<https://lib.example.edu/search?q=business>

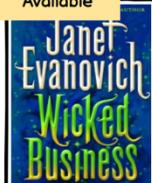
LIMS My Dashboard | [Book Categories](#) | [Help](#) | [Advanced Search](#) [Full Name](#) ▾

[My Dashboard](#) > Search results

Showing 1-3 of 13 results for "business"

Available  **Business Adventures**
John Brooks
★ ★ ★ ★ ★ (10 reviews)
What do the \$350 million Ford Motor Company disaster known as the Edsel, the fast and incredible rise of Xerox, ... [View details](#)
[Add to Wishlist](#)

Not available  **Business Analysis for Practitioners**
Project Management Institute
★ ★ ★ ★ ★ (16 reviews)
The PMI provides services including the development of standards, research, education, publication, networking-opportunities in local chapters... [View details](#)
[Add to Wishlist](#) [Reserve](#)

Available  **Wicked Business**
Janet Evanovich
★ ★ ★ ★ ★ (10 reviews)
Lizzy Tucker's once normal life as a pastry chef in Salem, Massachusetts, turns upside down as she battles both sinister forces and... [View details](#)
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Figure 3.2-2: Reserve Book screen 1 (Reserve a book at Search Results screen)



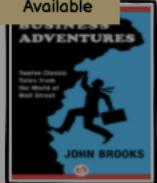
Figure 3.2-3: Reserve Book screen 2 (Confirm reservation)

LiMS :: Search Results
https://lib.example.edu/search?q=business

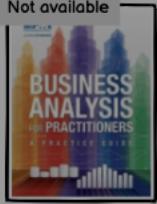
My Dashboard | Book Categories | Help | Advanced Search Full Name ▾

My Dashboard > Search results

Showing 1-3 of 13 results for "business"

Available  **Business Adventures**
John Brooks
★ ★ ★ ★ ★ (10 reviews)
What do the \$350 million Ford Motor Company disaster known as the Edsel, the fast and incredible rise of Xerox, ... [View details](#)

Add to Wishlist

Not available  **Business Analysis for Practitioners**
Project Management Institute
★ ★ ★ ★ ★
The PMI provides education, pu...
Unfortunately, all copies of "Business Analysis for Practitioners" has reach been reserved.
You may add this book to your Wishlist to be notified when it is available for reservation or borrowing.

Add to Wishlist Reserve

Available  **Wicked Business**
Janet Evanovich
★ ★ ★ ★ ★ (10 reviews)
Lizzy Tucker's once normal life as a pastry chef in Salem, Massachusetts, turns upside down as she battles both sinister forces and... [View details](#)

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Figure 3.2-4: Reserve Book screen 3 (Error – Reservation limit reached)

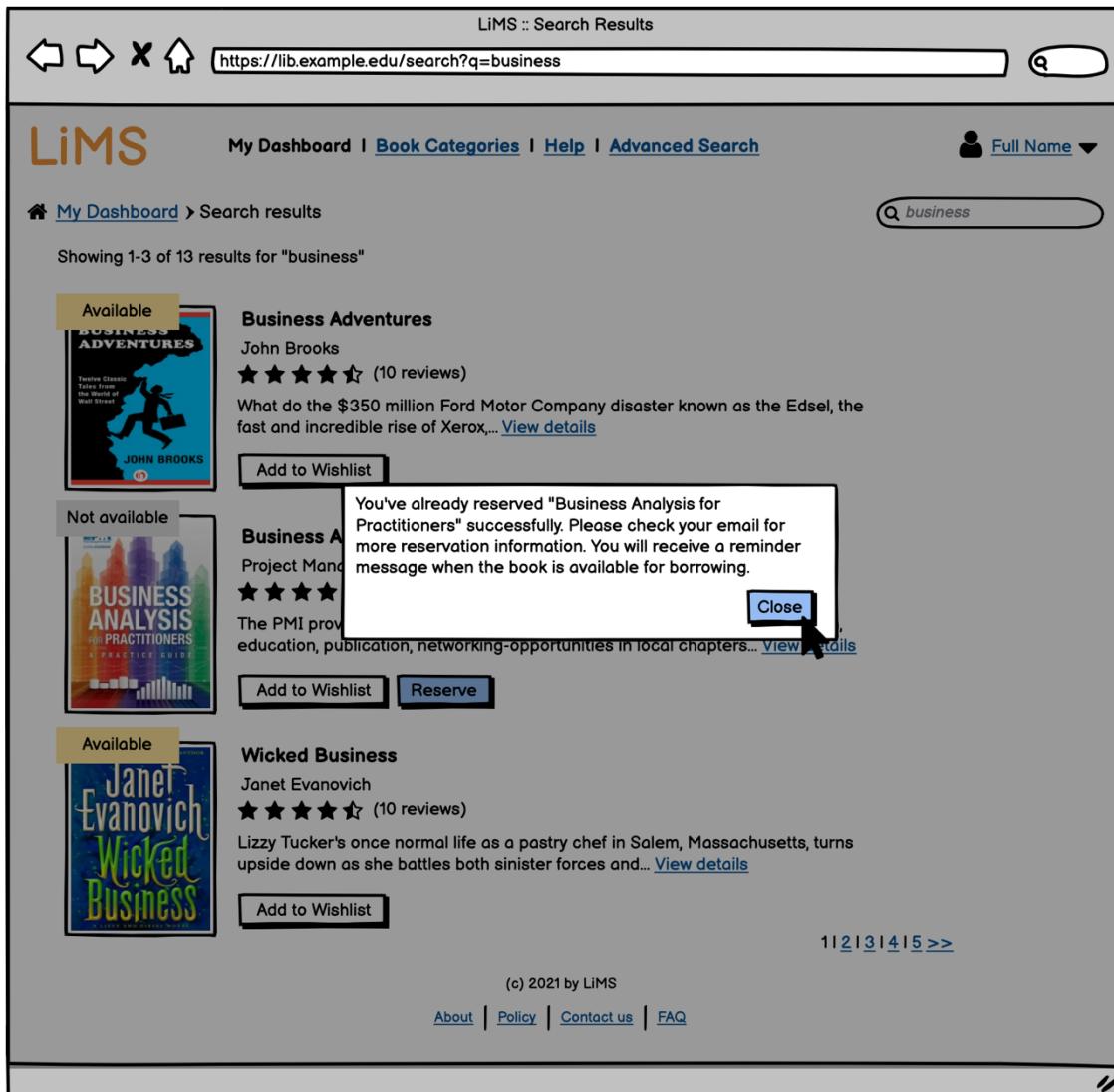


Figure 3.2-5: Reserve Book screen 3 (Reserve successfully)

LiMS :: Search Results
<https://lib.example.edu/search?q=business>

LiMS My Dashboard | Book Categories | Help | Advanced Search Full Name ▾

[My Dashboard](#) > Search results

Showing 1-3 of 13 results for "business"

	Business Adventures John Brooks (10 reviews) What do the \$350 million Ford Motor Company disaster known as the Edsel, the fast and incredible rise of Xerox, ... View details
	Business Analysis for Practitioners Project Management Institute (16 reviews) The PMI provides services including the development of standards, research, education, publication, networking-opportunities in local chapters... View details
	Wicked Business Janet Evanovich (10 reviews) Lizzy Tucker's once normal life as a pastry chef in Salem, Massachusetts, turns upside down as she battles both sinister forces and... View details

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Figure 3.2-6: Reserve Book screen 5 (Search Results screen after sucessful reservation)

3.2.6 Screen Description

RE F	Field Name	Control Type	Data Type	Default Value	Mandat ory	Editable	Description
Header							
1	Logo	Image	N/A	N/A	Y	N	Use LiMS default logo or logo requested by the University.
2	Header menu	Hyperlink	Text	N/A	Y	N	Showing quick access link to "My Dashboard", "Book Caegories", "Help", "Advanced Search".
3	Avatar	Image	Image	noavatar.jpg	N	Y	Showing user's avatar.
4	Full Name	Hyperlink	Text	N/A	N/A	N/A	Showing full name of the user, go to "My Account Information" when click on the link.

5	Log out	Hyperlink	N/A	N/A	N/A	N/A	Trigger logout function
6	Quick search field	Textbook	Text	N/A	N	Y	Your can enter keyword here for a quick search book title by keyword.
7	Navigation	Hyperlink	Text	N/A	N/A	N/A	Dynamic field, retrieve based on the path to the current page from home page.
Body (screen 1)							
8	Reserve	Button	N/A	N/A	N/A	N/A	Only display this button if the book is not currently available for borrowing.
9	Other fields please refer to Search Results screen description						
Body (screen 2)							
10	Confirm message	Text	N/A	N/A	N/A	N/A	Display confirmation message. Refer to <BR-02-01>.
11	OK	Button	N/A	N/A	N/A	N/A	User clicks on this button to confirm reservation.
12	Cancel	Button	N/A	N/A	N/A	N/A	User clicks on this button to cancel the action of reservation.
Body (screen 3)							
13	Success message	Text	N/A	N/A	N/A	N/A	Display success message. Refer to <BR-02-02>.
14	Close	Button	N/A	N/A	N/A	N/A	User clicks on this button to close message and return to previous screen.
Footer							
15	Copyright	Text	N/A	N/A	N/A	N/A	This section shows copyright information "(c) 2021 by LiMS".
16	Footer menu	Hyperlink	N/A	N/A	N/A	N/A	This section display a link bar for quick access to "About", "Policy", "Contact us", "FAQ" page.

3.3 UC03 Add New Book

3.3.1 Overview

ID and Name	UC03 Add New Book
Description	Librarian can add books to the library's inventory
Actor	Librarian
Trigger	User clicks on "Add New Book" button in the dashboard.
Pre-condition	User must login sucessfully and have librarian role.
Post-condition	New book is added to the library's inventory or user cancel this action.

3.3.2 Activity Flow

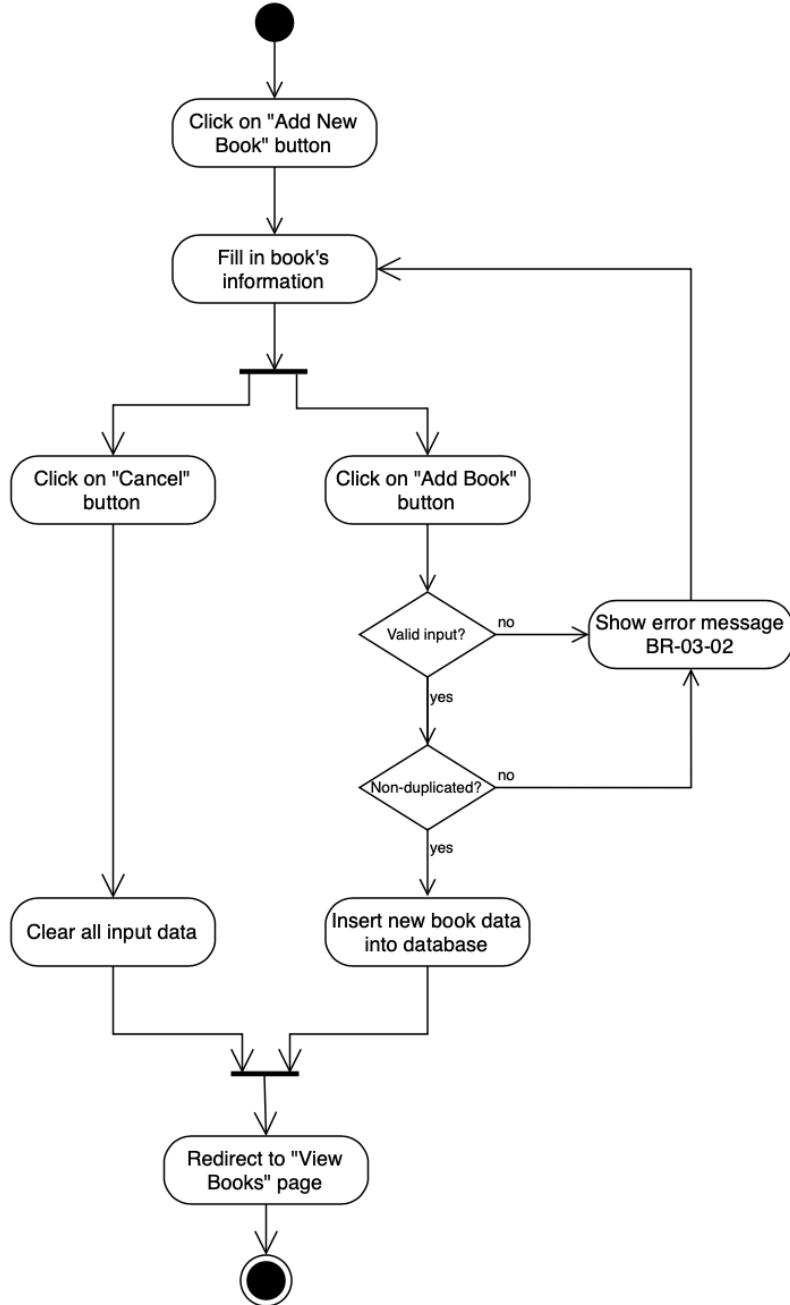


Figure 3.3-1: Activity diagram - Add New Book

3.3.3 Business Rules

Business Rule ID	Business Rule Description
BRL-03-01	When user successfully added a new book, a message and a hyperlink to “Add New Book” page and “View Book Details” will be shown. Output: Success message “You’ve successfully added a new book.”
BRL-03-02	When user clicks on “Add Book” button, input data must be validated. 1. The title field is required. If it is left blank, error happens. Output: Error message “Please input the book title”.

	2. ISBN must be in number format and max length is 13. If entering invalid input, error happens. Output: Error message “Invalid ISBN”.
BRL-03-03	System allows image file formats: .jpg, .png, maximum size: 2MB.

3.3.4 Flow of Events

3.3.4.1 Basic Flow

Step	Description
	User clicks on “Add New Book”.
	User enters the valid data in input fields.
	User clicks on “Add book” button.
	System checks and finds no duplication.
	New book record is inserted into database and a sucessful message will be shown <BR-03-01>

3.3.4.2 Alternative flow – Invalid input data type

Step	Description
	User clicks on “Add New Book”.
	User enters the invalid data in input fields.
	User clicks on “Add book” button.
	Error messages will be shown. <BR-03-02>
	User return to “Add New Book” form to re-enter data.

3.3.4.3 Alternative flow – Duplicated book

Step	Description
	User enters incorrect email or password.
	User enters the valid data in input fields.
	User clicks on “Add book” button.
	Error messages will be shown. <BR-03-03>
	User return to “Add New Book” form to re-enter data.

3.3.4.4 Exceptional Flow – Cancel adding new book

Step	Description
	User clicks on “Add New Book”
	User enters the data in input fields.
	User clicks on “Cancel” button.
	User is redirect back to “Add New Book” page.
	Repeat Basic Flow from Step 2.

3.3.5 Mock-up Screen

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<https://lib.example.edu/dashboard/>

LIMS [My Dashboard](#) | [Book Categories](#) | [Help](#) | [Advanced Search](#) [Full Name](#) ▾

[My Dashboard](#) > [Books](#) > Add Book [Quick search](#)

ADD NEW BOOK

Title	<input type="text"/>	Enter at least one word in the Book Title
Author(s)	<input type="text"/>	Enter the name of the authors separated by a comma. Multiple authors are allowed.
ISBN	<input type="text"/>	Enter the exact ISBN.
Year	<input type="text" value="-- Select Year--"/>	Expand and choose one available option.
Publisher	<input type="text"/>	Enter the name of the publishers separated by a comma. Multiple publishers are allowed.
Pages	<input type="text"/>	Enter the total number of book pages
Description	<input type="text"/>	Enter a description with the maximum of 200 words
Category	<input type="text" value="--Select Categories--"/>	Expand and choose one available option.
Position	<input type="text" value="--Bookshelf no--"/> ▾ <input type="text" value="--Row no--"/> ▾ <input type="text" value="--Column no--"/> ▾	Expand and choose one available option.

[Add Book](#) [Cancel](#)

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Figure 3.3-2: Add New Book screen 1 (Blank input form)

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https://lib.example.edu/dashboard/

My Dashboard | Book Categories | Help | Advanced Search

Full Name ▾

Quick search

My Dashboard > Books > Add Book

ADD NEW BOOK

Title	Business Analysis	Enter at least one word in the Book Title		
Author(s)	James Porter, Lily	Enter the name of the authors separated by a comma. Multiple authors are allowed.		
ISBN	978-1-62825-069-4	Enter the exact ISBN.		
Year	2020	Expand and choose one available option.		
Publisher	Nha xuat ban Kim Dong	Enter the name of the publishers separated by a comma. Multiple publishers are allowed.		
Pages	500	Enter the total number of book pages		
Description	Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book.			
Category	Business	Expand and choose one available option.		
Position	1	1	1	Expand and choose one available option.

Add Book Cancel

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Figure 3.3-3: Add New Book screen 2 (Valid data input)

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LiMS My Dashboard | Book Categories | Help | Advanced Search Full Name ▾

My Dashboard > Books > Add Book Quick search

ADD NEW BOOK

Title	Business Analysis	Enter at least one word in the Book Title
Author(s)	James Porter, Lily	Enter the name of the authors separated by a comma. Multiple authors are allowed.
ISBN	978-1-62825-069-4	Enter the exact ISBN.
Year	2020	Expand and choose one available option.
Publisher	Nha xuat ban Kim Dong	the name of the publishers separated by a comma. Multiple publishers are allowed.
Pages	500	Enter the total number of book pages
Description	Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book.	
Category	Business	Enter a description with the maximum of 200 words
Position	1	Expand and choose one available option.
	Add Book	Expand and choose one available option.

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Figure 3.3-4: Add New Book screen 3 (Book added successfully)

3.3.6 Screen Descriptions

RE F	Field Name	Control Type	Data Type	Default Value	Mandat ory	Editable	Description
Header (Refer to UC02 screen description , header section)							
Body							
8	Book title	label	N/A		N/A	N/A	
9	Book title field	text	text		Y	Y	
10	Book title tooltip	label	N/A	N/A	N/A	N/A	
11	Author	label	N/A	N/A	N/A	N/A	
12	Author field	text	text	N/A	N	Y	
13	Author tooltip	label	N/A	N/A	N/A	N/A	
14	ISBN	label	N/A	N/A	N/A	N/A	
15	ISBN field	number	number	N/A	N	Y	

16	ISBN tooltip	label	N/A	N/A	N/A	N/A	
17	Year	label	N/A	N/A	N/A	N/A	
18	Year field	select	number	N/A	N	Y	
19	Year tooltip	label	N/A	N/A	N/A	N/A	
20	Publisher	label	N/A	N/A	N/A	N/A	
21	Publisher field	text	text	N/A	N	Y	
22	Publisher tooltip	label	N/A	N/A	N/A	N/A	
23	Page	label	N/A	N/A	N/A	N/A	
24	Page field	number	number	N/A	N	Y	
25	Page tooltip	label	N/A	N/A	N/A	N/A	
26	Description	label	N/A	N/A	N/A	N/A	
27	Description field	textbox	text	N/A	N	Y	
28	Description tooltip	label	N/A	N/A	N/A	N/A	

Footer (Refer to [UC02 screen description](#), footer section)

3.4 UC04 Advanced Search

3.4.1 Overview

ID and Name	UC04 Advanced Search
Description	User can use advanced search to search with multiple options and criteria.
Actor	Student, Staff, Librarian, Administrator
Trigger	Click on the “Advanced Search” link in the header menu
Pre-condition	User must login before they can use Advanced Search function.
Post-condition	System returns matching records on “Search Results” page.

3.4.2 Activity Flow

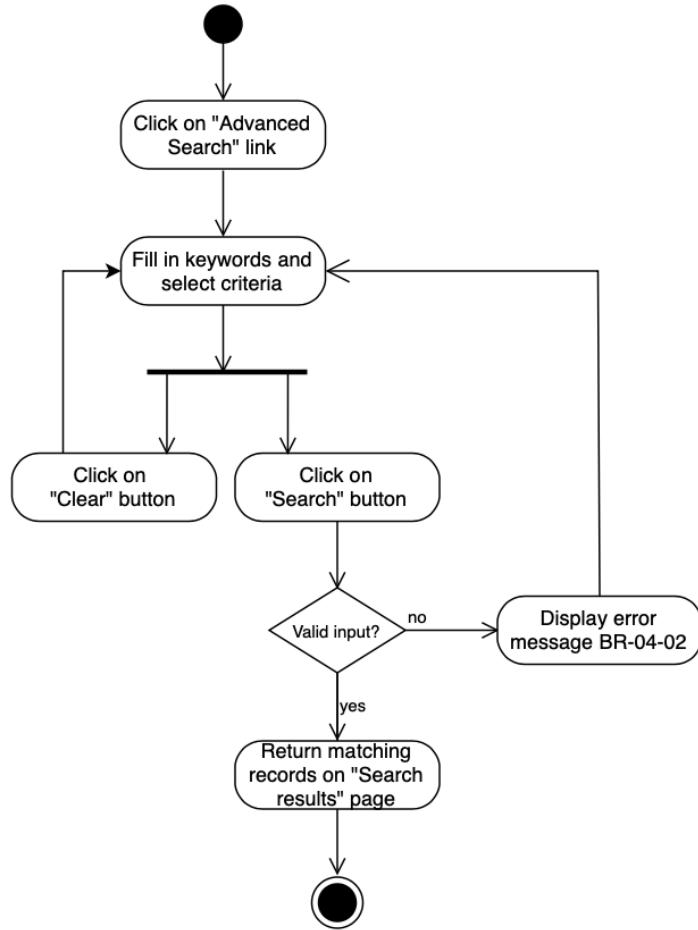


Figure 3.4-1: Activity diagram - Advanced Search

3.4.3 Business Rules

Business Rule ID	Business Rule Description
BR-04-01	Valid data are Latin and Arabic characters representing the numbers 0 - 9, the letters A - Z (both uppercase and lowercase). If users enter common symbols such as @ # * and &, it will show an error message " <i>Book titles mustn't include common symbols such as @ # * and &.</i> "
BR-04-02	Users must search for the name of the authors separated by a comma. Multiple authors are allowed. "Valid data are Latin and Arabic characters representing the numbers 0 - 9, the letters A - Z (both uppercase and lowercase). If users enter common symbols such as @ # * and &, it will show an error message " <i>Book authors mustn't include common symbols such as @ # * and &.</i> "
BR-04-03	ISBN is unique by books and entered by the librarian in the Admin. If there is no ISBN available in the Admin, it will show an error message " <i>ISBN does not exist.</i> "
BR-04-04	Year is the published year of the books. It will show have the options from 1500 to now, along with the option "No Date".
BR-04-05	Users must search for the name of the authors separated by a comma. Multiple authors are allowed. "Valid data are Latin and Arabic characters representing the numbers 0 - 9, the letters A - Z (both uppercase and lowercase). If users enter common symbols such as @ # * and &, it will show an error message " <i>Book publishers mustn't include common symbols such as @ # * and &.</i> "

BR-04-06	Categories are created by the librarian in the Admin and newly created categories will be automatically updated. Students/faculties can only choose 3 categories at max, each in a line. The default value is "--Select Category--"
BR-04-07	"AND" means an item appearing on the Search results page must match all the filter conditions on the Advanced search page. "OR" means an item appearing on the Search results page can match at least one of the conditions which uses the "OR" function on the Advanced search page. The default value is "AND"
BR-04-08	Users must enter search terms in at least one of the fields below.

3.4.4 Flow of Events

3.4.4.1 Basic Flow

Step	Description
	User clicks on "Advanced search" on Header menu.
	System opens the "Advanced Search" page.
	User fills and selects the search information and click "Search".
4.	System validates the search information and all are correct.
5.	System shows the "Search Results" page.

3.4.4.2 Alternative Flow – Clear to re-input search data

Step	Description
1.	User clicks on "Advanced search" on Header menu.
2.	System opens the "Advanced Search" page
3.	User fills and selects the search information and click "Clear"
4.	System refreshes the page and shows a blank "Advanced search"
5.	User fills and selects the search information again and click "Search"
6.	System validates the search information and all are correct
7.	System opens the "Search Results" page.

3.4.4.3 Exceptional Flow – Clear to re-input search data

Step	Description
1.	User clicks on "Advanced search" on Header menu.
2.	System opens the "Advanced Search" page.
3.	User fills and selects the search information and click "Search".
4.	System validates the search information and find some invalid information.
5.	System shows an error message.
6.	User correct data and click "Search" again.
7.	System validates the search information and all are correct.
8.	System open the "Search Results" page.

3.4.5 Mock-up Screen

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<https://lib.example.edu/dashboard/>

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[My Dashboard](#) > [Books](#) > Add Book [Quick search](#)

ADD NEW BOOK

Title	<input type="text"/>	Enter at least one word in the Book Title
Author(s)	<input type="text"/>	Enter the name of the authors separated by a comma. Multiple authors are allowed.
ISBN	<input type="text"/>	Enter the exact ISBN.
Year	<input type="text" value="-- Select Year--"/>	Expand and choose one available option.
Publisher	<input type="text"/>	Enter the name of the publishers separated by a comma. Multiple publishers are allowed.
Pages	<input type="text"/>	Enter the total number of book pages
Description	<input type="text"/>	Enter a description with the maximum of 200 words
Category	<input type="text" value="--Select Categories--"/>	Expand and choose one available option.
Position	<input type="text" value="--Bookshelf no--"/> ▾ <input type="text" value="--Row no--"/> ▾ <input type="text" value="--Column no--"/> ▾	Expand and choose one available option.

[Add Book](#) [Cancel](#)

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Figure 3.4-2: Advanced Search screen 1 (Blank search form)

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https://lib.example.edu/search?q=business

LiMS My Dashboard | Book Categories | Help | Advanced Search Full Name ▾ Quick search

Q Advanced Search > ...

Enter search terms in at least one of the fields below.

Title	Business Analysis	Enter at least one word in the Book Title
OR	Author(s)	James Porter, Lily Enter the name of the authors separated by a comma. Multiple authors are allowed.
AND	ISBN	978-1-62825-069-5 Enter the exact ISBN. Otherwise, skip it.
AND	Year	2020 Expand and choose one available option.
AND	Publisher(s)	Enter the name of the publishers separated by a comma. Multiple publishers are allowed.
AND	Category 1	Business Expand and choose one available option.
OR	Category 2	Technology Expand and choose one available option.
AND	Category 3	--Select Category-- Expand and choose one available option.
OR		
AND		

Search Clear

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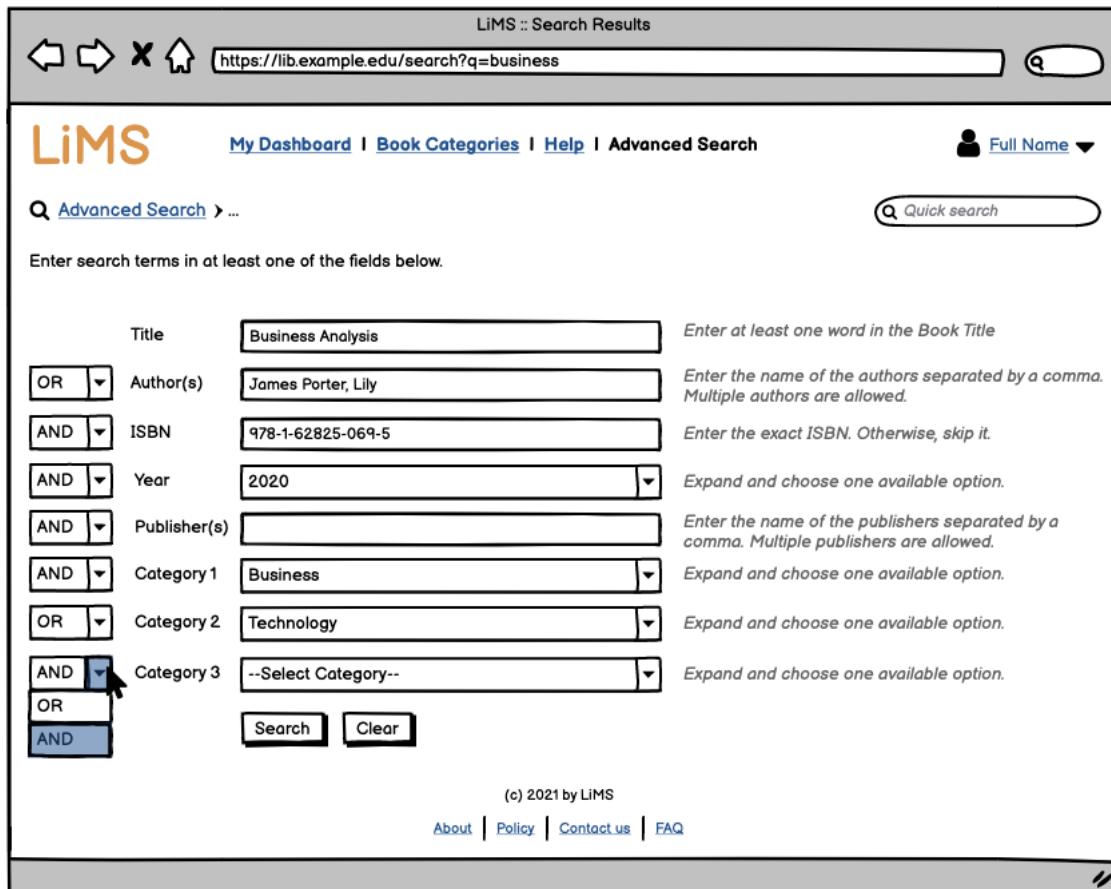


Figure 3.4-3: Advanced Search screen 2 (Select options)

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https://lib.example.edu/search?q=business

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Q Advanced Search > ... Quick search

Enter search terms in at least one of the fields below.

Title	Business Analysis	Enter at least one word in the Book Title
OR	Author(s)	James Porter, Lily Enter the name of the authors separated by a comma. Multiple authors are allowed.
AND	ISBN	978-1-62825-069-5 Enter the exact ISBN. Otherwise, skip it. <i>*ISBN does not exist</i>
AND	Year	2020 Expand and choose one available option.
AND	Publisher(s)	
AND	Category 1	Business Expand and choose one available option.
OR	Category 2	Technology Expand and choose one available option.
OR	Category 3	--Select Category-- Expand and choose one available option.

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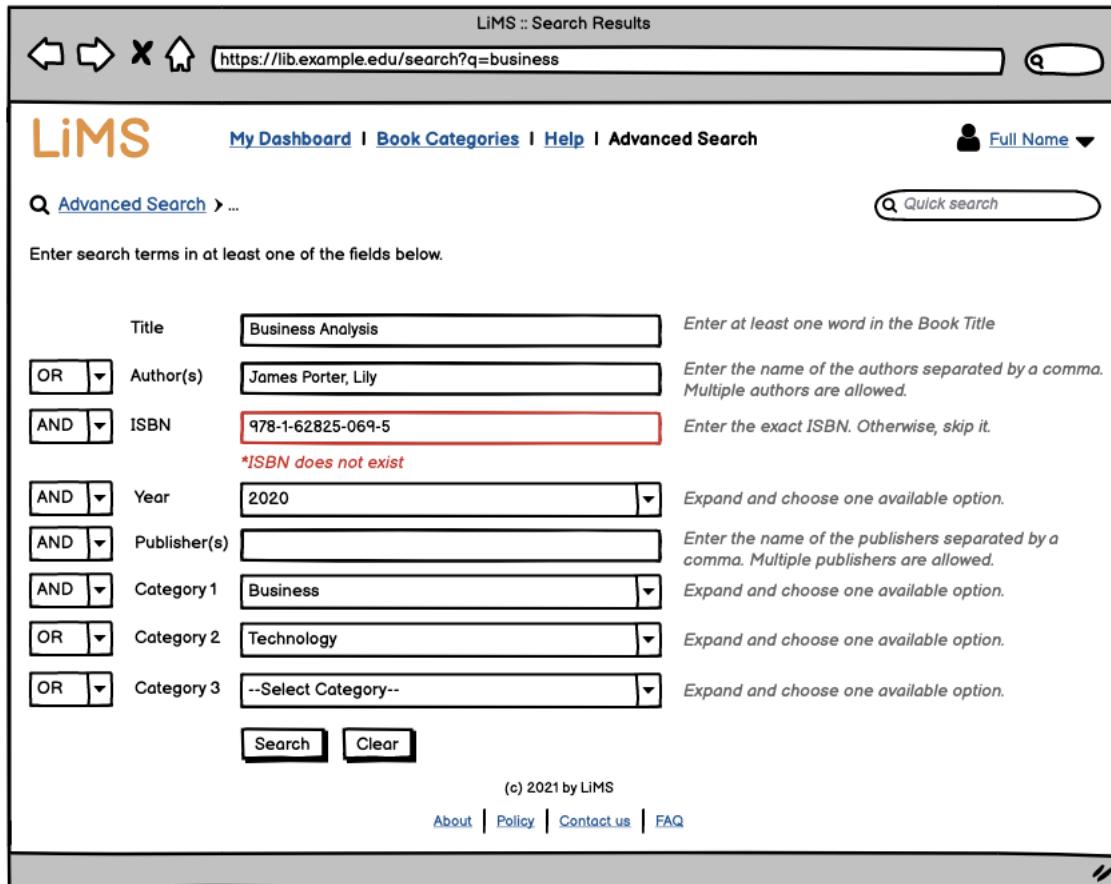


Figure 3.4-4: Advanced Search screen 3 (Error - invalid ISBN)

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https://lib.example.edu/search?q=business

LiMS My Dashboard | Book Categories | Help | Advanced Search Full Name ▾

Q Advanced Search > ... Quick search

Enter search terms in at least one of the fields below.

Title	Business Analysis	Enter at least one word in the Book Title
OR	Author(s)	James Porter, Lily Enter the name of the authors separated by a comma. Multiple authors are allowed.
OR	ISBN	978-1-62825-069-4 Enter the exact ISBN. Otherwise, skip it.
AND	Year	2020 Expand and choose one available option.
AND	Publisher(s)	Enter the name of the publishers separated by a comma. Multiple publishers are allowed.
AND	Category 1	Business Expand and choose one available option.
OR	Category 2	Technology Expand and choose one available option.
AND	Category 3	--Select Category-- Expand and choose one available option.

Search Clear

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Figure 3.4-5: Reserve Book screen 4 (Valid data input)

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Showing 1-3 of 13 relevant results

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	Business Analysis for Practitioners Project Management Institute ★★★★☆ (16 reviews) The PMI provides services including the development of standards, research, education, publication, networking-opportunities in local chapters... View details Add to Wishlist Reserve
Available	Business Adventures
	Business Adventures Jame Porter ★★★★☆ (10 reviews) What do the \$350 million Ford Motor Company disaster known as the Edsel, the fast and incredible rise of Xerox,... View details Add to Wishlist
Available	Wicked Business
	Wicked Business Lily ★★★★☆ (10 reviews) IT Business Analysis Lizzy Tucker's once normal life as a pastry chef in Salem, Massachusetts, turns upside down as she battles both sinister forces and... View details Add to Wishlist

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Figure 3.4-6: Advanced Search Screen 5 (Search results)

3.4.6 Screen Description

RE F	Field Name	Control Type	Data Type	Default Value	Mandat ory	Editable	Description
Header (Refer to UC02 screen description , header section)							
Body							
8	Search results	Text	Text		N/A	N	Showing [maximum_search_results_number_per_page] of [number_of_search_results] of "[search_keyword]"
Body (Screen 1)							
	Book title	label	N/A	N/A	N/A	N/A	

	Book title field	text	text	N/A	Y	Y	
	Book title tooltip	label	N/A	N/A	N/A	N/A	
	Author	label	N/A	N/A	N/A	N/A	
	Author field	text	text	N/A	N	Y	
	Author tooltip	label	N/A	N/A	N/A	N/A	
	Author select	select	text	OR	N	Y	
	ISBN	label	N/A	N/A	N/A	N/A	
	ISBN field	number	number	N/A	N	Y	
	ISBN tooltip	label	N/A	N/A	N/A	N/A	
	ISBN select	select	text	OR	N	Y	
	Year	label	N/A	N/A	N/A	N/A	
	Year field	select	number	N/A	N	Y	
	Year tooltip	label	N/A	N/A	N/A	N/A	
	Year select	select	text	OR	N	Y	

Body (Screen 5)

9	Book image	Image	Image	noimage.jpg	N/A	N	Load image has file name the same with the book's ID in /img/book/
10	Book title	Hyperlink	N/A	N/A	N/A	N	Dynamic field retrieve from field 'book_title' of 'tbl_book' table.
11	Book author	Text	Text	N/A	N/A	N	Display [book_author]
12	Rating	Image/ Text	Image/ Text	No review	N/A	N	Display calculation of average [rating] and count number total [rating]
13	Description	Text	Text	N/A	N/A	N	Display [book_des]
14	Reserve	Button	N/A	N/A	N/A	N	Only display this button if the book is not currently available for borrowing.
15	Wishlist	Button	N/A	N/A	N/A	N	Button "Add to Wishlist" trigger function add a book to user's wishlist.
16	Pagination	Hyperlink	N/A	N/A	N/A	N	There are maximum 3 books will be shown per page.

Footer (Refer to [UC02 screen description](#), footer section)

4. NON-FUNCTIONAL REQUIREMENTS

4.1 Performance

- The system must be able to handle at least 300 concurrent users.
- If it takes the website returns more than 30 seconds to load, display error message: “The page is temporarily down. Please return later.”

4.2 Security

- Users can only access them when they are in the school's LAN.
- The system must follow ISMS Information Security System standards
- Password must be encrypted by MD5 hash algorithm before sending to the browser.

4.3 Localization

LiMS is intranet-based with one specific local system so there is no requirement for localization.

5. APPENDIX

5.1 Email notification about reserved book's availability

Subject line: Your reserved book is already returned to the library!

Content:

Hi [name_of_the_user],

We are happy to inform you that the book **[BOOK_TITLE]** is already returned to the library today.

Please come to the library at **No.48 To Huu Street, Nam Tu Liem District, Hanoi City** within 3 days after you receive this email to borrow the book.

If you do not come to the library within the time, your book reservation will be automatically canceled.

Feel free to contact us at 10xxxxxx (Ms. Stephanie) supposed that you have any questions related to the book reservation.

Thank you.

Best,

Ms.Stephanie.

Librarian of The University Group1 LiMS System.

Contact number; 10xxxxxx

Email: stephanie@group1.edu