

CSE222-505

GROUP-3

General Purpose Library Automation System

REPORT

1-Group Members

- 200104004094 - Yeşim YALÇIN
- 1801042095 - Mehmet ACAR
- 171044048 - Muhammed GEÇGELOĞLU
- 1901042631 - Gökbeý Gazi KESKİN
- 1801042608 - Hikmet Mete VAROL
- 1801042091 - Sinan SARI
- 1801042613 - Oğulcan KALAFATOĞLU
- 171044034 - Mustafa GÜRLER
- 161044058 - Osman Talha AYDIN
- 20500800301 - Hayrettin Kasım ÖZKUL

2-Problem Definition

People have always been eager to do things in the easiest way and save time. They do not like doing something if it is complicated and hard to reach. From our point of view, libraries might also seem like a complicated enormous place which one can get lost trying to find information. This is one of the reasons why in today's world the internet is a lot more preferred over libraries. We would like to change that by giving libraries a structure and connecting them with each other so that it is a lot easier for people to find what they need.

Furthermore, we know that libraries do not have enough employees. All the things that needs to be done is usually left to one person only. Therefore employees do not have much time for arranging everything properly all the time. Libraries should have an organized employee system to be able to offer the information easily and quickly.

On the other hand, libraries have functions other than keeping books. There are many cultural activities which are organized by libraries. However not many people are getting the news about these. We would like to develop a system that will announce the activities the libraries organize so that people will not miss out anything and realize the worth of libraries in different areas.

Finally, we would like to add a new feature to libraries and let readers add comments. Readers may want to research about books comments and choose if they want to read them or not. Reading a book without comments can be a waste of time.

In conclusion, libraries have a big potential for searching data and we would like to be able to let people reach the books without spending much time and get the best information about everything by creating an organized library system.

3- Users Of The System

The library system has users such as administrator, library manager, branch employee, janitor, standart reader, premium reader.

Administrator: Administrator manages the system by adding or removing Library Managers and libraries.

Library Manager: Library managers control the library tasks. They can get book demands, add/remove/search books, book categories, librarians and janitors. They can add new tasks for Janitors. Also, they can see the event requests from users and accept/decline them.

Librarian: Librarians can lend, relend, search and demand books.

Janitor: Janitors can list their tasks and mark them as “done”.

Readers : Readers can improve their account to Premium reader. So there are two types of reader:

Standart Reader: Standart readers can register and login. They can search, borrow, return and view info of books. Also they can leave comments for books, see the occupancy rate of libraries, vote for events, view events and participate in events.

Premium Reader: Premium readers have all the features that standart readers has. Additionally they can create an event request and demand new books from the manager.

4- Requirements

4.1 Functional Requirements

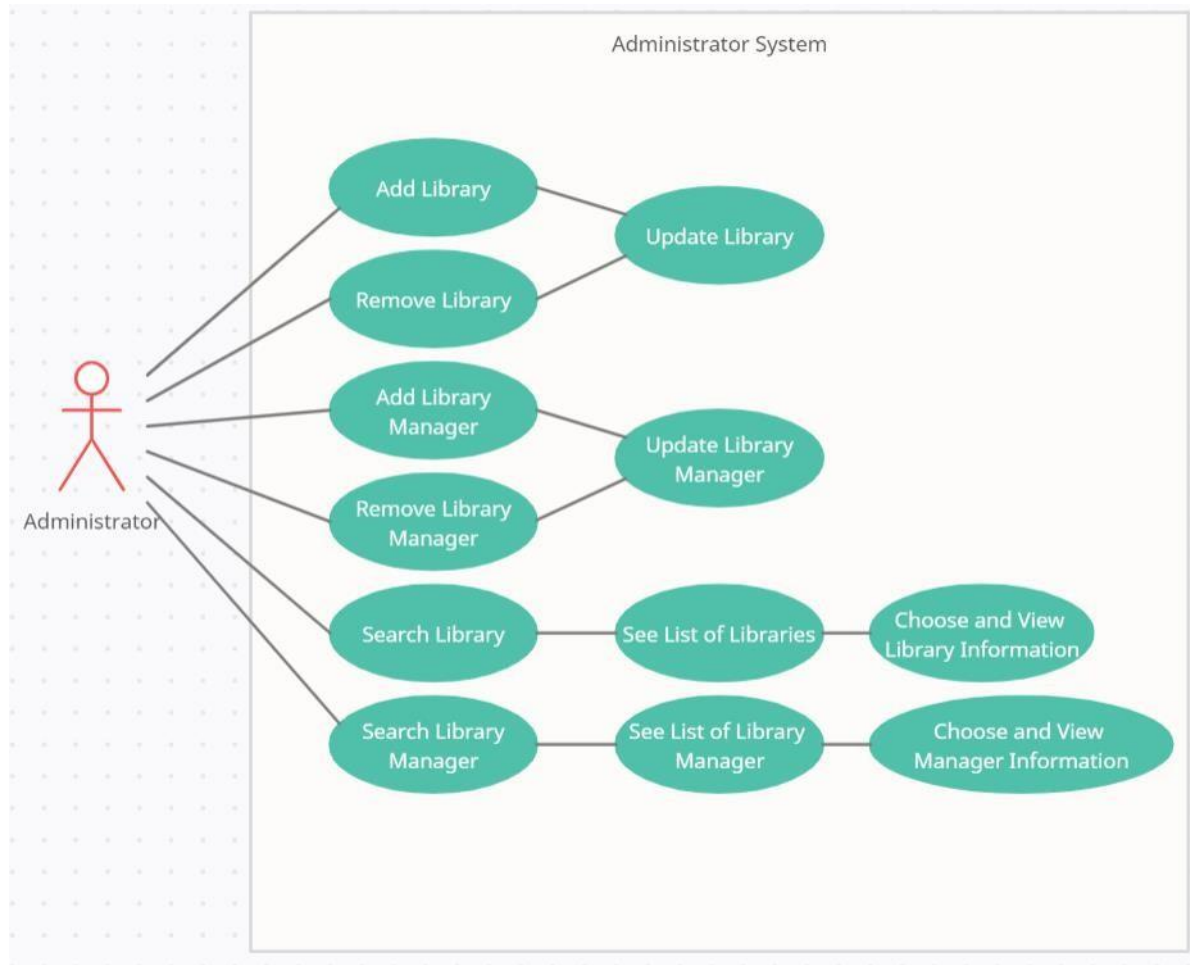
Requirement ID	Description of the requirement
FR1	Administrator is able to add and remove Library Managers and Libraries.
FR2	Administrator is able to search for Library Managers and Libraries.
FR3	Administrator is able to update Library and Manager info.
FR4	Library manager is able to add and remove books.
FR5	Library manager is able to add and remove book categories.
FR6	Library manager is able to add and remove librarians.
FR7	Library manager is able to add and remove janitors.
FR8	Library manager is able to add new tasks for janitors.
FR9	Library manager is able to get book demands.
FR10	Library manager is able to list event requests and accept/decline them.
FR11	Library manager is able to search for books.
FR12	Library manager is able to search for book categories.
FR13	Library manager is able to search for librarians.
FR14	Library manager is able to search for janitors.
FR15	Librarian is able to demand new books.
FR16	Librarian is able to demand stock for an existing book.
FR17	Librarian is able to lend, and relend books.
FR18	Librarian is able to search for books.
FR19	Janitor is able to list their tasks and mark them as “done”.
FR20	Standart Reader is able to register and login.
FR21	Standart Reader is able to search for books.
FR22	Standart Reader is able to borrow and return books.
FR23	Standart Reader is able to view book information(stock,name etc).
FR24	Standart Reader is able to see the occupancy rate of libraries.
FR25	Standart Reader is able to leave comments for books.
FR26	Standart Reader is able to view events.
FR27	Standart Reader is able to vote for events.
FR28	Standart Reader is able to participate in events.
FR29	Premium Reader is able to register and login.
FR30	Premium Reader is able to search for books.
FR31	Premium Reader is able to borrow and return books
FR32	Premium Reader is able to view book information(stock,name etc).
FR33	Premium Reader is able to see the occupancy rate of libraries.
FR34	Premium Reader is able to leave comments for books.
FR35	Premium Reader is able to view events
FR36	Premium Reader is able to vote for events.
FR37	Premium Reader is able to participate in events.
FR38	Premium Reader is able to create a new event request.
FR39	Premium Reader is able to demand new books

4.2 Non-Functional Requirements

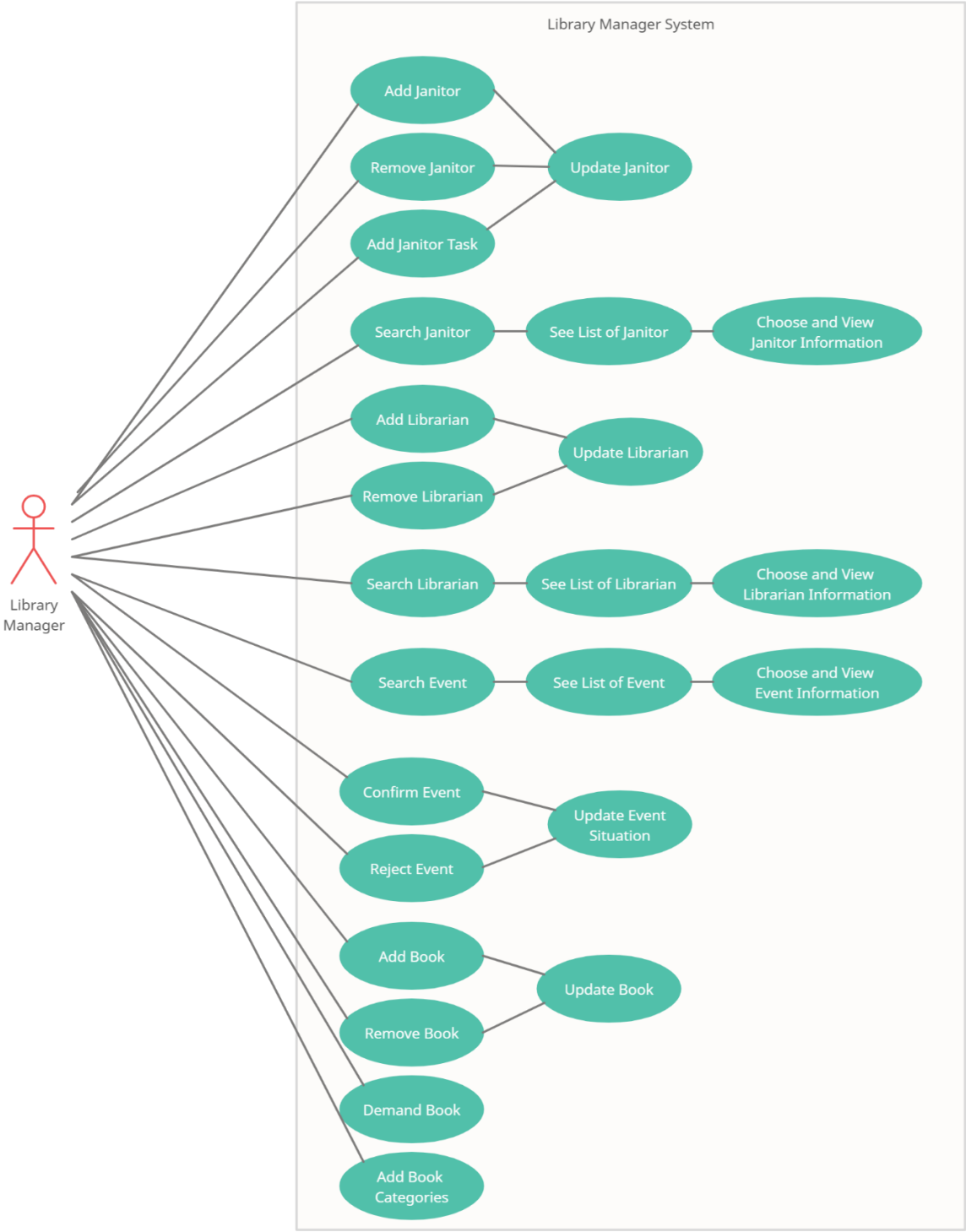
Requirement ID	Description of the requirement
NFR1	JavaSE13 or higher should be installed and running properly.
NFR2	System can operate on any hardware. The user is not in charge of any leaks in security if user decides to change their hardware or their operating system.
NFR3	System is user-friendly so a new user can learn easily.
NFR4	Libraries which installs this automation system on their libraries should inform the Administrator about their library capacity (employees, books, maximum readers etc.).
NFR5	Initial installation of the system should be done by professionals.

6-Use-Case Diagrams

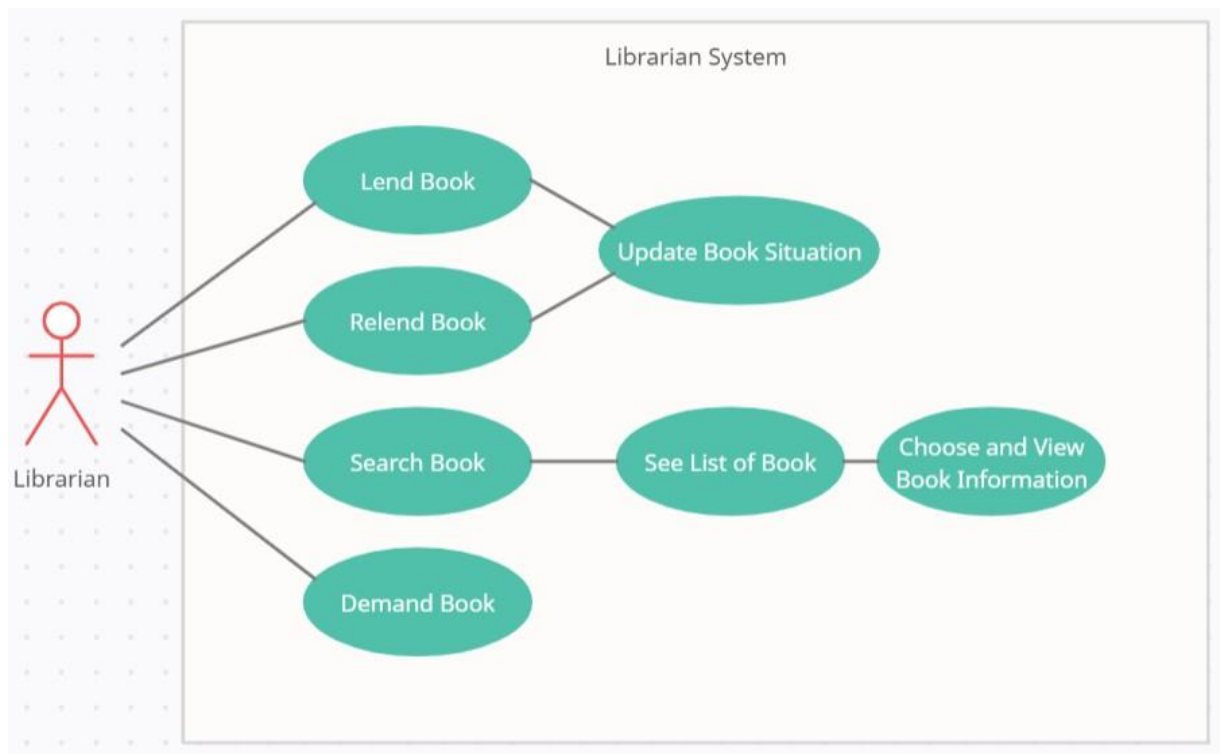
6.1 Administrator Diagram



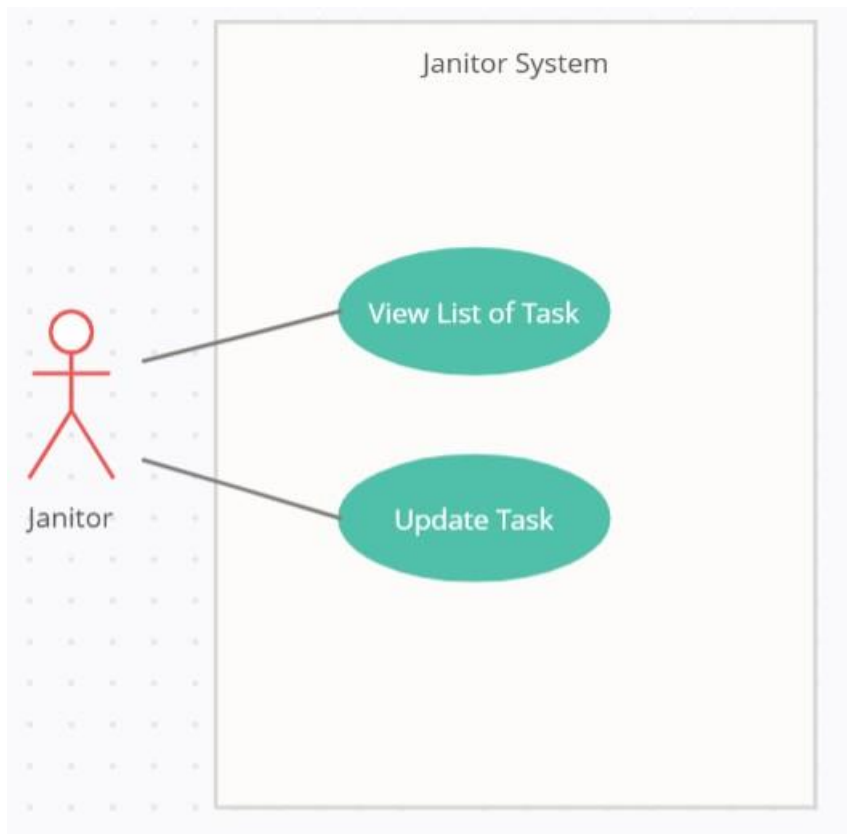
6.2 Library Manager Diagram



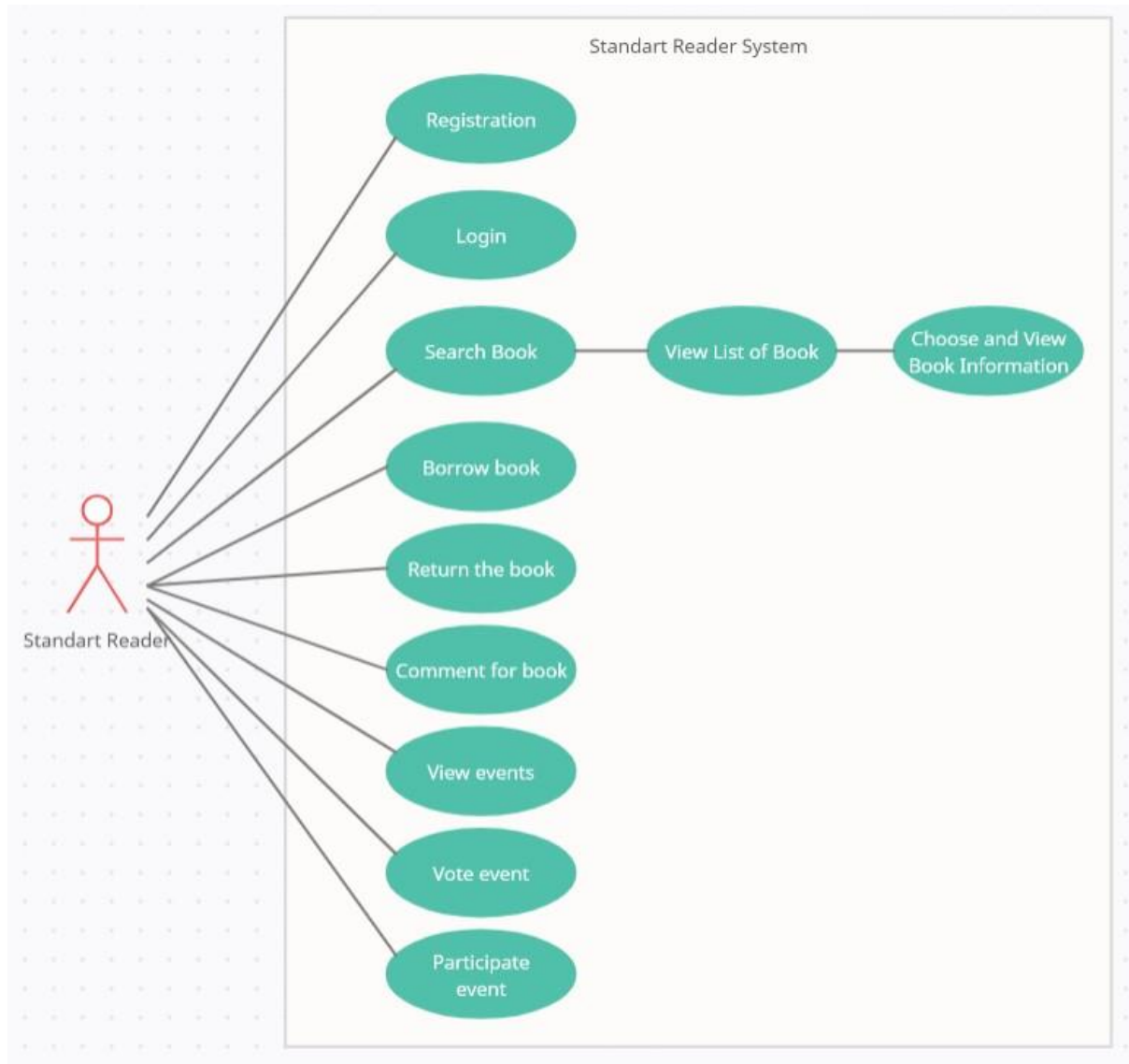
6.3 Librarian Diagram



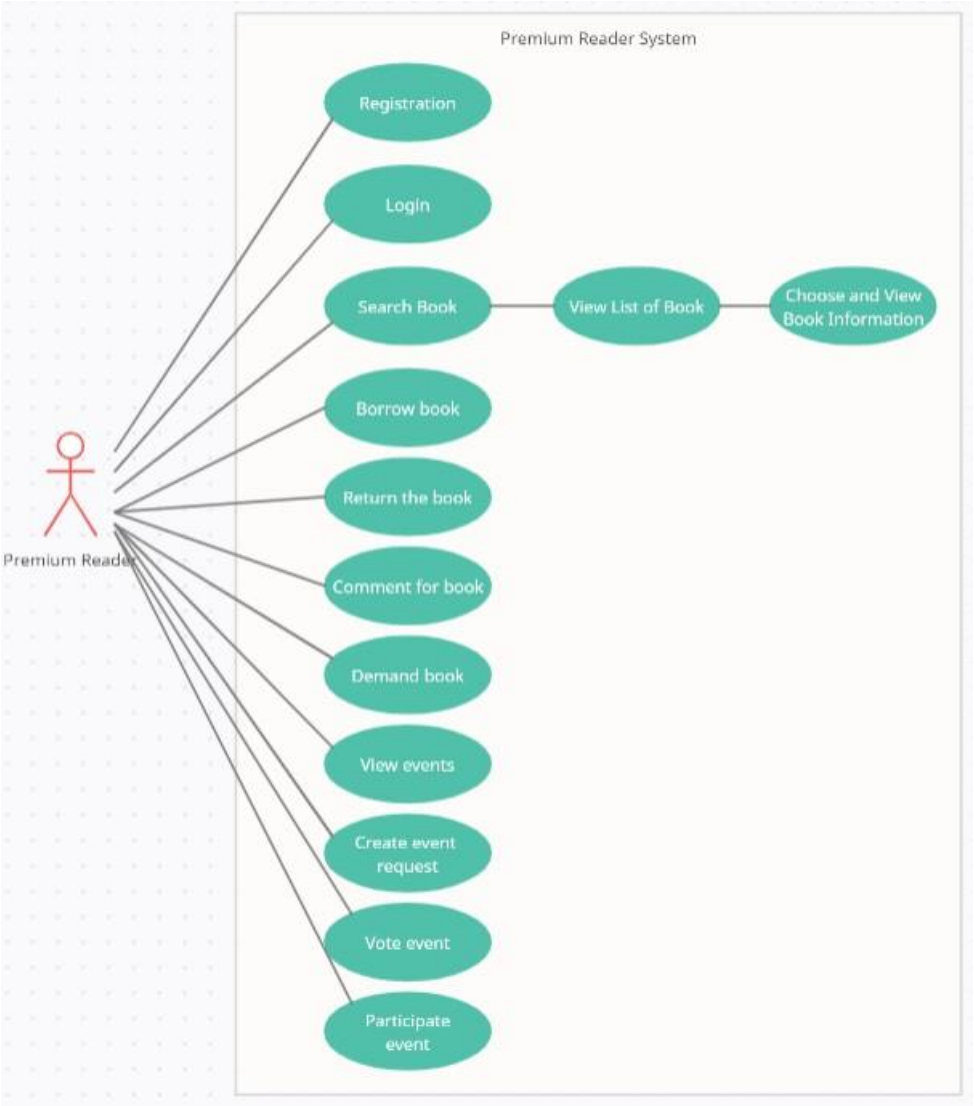
6.4 Janitor Diagram



6.5 Standart Reader Diagram

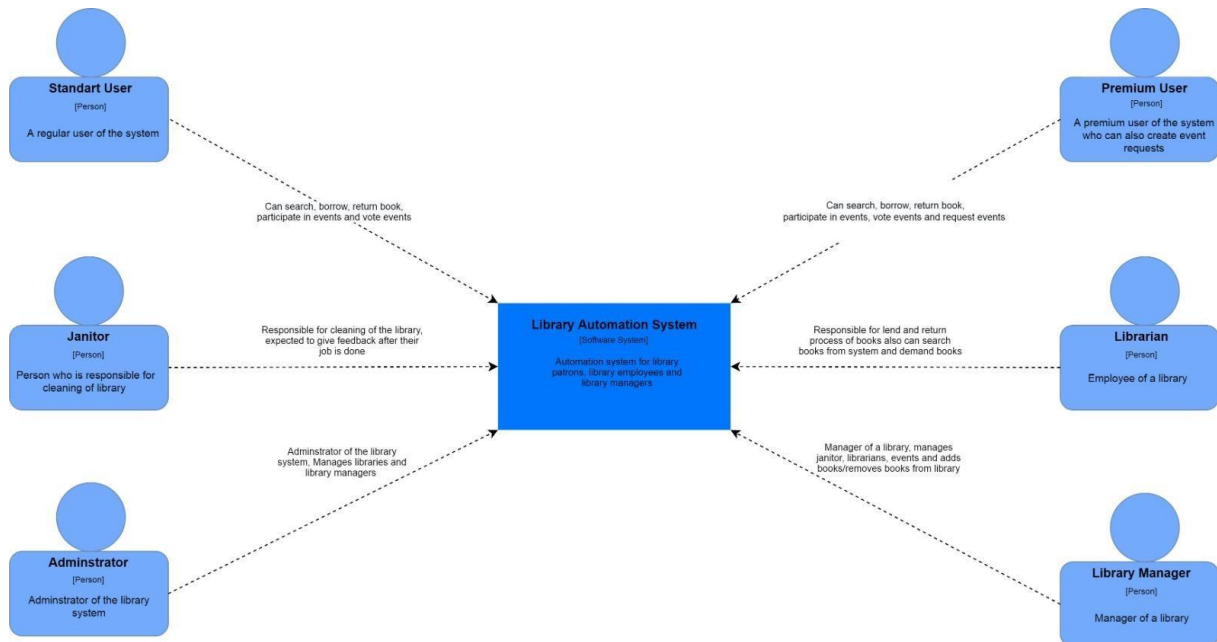


6.6 Premium Reader Diagram

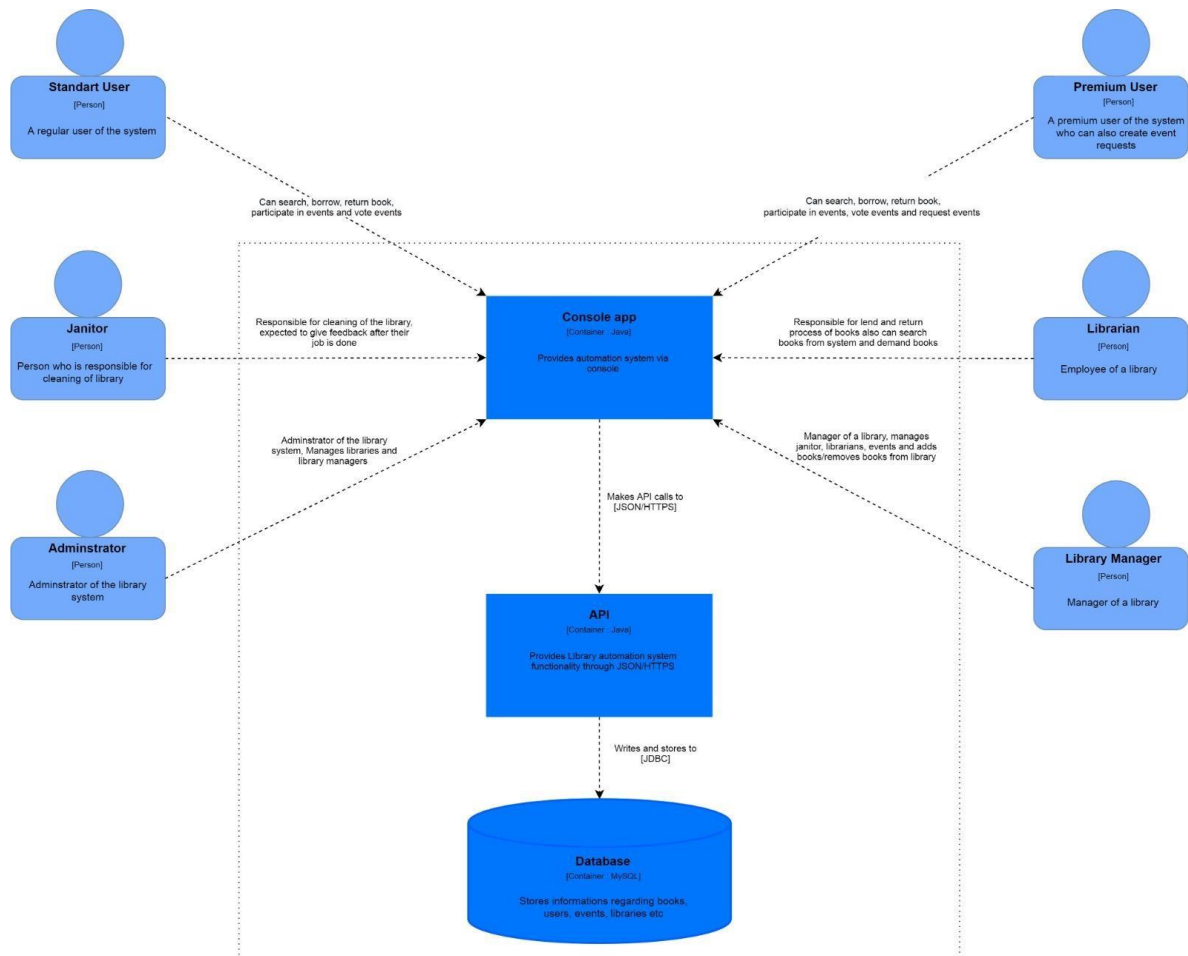


7- C4 Models

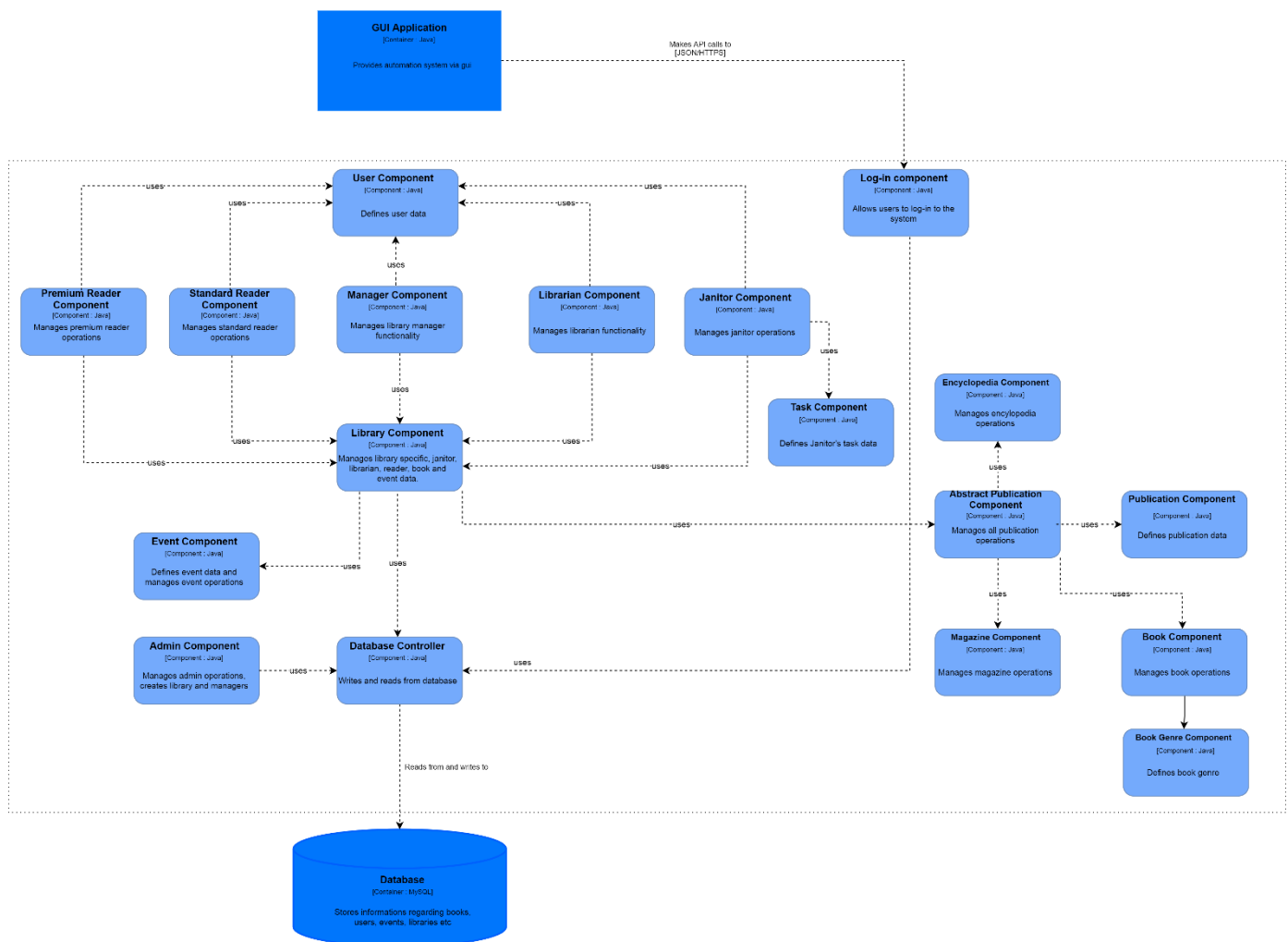
7.1 System Context Diagram



7.2 Container Diagram



7.3 Component Diagram



7.4-

Arraylist is used for readers, events, librarians, janitors and comments of the publications because there won't be many additions and these additions will be at the end of these data structures. So there won't be any shifting operations.

- Binary search tree is used for publications because publications will be alphabetically ordered and search operation on binary search tree is $O(\log n)$ in average.
- Priority queue is used for upcoming events because upcoming events will take place with respect to their dates, not wrt their addition order.
- Queue is used for Tasks of the janitors because janitors will do their tasks with respect to tasks addition order.
- Linkedlist is used for borrowed books because there will be lots of insertion and deletion while iterating through list. And insertion and deletion while iterating is $O(1)$ on linked list.

AVLTree

We have implemented AVLTree to use as a balanced binary tree. We are using AVLTree to keep the books in the libraries. Because there will be a lot of books in the libraries, having a balanced tree instead of a regular BinarySearchTree is a lot more efficient, The average running time of AVLTree is $O(\log N)$ whereas BinarySearchTree might have $O(n)$ run time. Therefore

the performance is improved to add & remove & search books in the libraries.

Graph

We have used graph to provide a navigation system to the users in the libraries. The graph stores each location inside and identifies the shortest paths for each location pairs. Users can enter where they are in the library and enter where they want to go. The graph gives a detailed shortest path direction information to their desired destination.

Sort

We have added a merge sort for our system. We use merge sort to sort the books in a specific genre in alphabetical order. Merge sort has $\Theta(N \log N)$ average runtime with $\Theta(n)$ space complexity and this gives advantage over many other sorting algorithms. Moreover, merge sort is beneficial for large data sizes and in the libraries there might be many books with the same genres.

Map

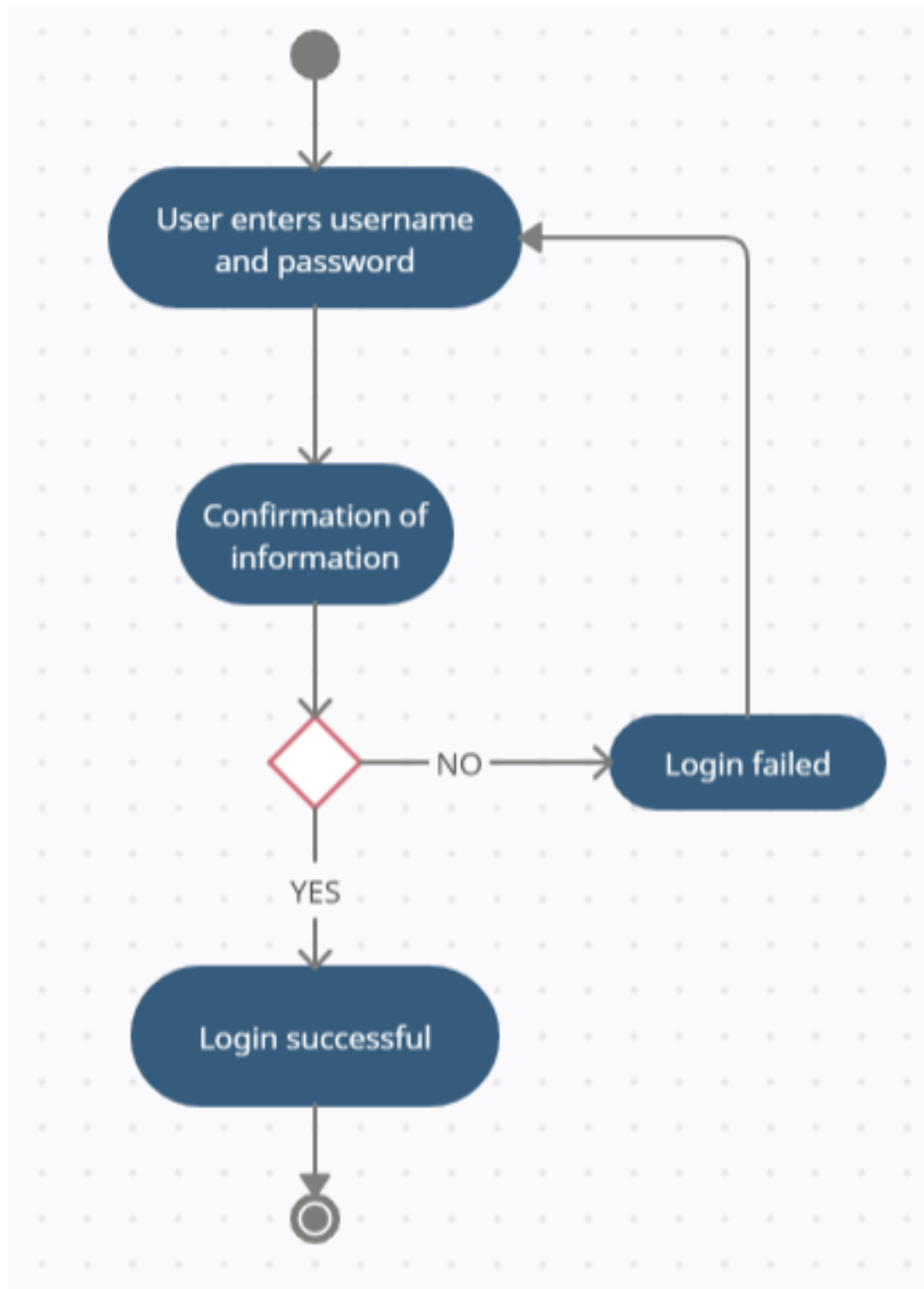
We use a HashMap inside the Task class. HashMap is used to match the task names with their ID's. For example the task with the ID 001 is named as "Unlock the doors". When a manager adds a task to a Janitor by inputting an ID, the ID is found inside the HashMap and the name of the task is automatically assigned.

Set

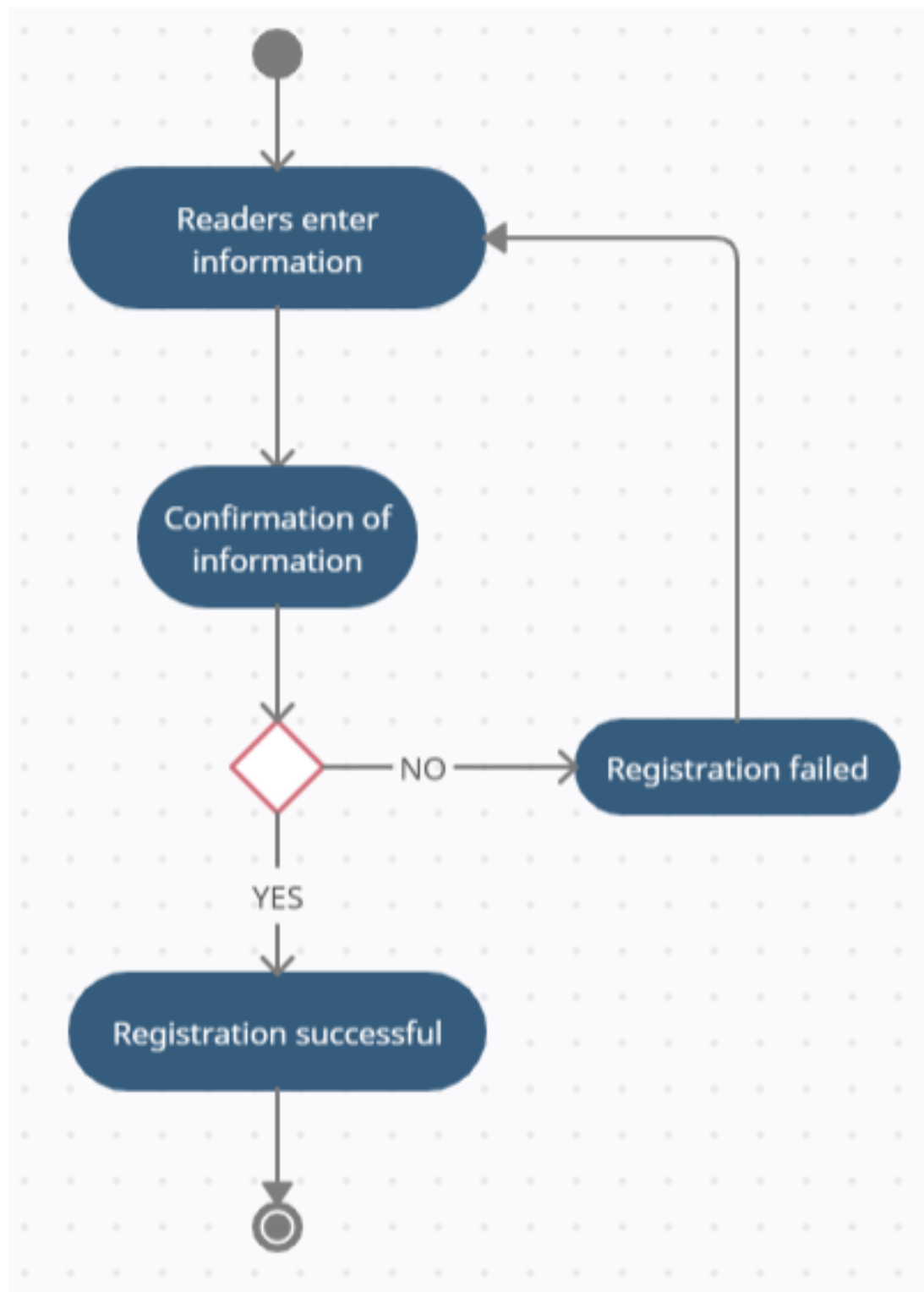
We use NavigableSet to hold the librarians and the janitors of the libraries inside the Library class. We chose to use NavigableSet here because a library cannot have the same librarian, janitor twice. They should be unique, should be added once. NavigableSet allows us to add the same user once and let us quickly retrieve them when needed.

8-Activity Diagrams

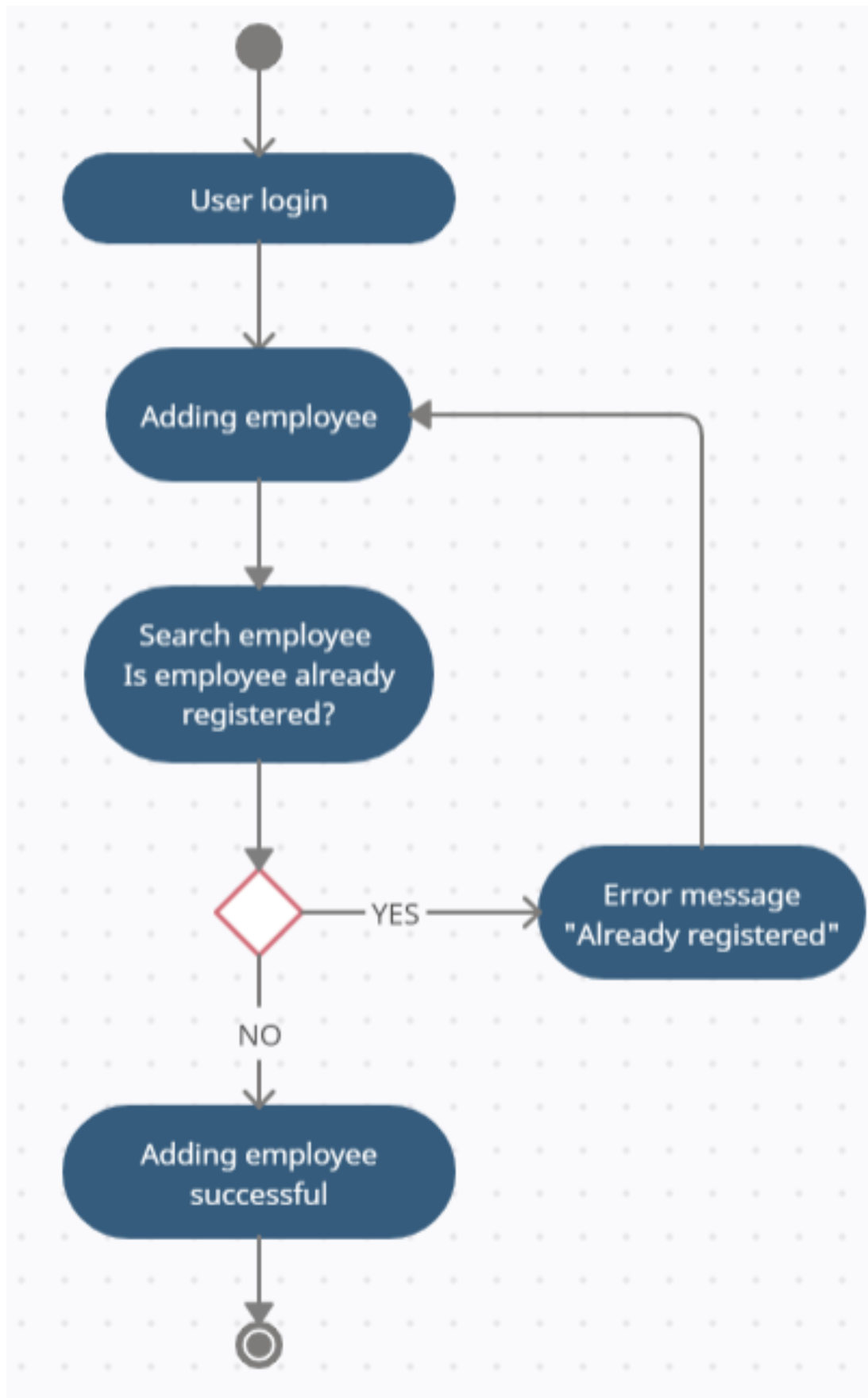
8.1- User Login Activity



8.2- Registration Activity for Readers

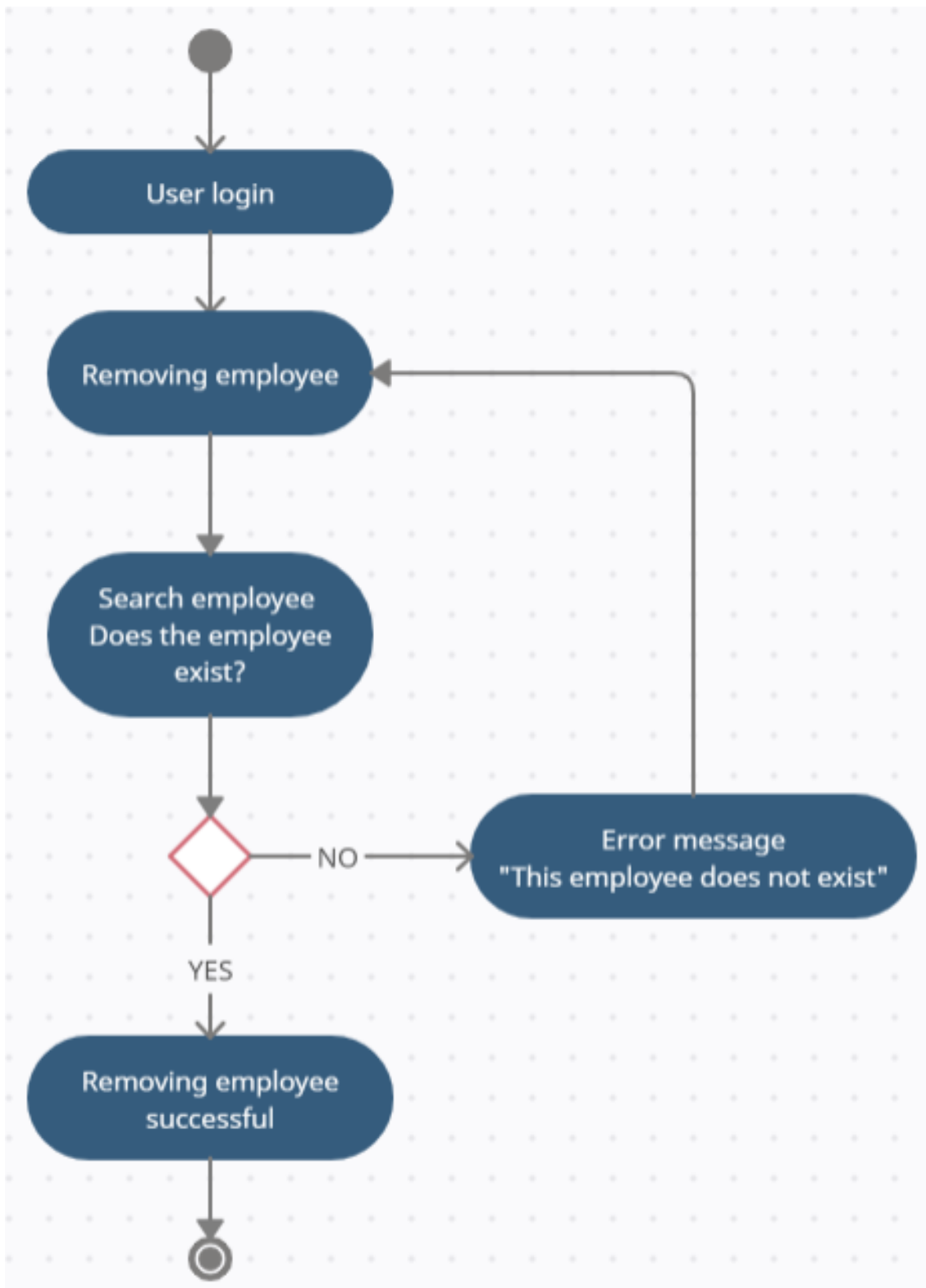


8.3 Adding Employee Into Library System For Admin And Manager

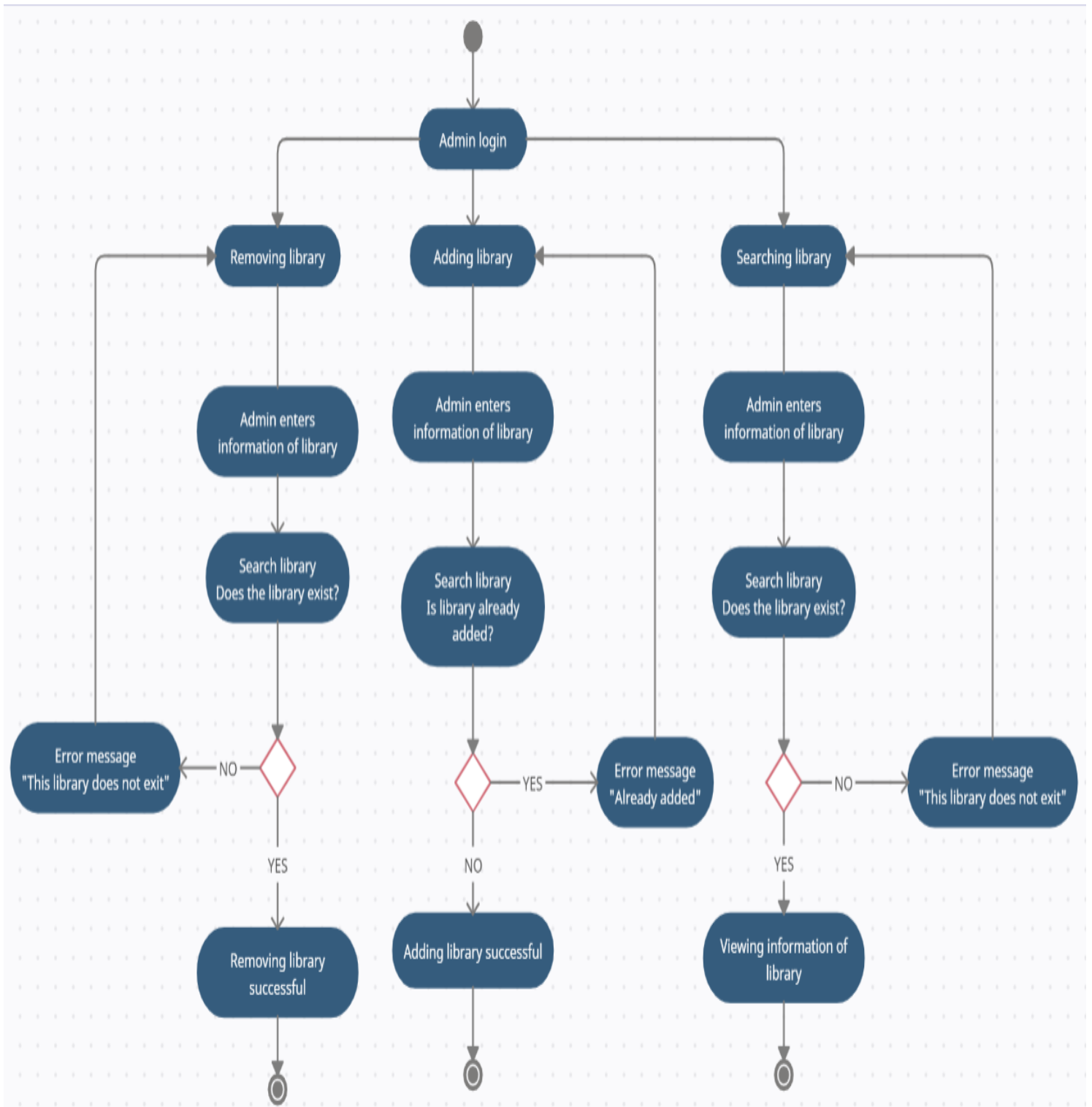


8.4 Removing Employee From Library System For Admin And

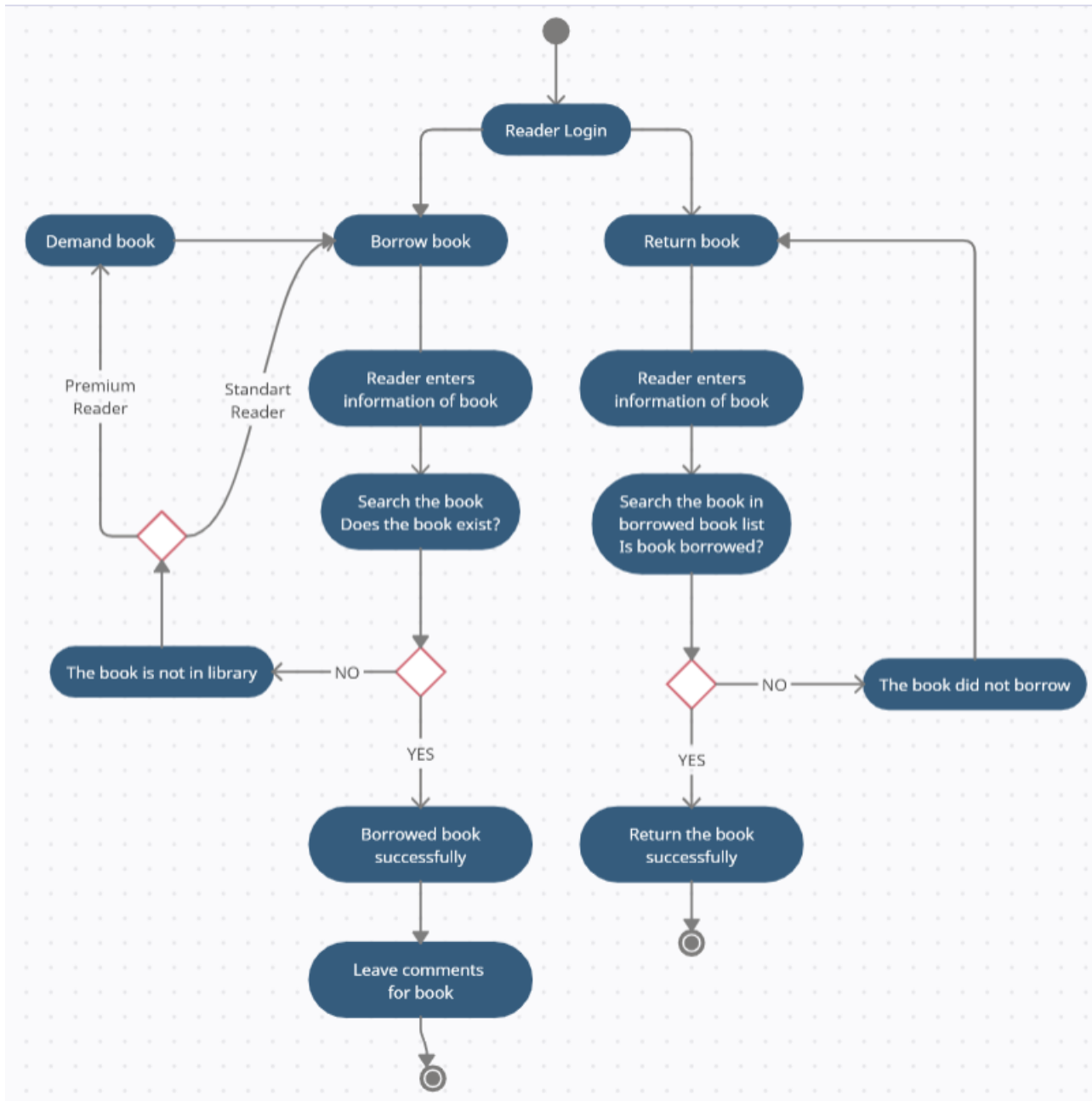
Manager



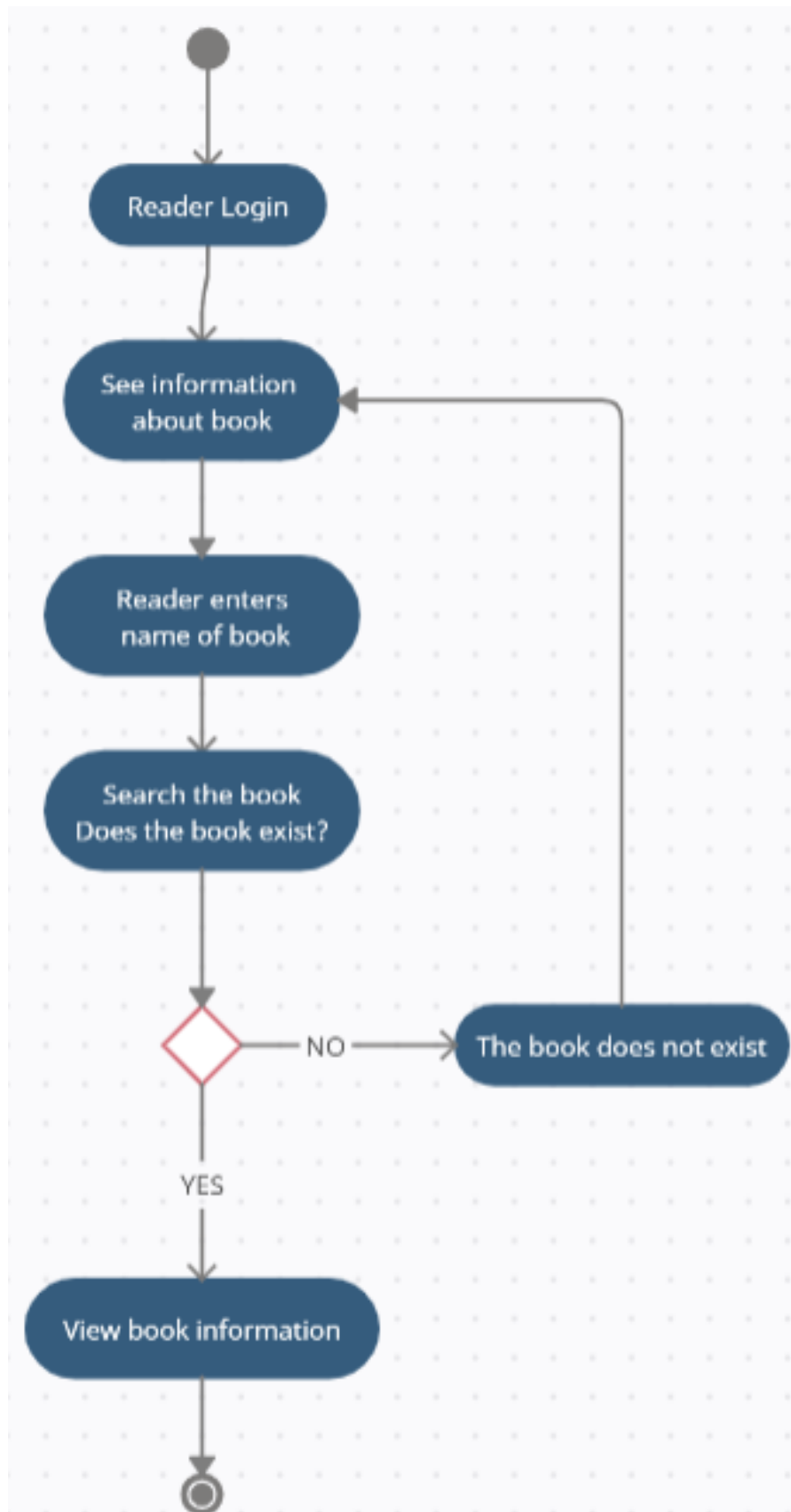
8.5 Admin's other activities



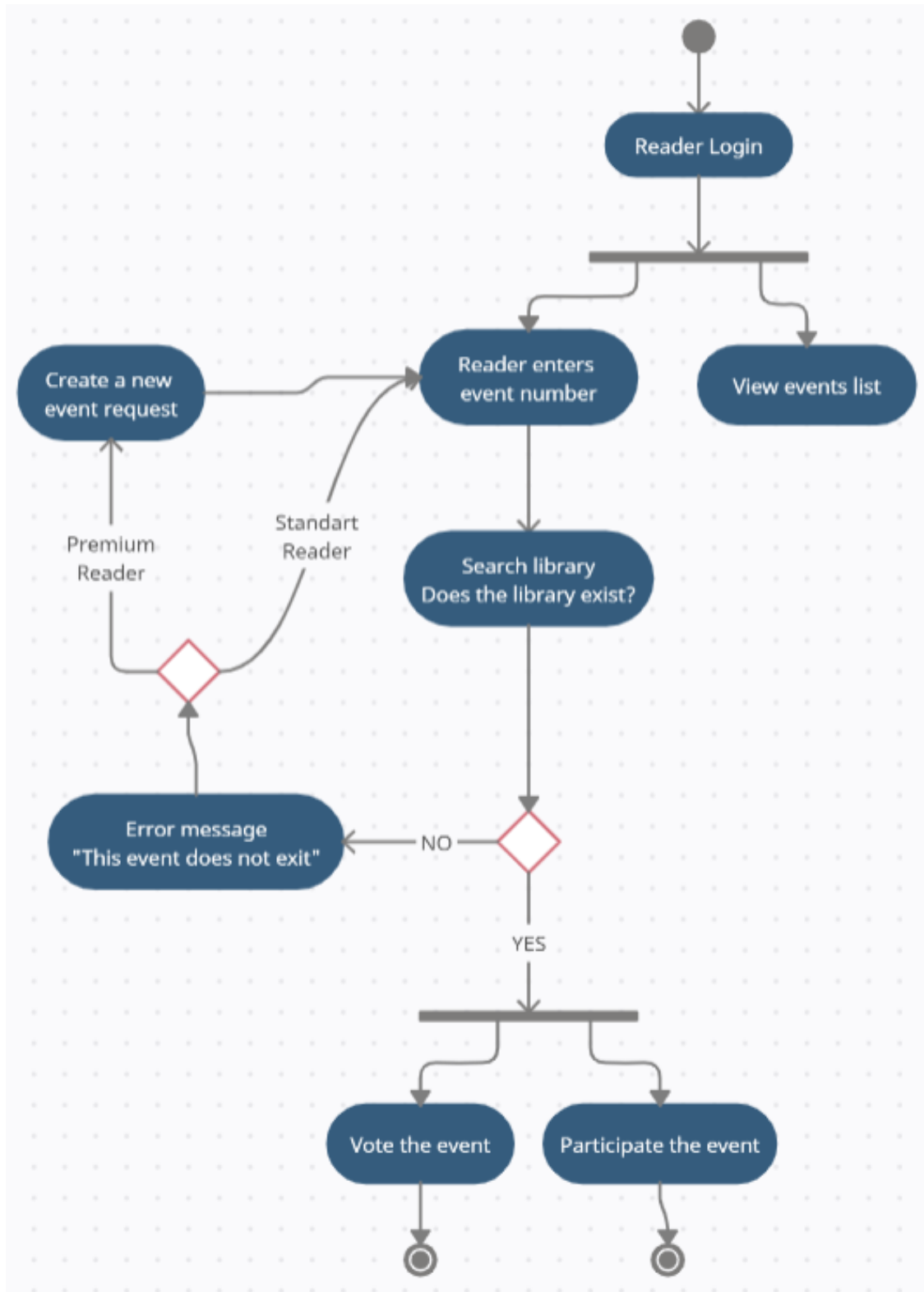
8.6 Borrow ,Return ,Demand, Leave Comment For Book



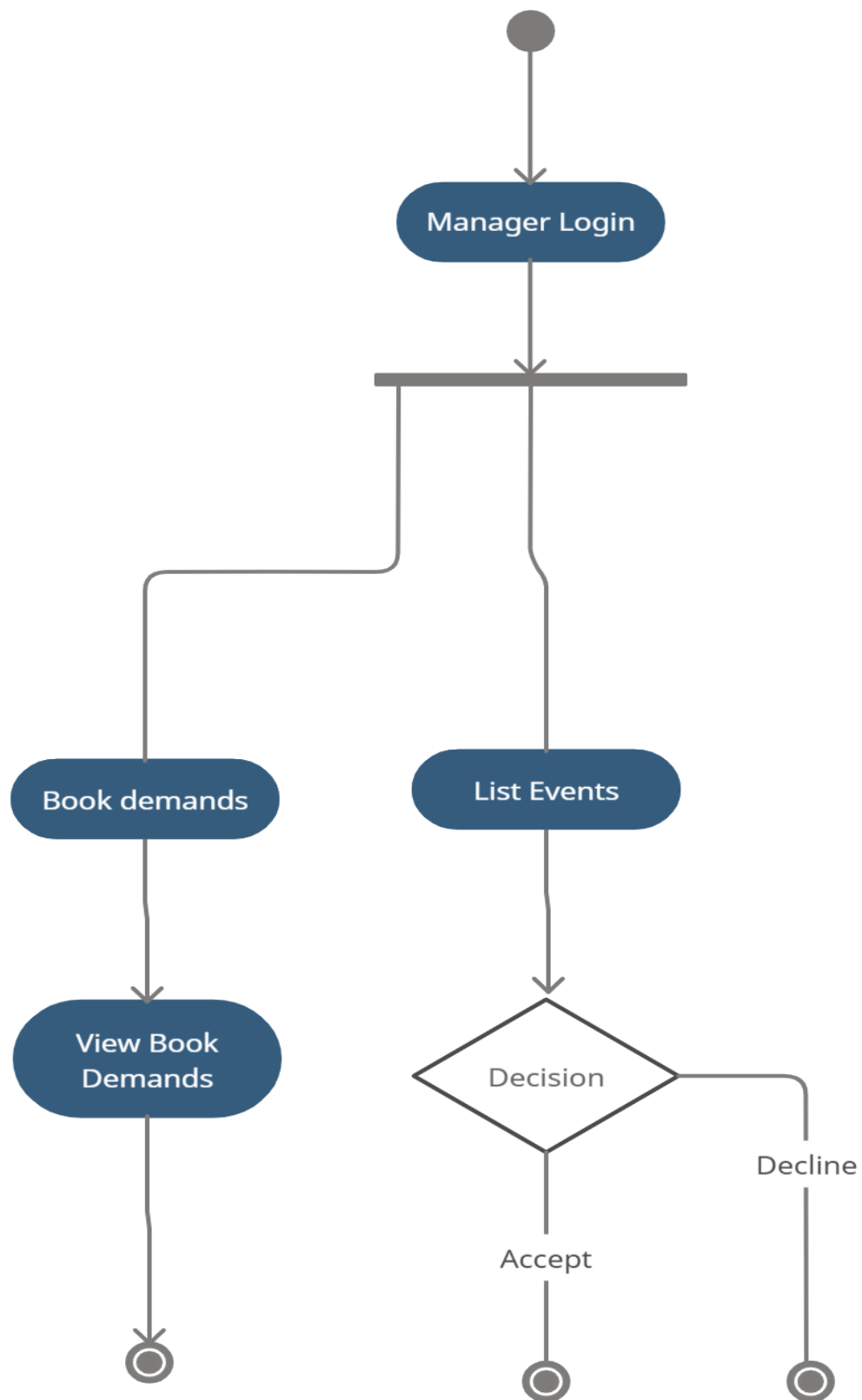
8.7 Search book and view book information



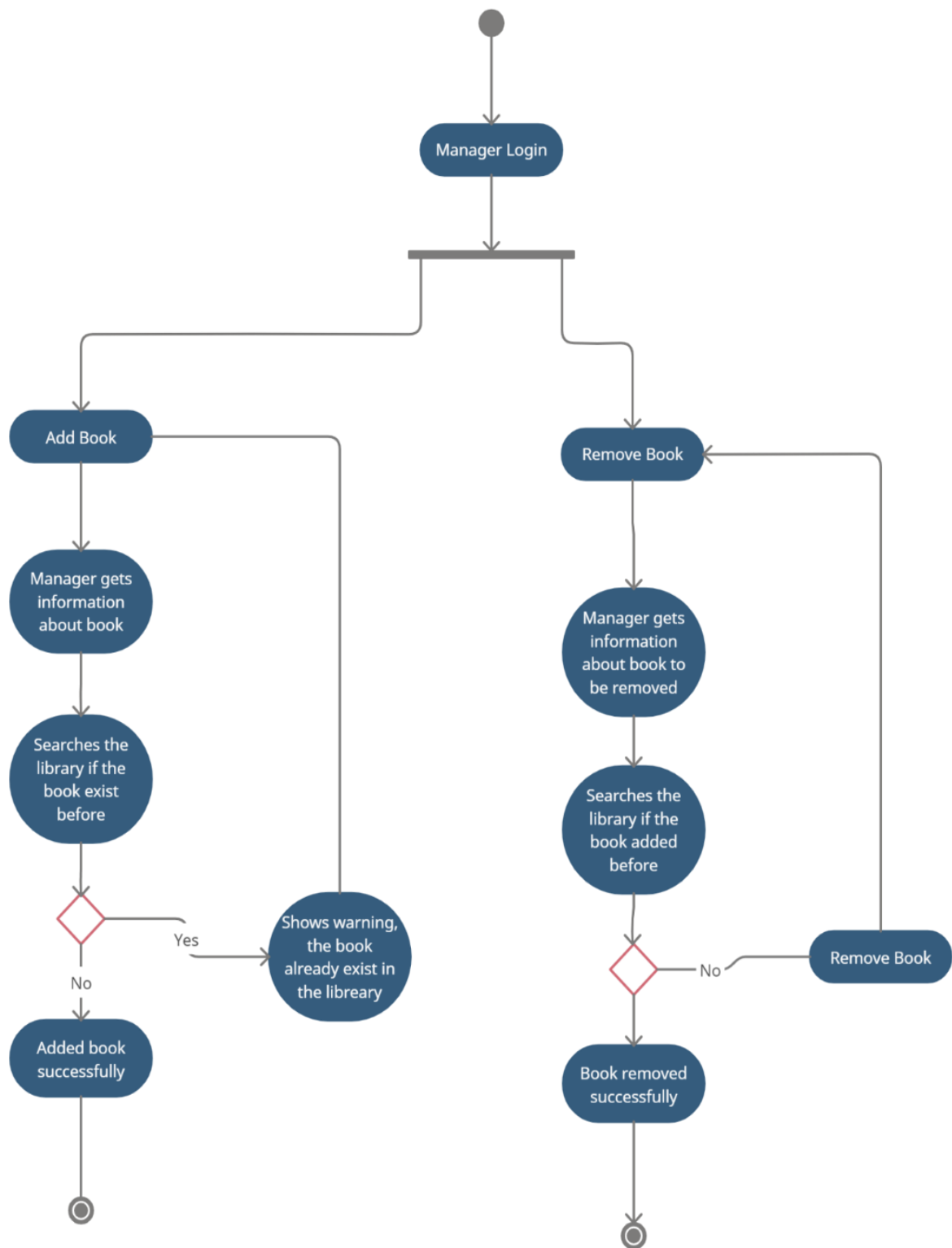
8.8 Events



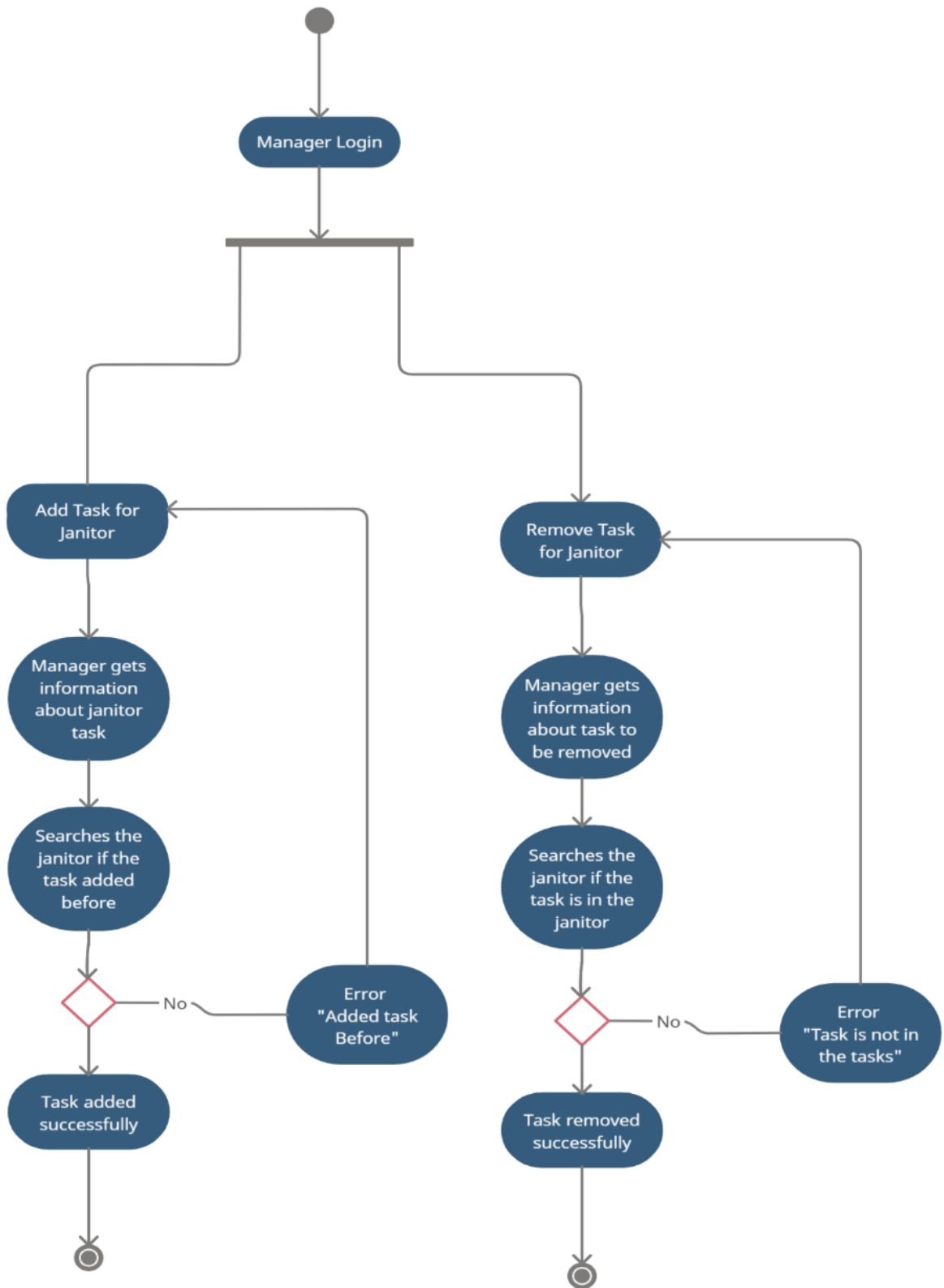
8.9 Manager Book Demand



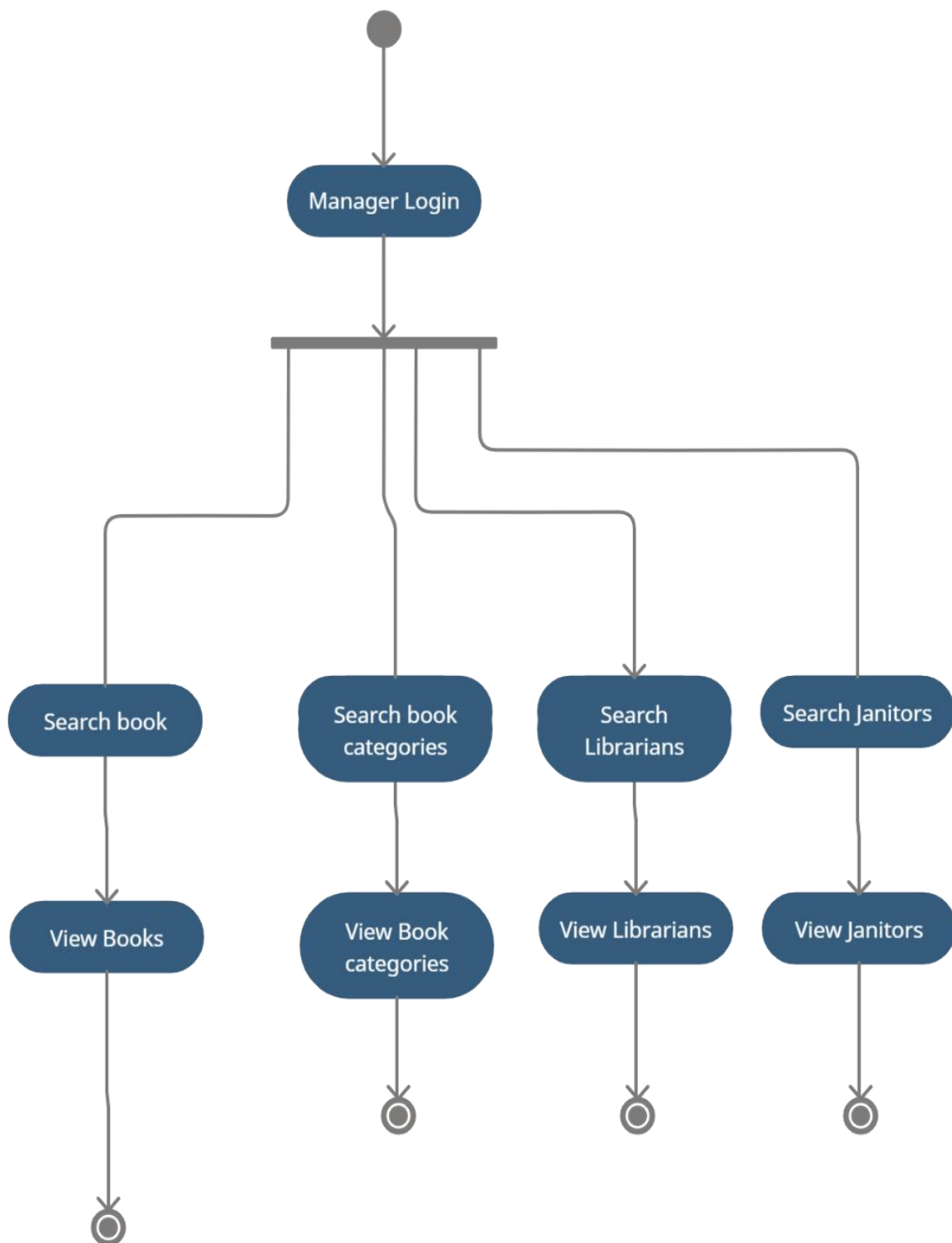
8.10 Manager Add and Remove Books



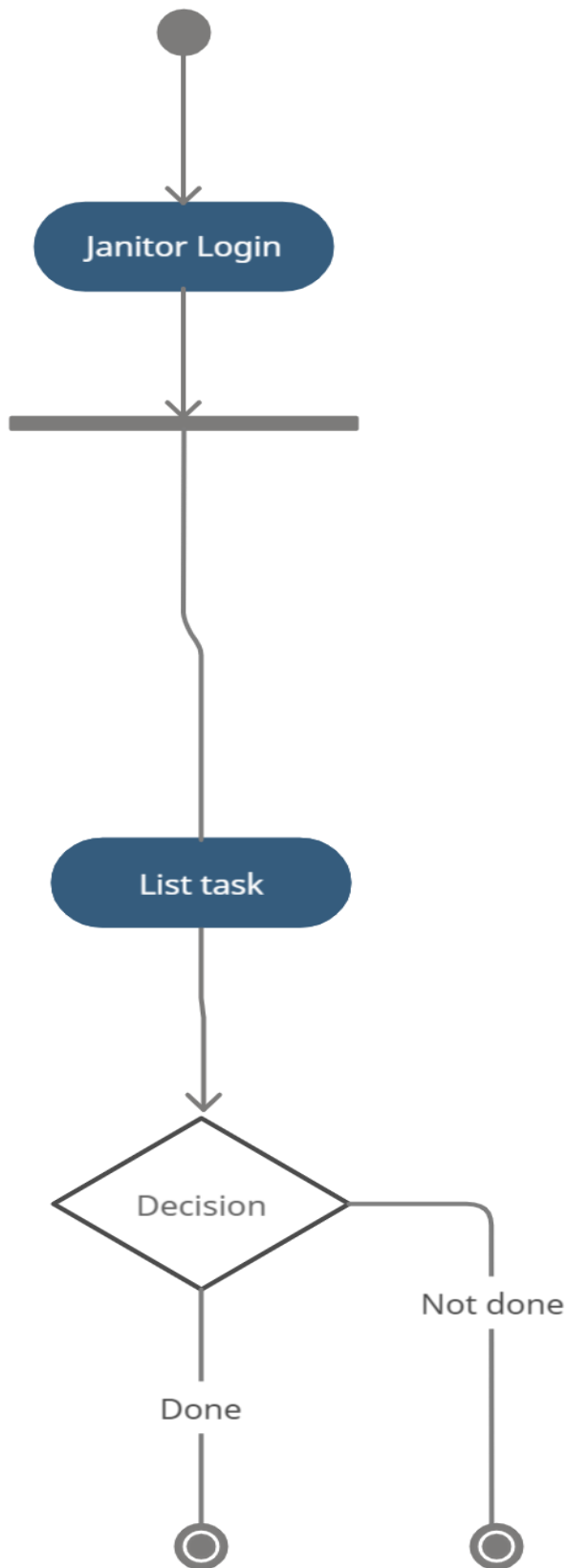
8.12 Manager Janitor Task Add and Remove Tasks

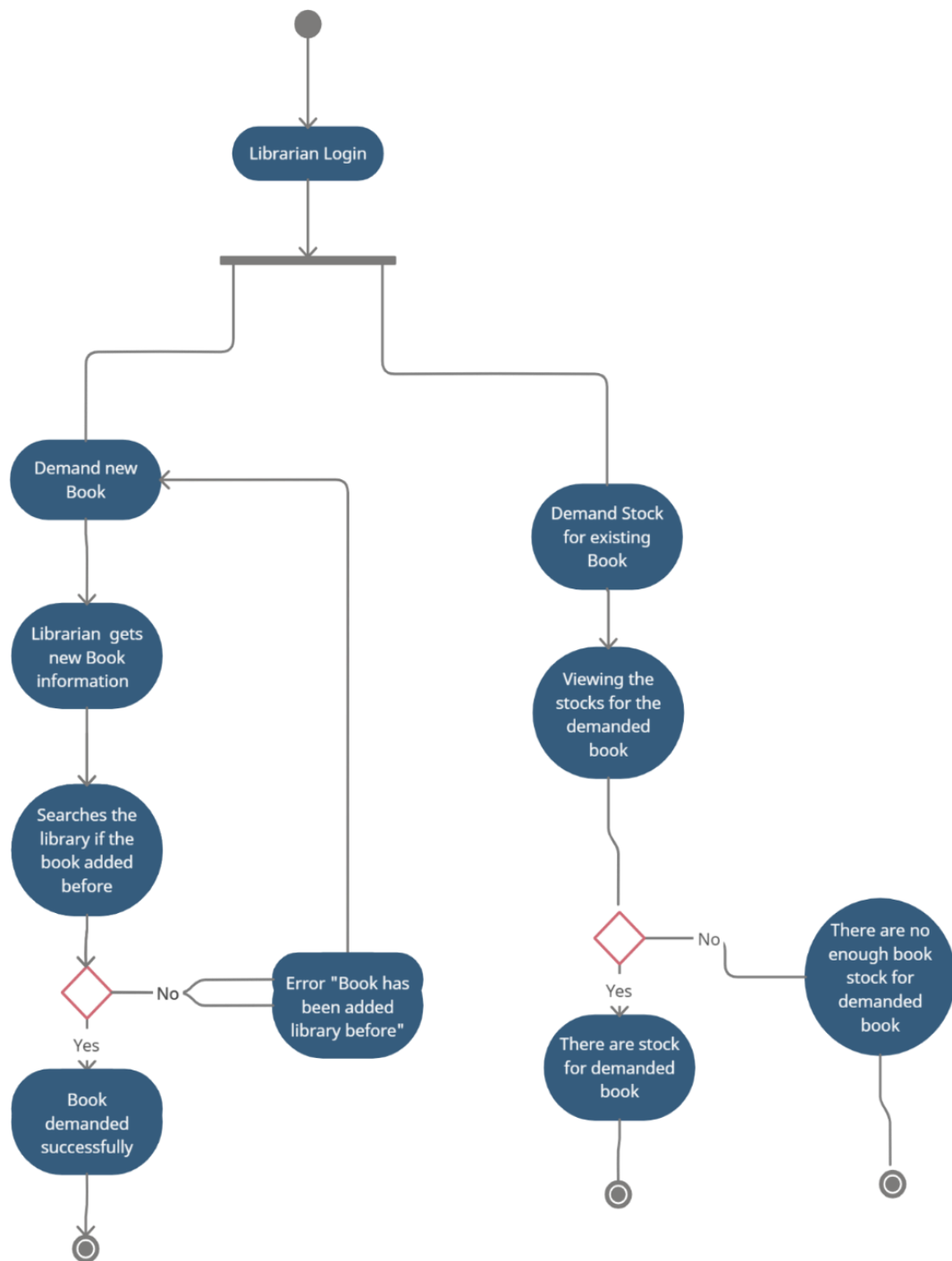


8.13 Manager Search

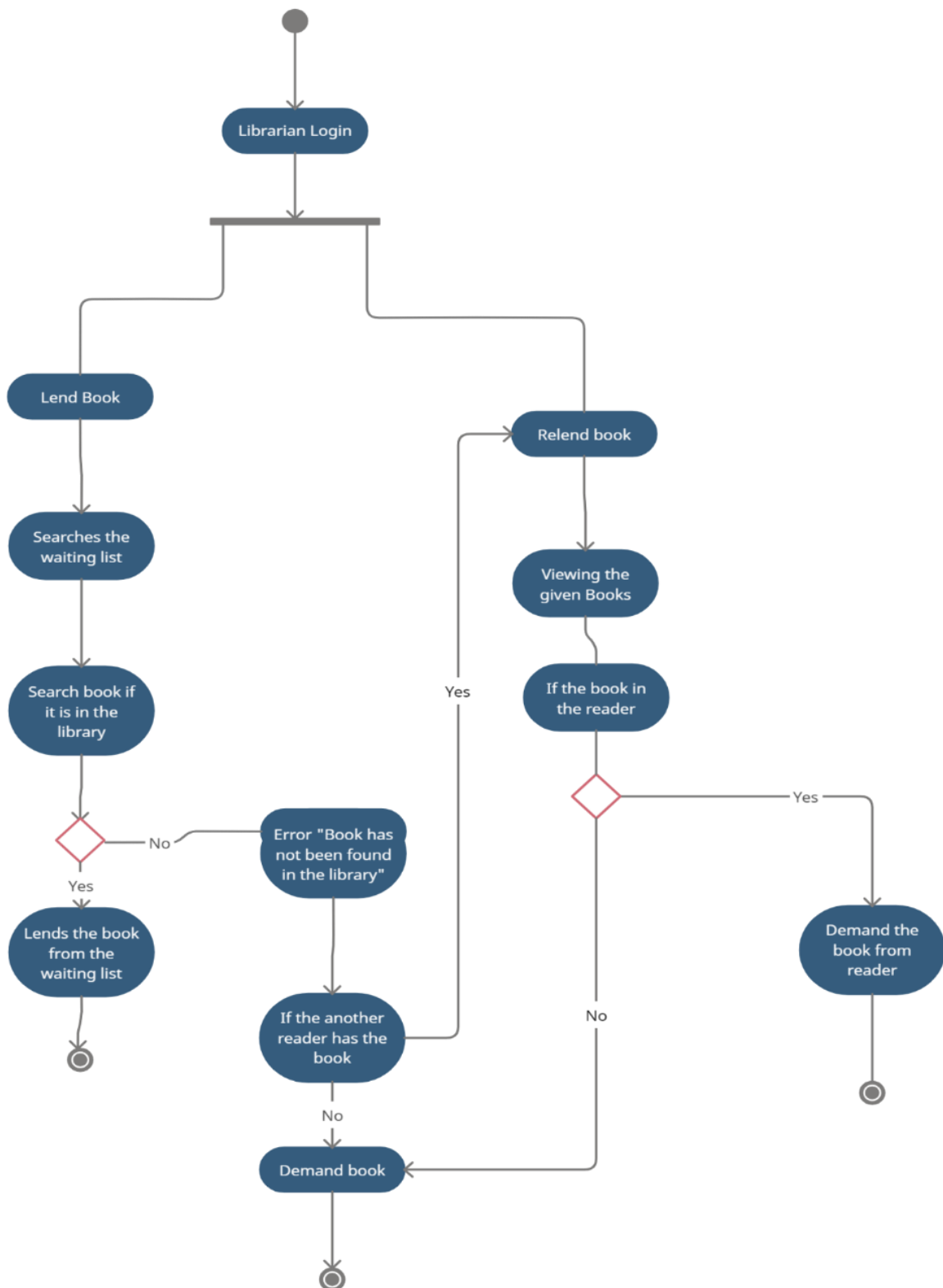


8.14 Janitor Tasks

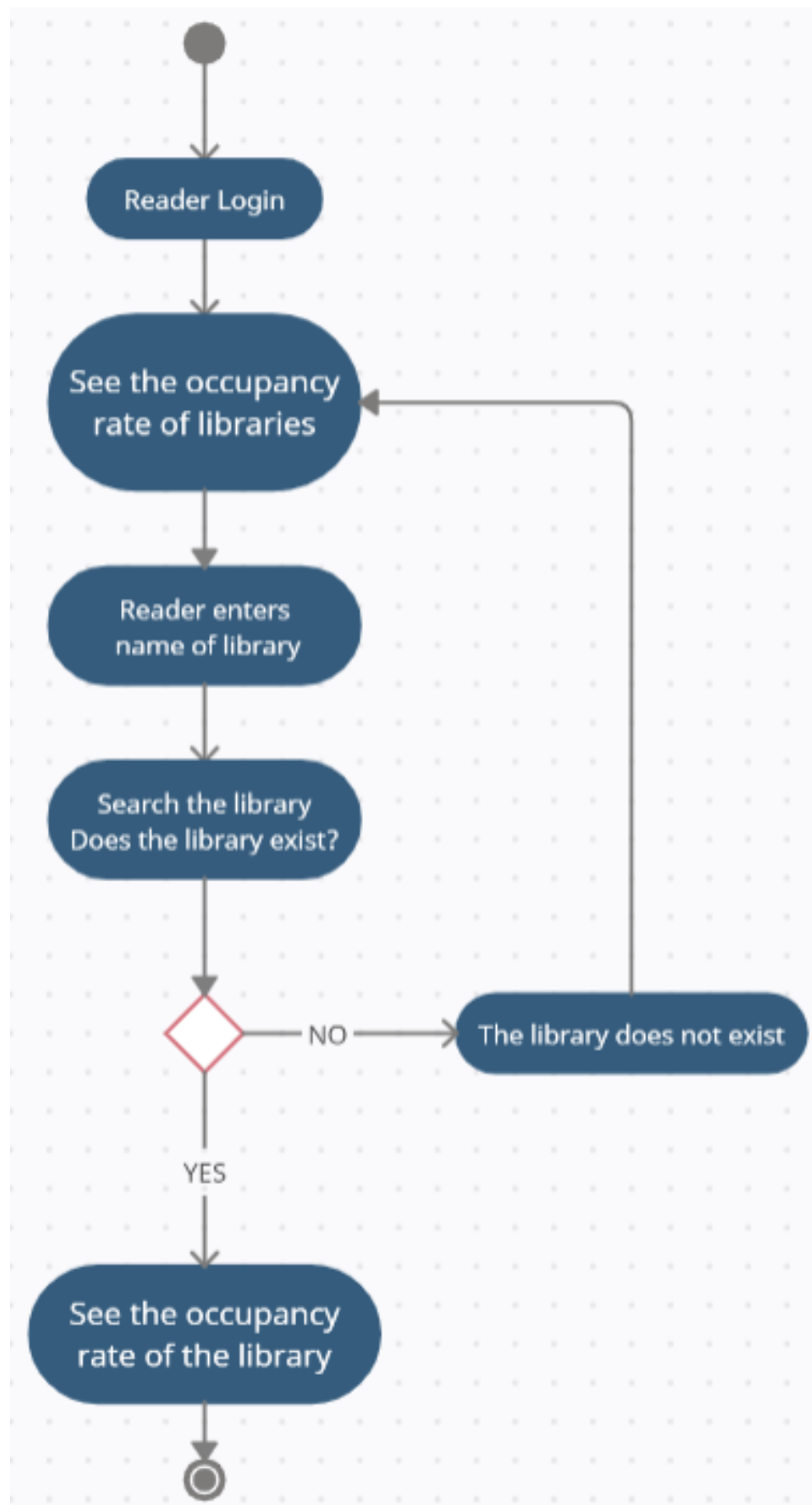




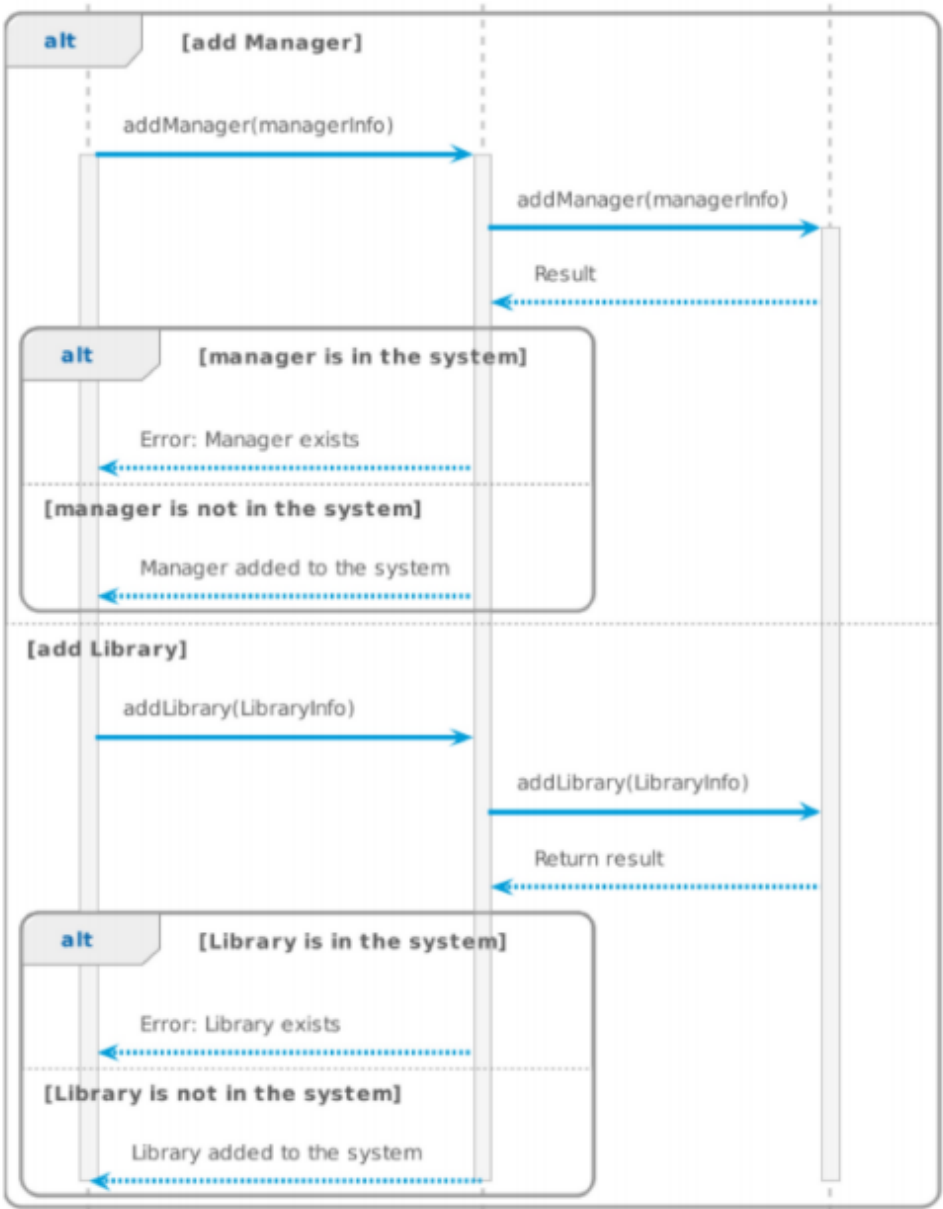
8.16 Librarian Lend and Relend Books

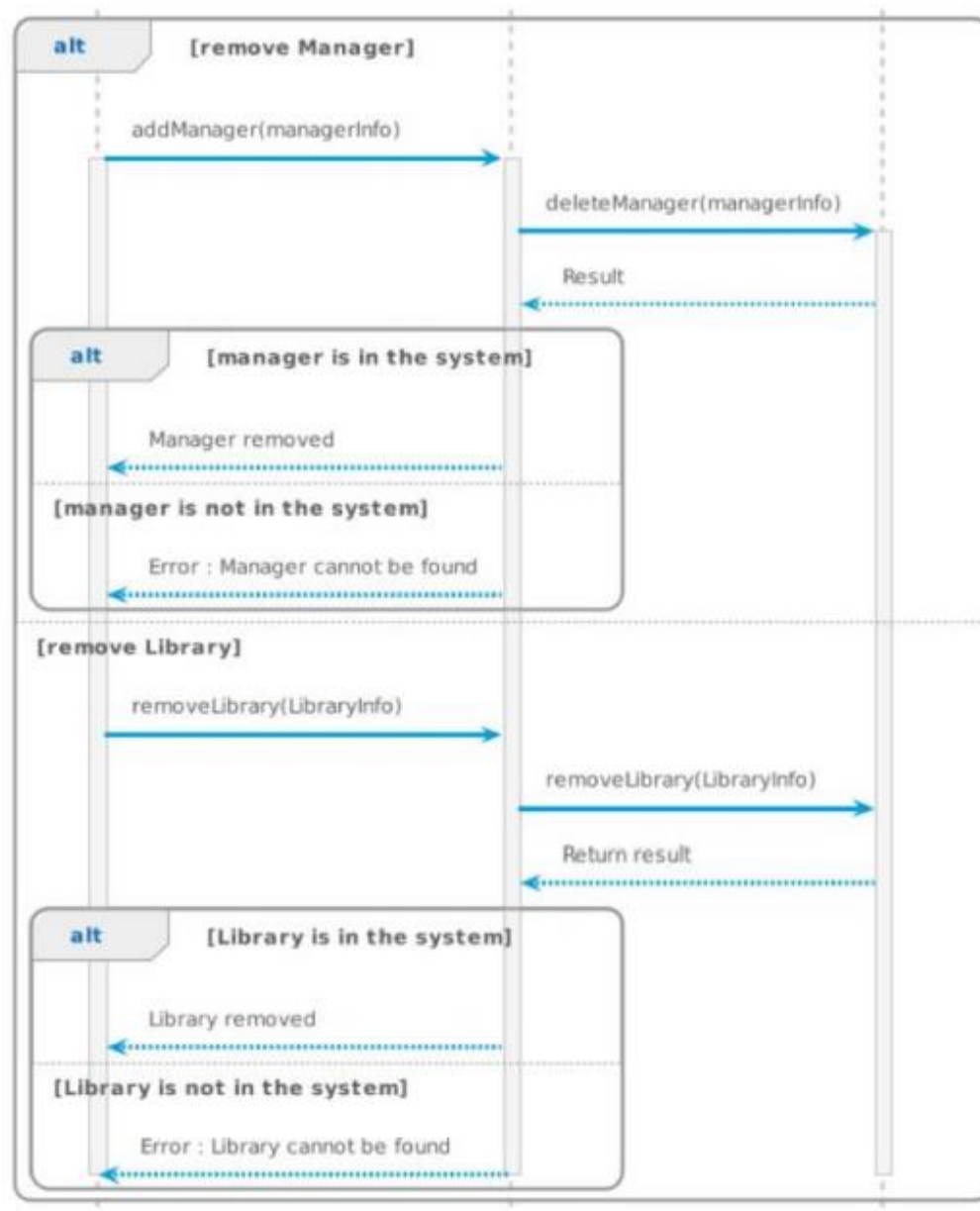


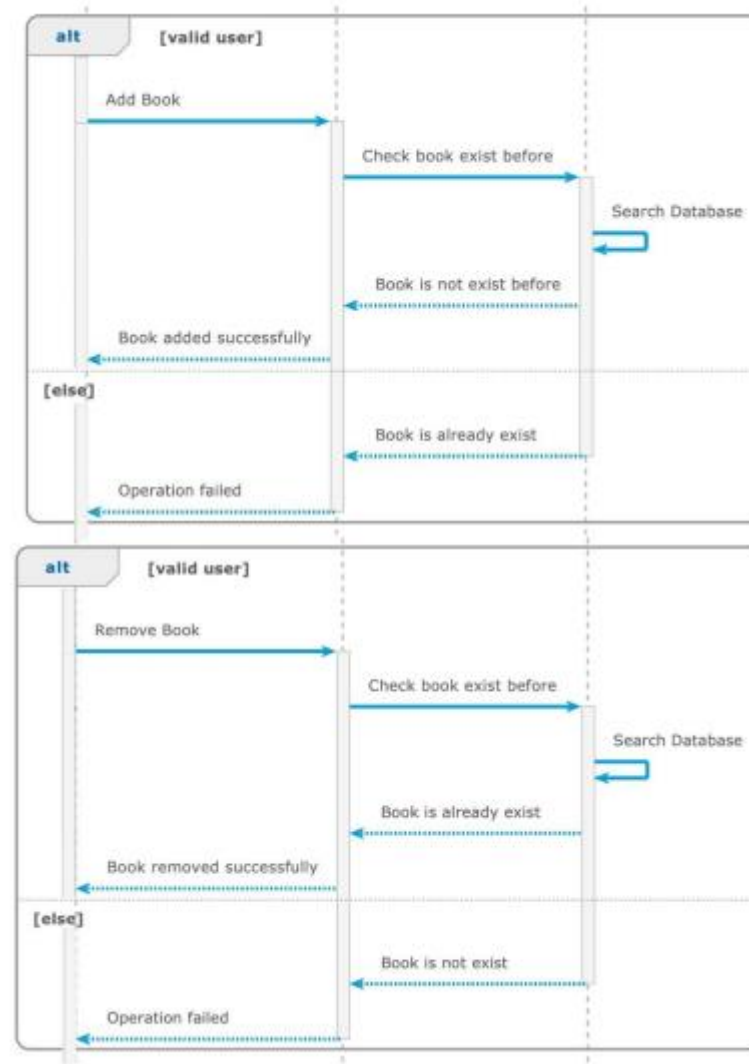
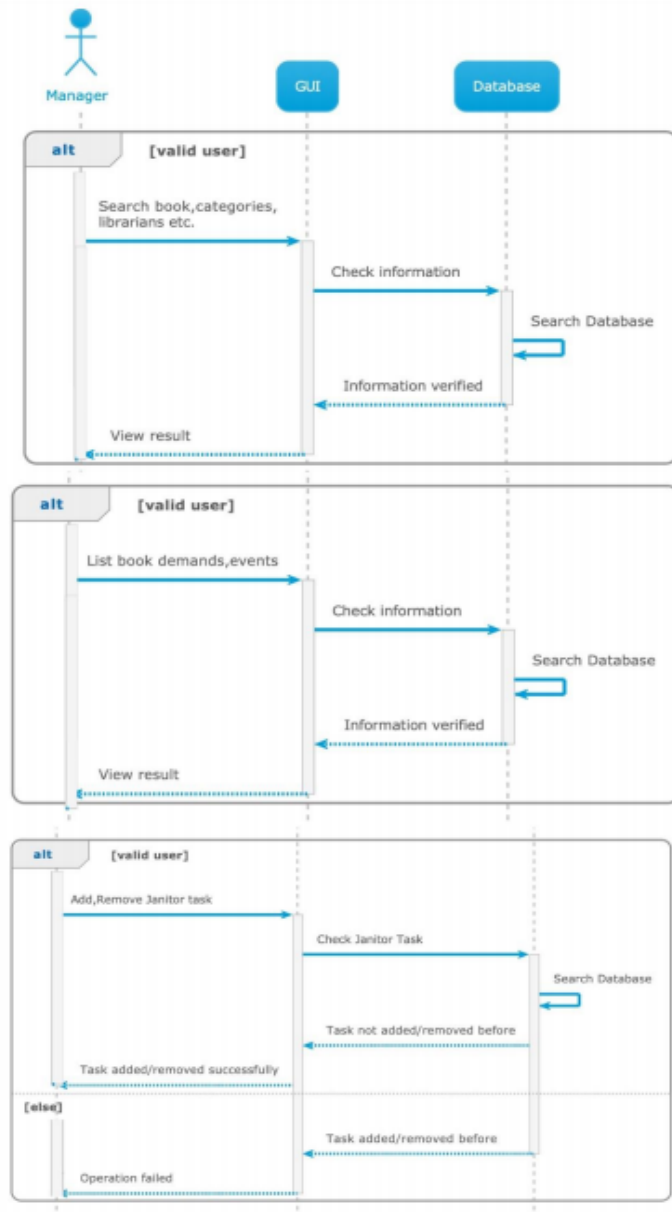
8.17 See the occupancy rate of libraries

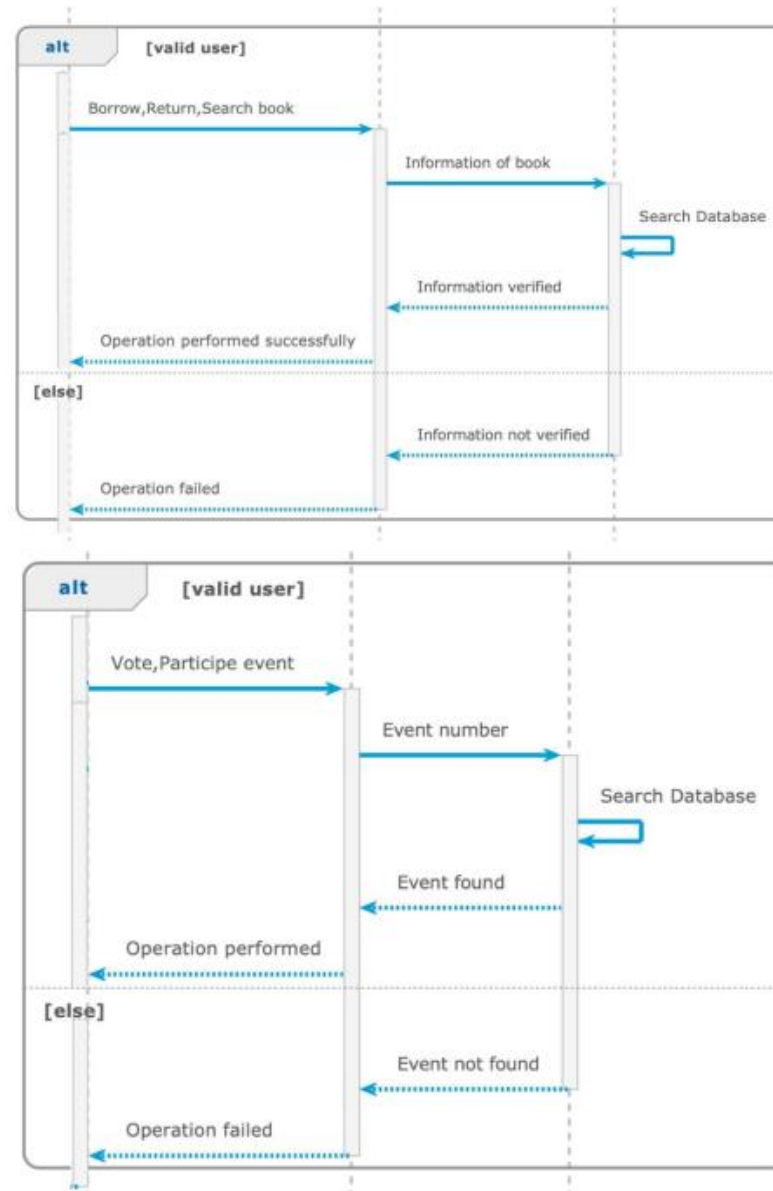
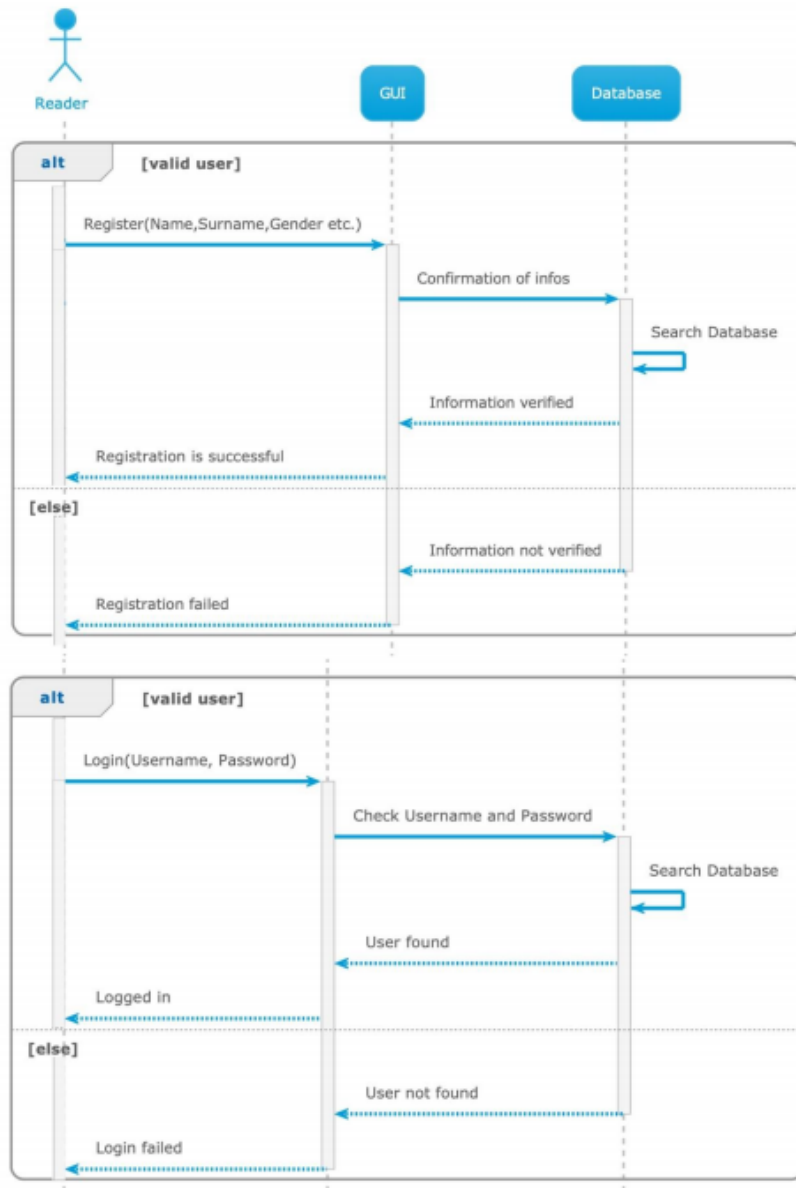


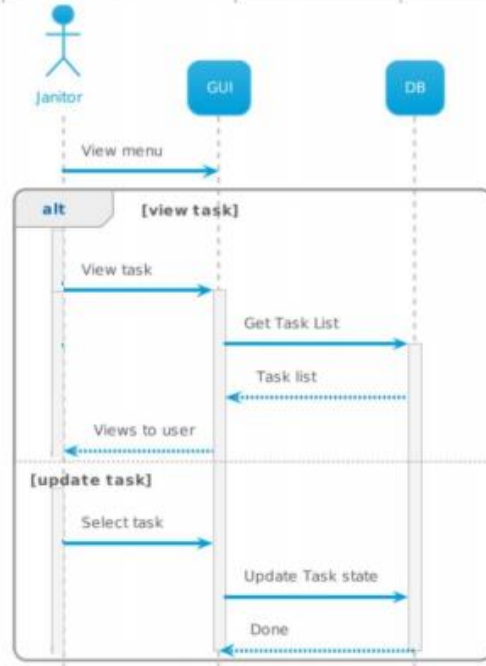
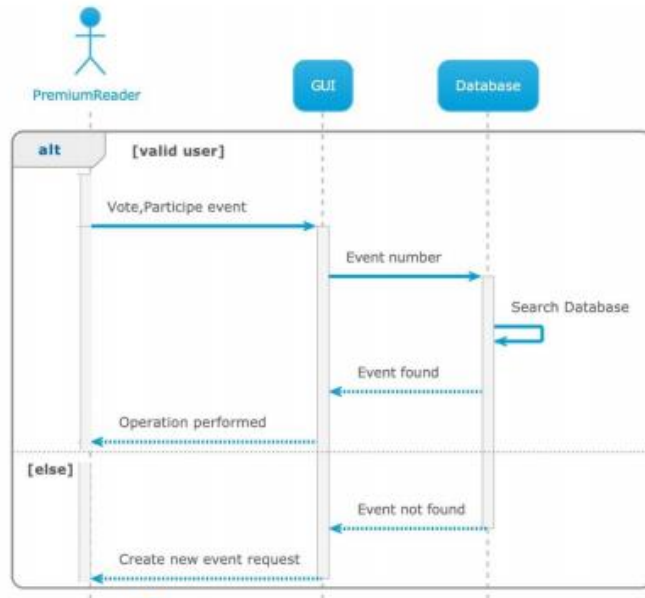
9-Sequence Diagrams

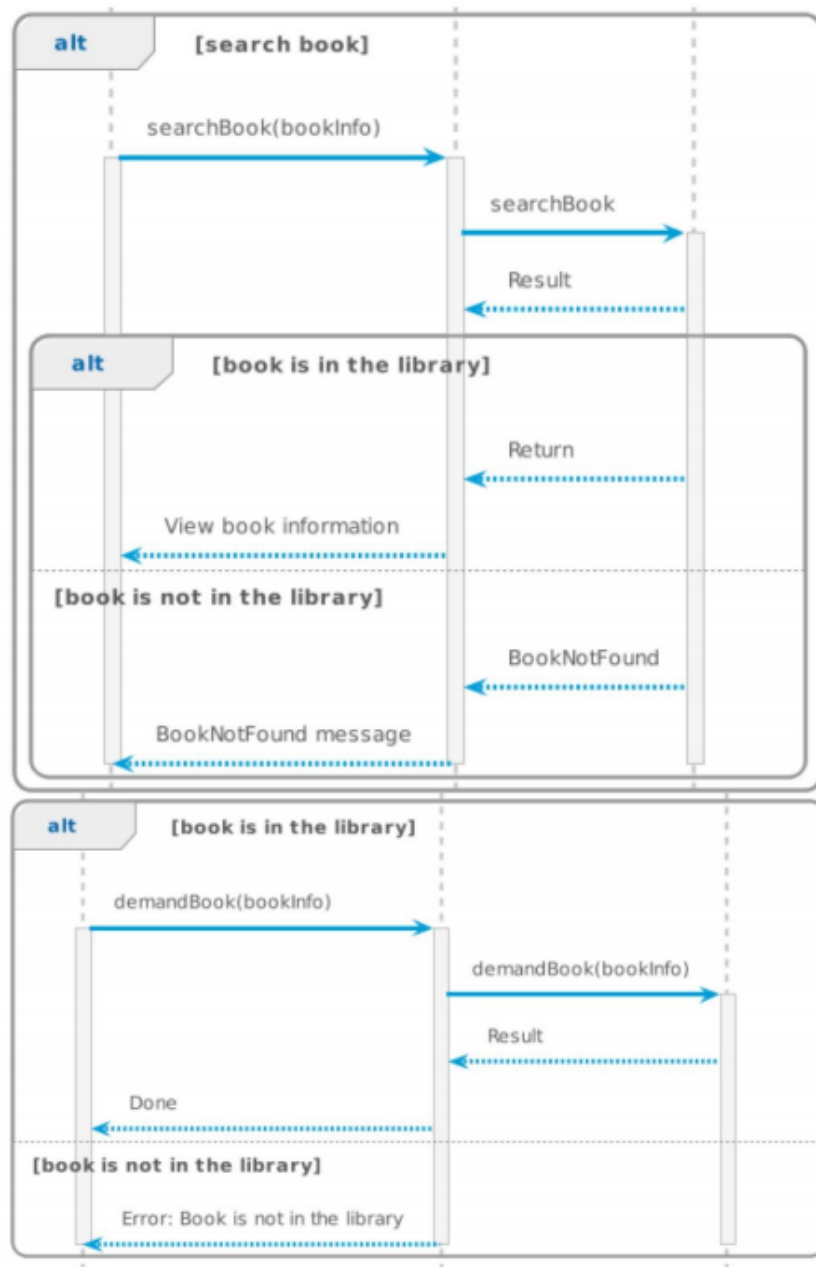




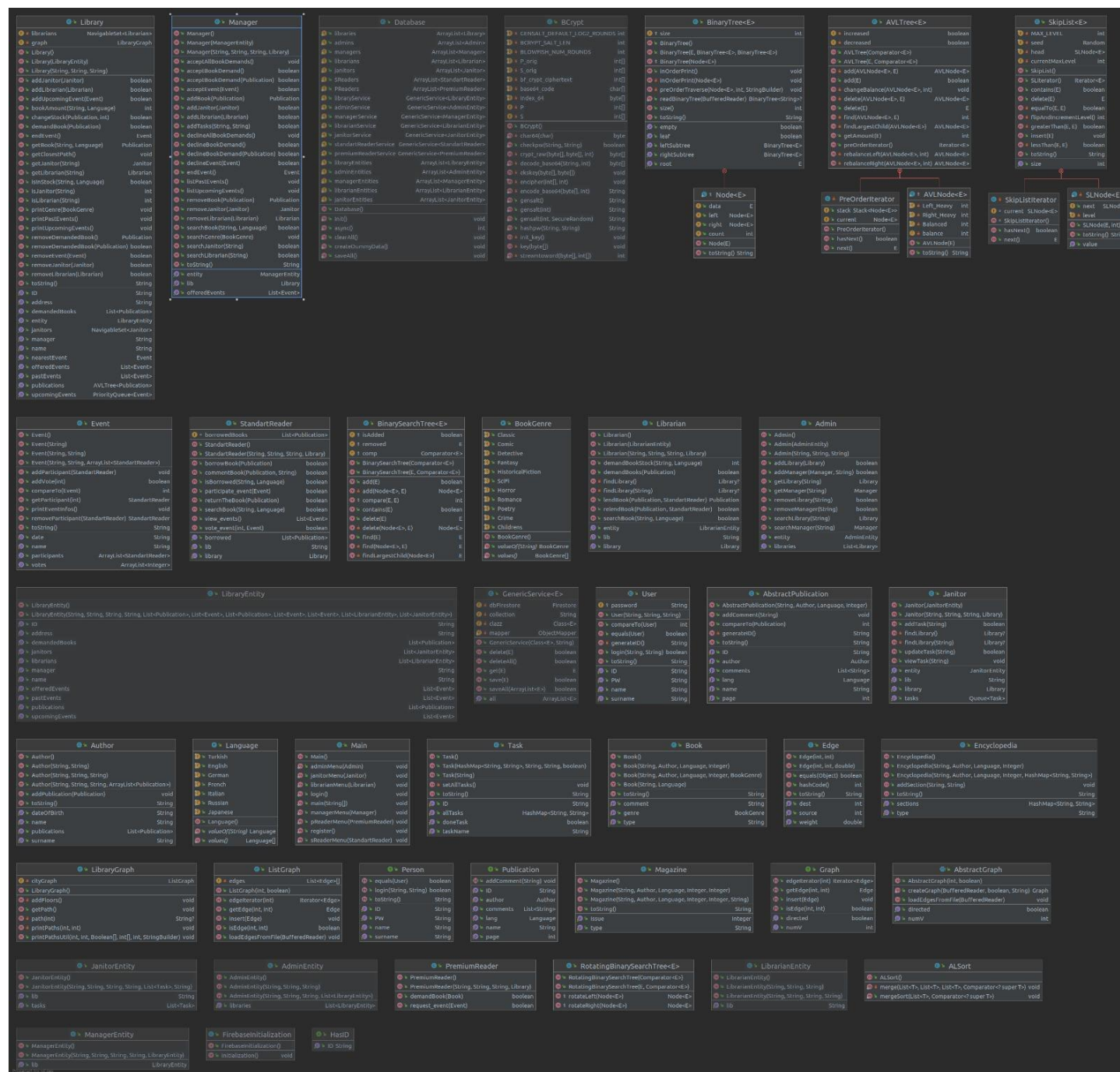








10-Class Diagrams



11- Non Trivial Implementation Details

Security Measures

Storing Passwords:

Passwords are salted and hashed with Bcrypt. Unique salts are generated for each user using Bcrypt's salt generation algorithm with 2^{12} rounds of hashing.

Java has built-in support for PBKDF2WithHmacSHA1/SHA256/SHA512 (Password-Based Key Derivation Function 2 With Hash-based message authentication code Secure Hashing Algorithm 1/256/512) which is quite secure but calculated relatively fast when compared to Bcrypt. To be safe for future brute force/rainbow table attacks, we are implementing Bcrypt as a 3rd party library which is slow to calculate making it secure for today's standards.

Generating User IDs:

User IDs should be unique for each user, to generate an ID we follow the steps below,

Create an empty string.

Add the name of the user.

Add the surname of the user.

Add the salted and hashed password of the user (Bcrypt).

Then hash the final string using SHA256 (Secure Hashing Algorithm-256).

It is important to note that if we were to use the original passwords while creating the ID. We would have introduced a weak point in the system.

We are using SHA256 when hashing the ID which is weaker compared to Bcrypt and faster to compute, so attackers could target IDs to find the passwords.

To prevent this from happening, we are using the salted and hashed version of the password of the user, so even if an attacker finds the building blocks of the ID, he/she still needs to get through Bcrypt to find the original password.

So we are trying to make the system secure by hashing the sensitive information with state-of-the-art

algorithms but to make the system hacker-proof, we need to introduce another security measure to the system.

Although we are hashing everything, we need to send this sensitive information to the database, through the internet. A man-in-the-middle attack can still cause great damage to the design of our system.

To deal with this problem we are using Google's Firebase as our database. Firebase encrypts the data in transit using HTTPS (HyperText Transfer Protocol Secure).

It uses ECDH (Elliptic Curve Diffie-Hellman) for key exchange and SHA256 with RSA (Rivest–Shamir–Adleman) for the signature algorithm which makes sure that the information is securely sent to the database.

By implementing these security measures we can create a secure channel between the user and the database, and we can be sure that nobody is listening.

Handling of Data Structures

All the data structures of the automation system are included in the Database class. When the program is executed, all data structures are copied to pre-designated classes such as Library, Admin etc.

How the Operations are Handled:

Before our menu starts, all the information are gathered from the database. After that the operations are handled by the main menu which runs on command prompt. In this menu, firstly users login or register after that they can choose their actions. After users choose their actions, all the inputs are gathered from the menu and the related methods inside the classes are called with the inputs. All the methods inside all the classes are connected and work together. When the system wants to be exited, all the changes are loaded to the database and the system closes.

13)Test Cases

TEST ID	Test case	Test scenario	Steps	Test data	Expected Result
T0	Register Admin	Admin registers to the system	Enters name Enters surname Sets password	Name = Kamuran Surname = Legolas Password = 12345	A new Admin registered to the system
T1	Register Reader	Reader registers the library as a premium or standart	Enters name Enters surname Sets password	Name = Jamie Surname = Lanister Password = Elsiz123	A new Reader registered to the library system
T2	Login Reader	Reader logs in the library system with and password	Enters ID Enters password	ID = 100 Password = Elsiz123	Reader can able to reach to his/her personal page in the library
T3	Login Reader	Reader logs in the library system with a wrong password	Enters ID Enters password	ID = 100 Password = Elsiz1	The password is asked again before logging in
T4	Search Book	Reader searches the book what he/she needs and finds	Enters Book name Enters Publisher Enters Book language	Book name = Fifty Shades of Grey Publisher = E. L. James Language = Turkish	Reader viewed the book the library
T5	Borrow Book	Reader borrow the book in the library	Enters Book name Enters Publisher Enters Book language	Book name = Lord of the Flies Publisher = William Golding Language = English	Reader has the book and his/her own library
T6	Borrow Book	Reader tries to borrow a book in the library but the book is not in library stock	Enters Book name Enters Publisher Enters Book language	Book name = Ben Kimim Publisher = Venedik Kembiriç Language = Moğolca	The program will alert.
T7	Return Book	Reader returns the book to library	Enters Book name Enters Publisher Enters Book language	Book name = Bliendness Publisher = Jose Saramago Language = Turkish	The book added to library system and reader can not be able to reach to book
T9	Leave Comment	Reader add comments for the book	Enters Book name Enters Publisher Enters Book	Book name = Istanbul Hatirasi Publisher = Ahmet Umit Language = Turkish	The comment added the book

			language Enters Comment	Comment = "Fena kitap"	
T10	View Events	Reader views the events	Enters library name	Library name = "Gemlik Belediyesi"	The events listed for reader
T11	Vote for Events	Reader votes for event to selected library	Enters library name Enters event	Library name = "Gebze Belediyesi" Event = "Imza gunu"	The reader vote added to library event system
T12	Participate Event	Reader can choose what event he/she is going to participate	Enters library name Enters event	Library name = "Balcova Belediyesi" Event = "Sessiz Sinema"	The library system adds to reader to event
T13	Create new Event request	Premium Reader can create new event request	Enters library name Enters event	Library name = "Liverpool Belediyesi" Event = "Su Savasi"	The library system adds to event to requested event list
T14	Demand new Book	Premium reader can demand new book from library	Enters library name Enters book name Enters Publisher Enters Language	Library name = "Manchester Belediyesi" Book name = "Patasana" Publisher = "Ahmet Umit" Language = "Turkish"	The library system adds to demanded book to requested book list
T15	Login Admin	Admin logs in the library system with and password	Enters ID Enters password	ID = 100 Password = Admin	Admin can able to reach to his/her personal page in the library
T16	Login Admin	Admin logs in the library system with a wrong password or wrong id	Enters ID Enters password	ID = 1 Password = Ad	The password or id is asked again before logging in
T17	Add New Library	System Admin can add new Library	Enters Library Name Enters Library Address	Library Name = "Kars Belediyesi" Library Address = "1000"	The new Library added to system.
T18	Add New Library	System Admin tries to add a new Library but the library already exists	Enters Library Name Enters Library Address	Library Name = "Kars Belediyesi" Library Address = "1000"	Nothing is changed
T19	Remove Library	System Admin can remove specific Library with its ID	Enters Library ID	Library ID = "1000"	This library removed from the system.
T20	Remove Library	System Admin tries to remove a Library that does not exist	Enters Library ID	Library ID= "1007"	Nothing is changed
T21	Add Manager	System Admin can add new Manager	Enters Name Enters Surname Enters Password Enters Library	Name = "Polat" Surname = "Alemdar" Password = "KurtlarVadisi"	A new Manager added to library system

T22	Add Manager	System Admin tries to add a new Manager but the library doesn't exist	Enters Name Enters Surname Enters Password Enters Library	Name = "Polat" Surname = "Alemdar" Password = "KurtlarVadisi"	Nothing is changed
T23	Remove Manager	System Admin can remove Manager	Enters ID	ID = "105"	This manager removed from the system.
T24	Remove Manager	System Admin tries to remove a Manager that does not exist	Enters ID	ID = "1"	Nothing is changed
T25	Search Library	System Admin can search Library	Enters Address	Adress = "1000"	The library information appears in the window.
T26	Search Manager	System Admin can search Manager	Enters ID	ID = "105"	The manager information appears in the window.
T27	Login Janitor	Janitor logs in the library system with and password	Enters ID Enters password	ID = 15345 Password = Admin	Janitor can able to reach to his/her personal page in the library
T28	Login Janitor	Janitor logs in the library system with a wrong password	Enters ID Enters password	ID = 1786 Password = Ad	The password is asked again before logging in
T29	View Task	Janitor can view task.	Enters Task ID	ID = "61"	The task information appears in the window.
T30	View Task	If janitor wants to view task that doesn't already exist.	Enters Task ID	ID = "0"	The program will alert.
T31	Update Task	Janitor can update task.	Enters Task ID	ID = "60" doneTask = "true"	The doneTask infromation changes.
T32	Update Task	If janitor wants to update task that doesn't already exist.	Enters Task ID	ID = "1" doneTask = "true"	The program will alert.
T33	Demand new Book	Librarian adds a book to the demanded books list of the library			Demanded books list is updated
T35	Lend Publication	Librarian lends a book to a reader			Borrowed books list of the reader is updated
T36	Lend Publication	Librarian tries to lend a book to a reader but the book is not in the stock			
T37	Relend Publication	Relends a book from a customer			Stock of the library and the borrowed books of the reader are updated
T38	Search Publication	Searches if a book is in the stock of the library			If the book is in the stock is learnt
T39	Add Book	Adds a book to the library stock			Library stock is updated
T40	Remove Publication	Removes a book from the library stock			Library stock is updated
T41	Remove Publication	Tries to remove a book that is not in the library stock			Nothing is changed
T42	Add Encyclopedia	Adds an encyclopedia to the library stock			Library stock is updated
T45	Add Magazine	Adds a magazine to the library stock			Library stock is updated

T48	Add Librarian	Adds a new librarian to the library			A new librarian is added
T49	Remove Librarian	Removes a librarian from the library			A librarian is removed
T50	Remove Librarian	Tries to remove a librarian but the librarian does not exist			Nothing is changed
T51	Add Janitor	Adds a janitor to a library	Enters Name Enters Surname Enters Password	Name = "Iskender" Surname = "Kucuk" Password = "KurtlarVadisi"	A janitor is added
T52	Remove Janitor	Removes a janitor from the library			A janitor is removed
T53	Remove Janitor	Tries to remove a janitor but the janitor does not exist			Nothing is changed
T54	Add Task	Adds a new task to a janitor	Enter task Enter task ID Choose Janitor		A new task is added to the janitor
T55	Add Task	Tries to add a new task but janitor doesn't exist.	Enter task Enter task ID Choose Janitor		System gives an error message.
T56	Arrange Book Demands	Adds all the books in the demanded books list to the library stock			Demanded books list and the library stock are updated
T57	List Past Events	Shows all the past events			All past events are printed
T58	List Upcoming Events	Shows all the upcoming events			All upcoming events are printed
T59	Accept Event	Accept the event as a upcoming event			Upcoming events list is updated
T60	Decline Event	Declines the event			Offered Event list of the library is updated
T61	End Event	End the first upcoming event and adds it to pastEvents			Upcoming events list and past events list are updated
T62	Search Book	Searches for a book in the library			If the book is in the stock is learnt
T63	Search Genre	Searches for the books with the given genre in the library			All the books with the given genre are printed
T64	Search Librarian	Searches for a librarian in the library			If the librarian exists is learnt
T65	Search Janitor	Searches for a janitor in the library			If the janitor exists is learnt
T66	User Floor Information	User gets how to go to a spesific location	Choose location		How to get information
T67	List Libraries	Admin lists libraries			List of the libraries
T68	List Books	Librarian & Manager lists publications			List of the books

T69	Accept Book Request	Manager accepts book request			
T70	Decline Book Request	Managers declines book request			

14) Changes:

We have decided to use a commad prompt menu system instead of a GUI. Therefore the operations are handled in the menu.

15) Test Cases:

T1 – Reader Register

Enter name:

Joshua

Enter surname:

Jenkins

Enter password:

12345

Which Library do you want to register?

0) Name:Kadikoy

Address: Sahil

Manager: Big Boss

Library ID: 0001

1) Name:Nevmekan

Address: Uskudar Istanbul

Manager: John Doe

Library ID: 0002

2) Name:Beyazit Devlet

Address: Fatih Istanbul

Manager: Alice Bob

Library ID: 0003

3) Name:Aziz Berker İlçe Halk Kütüphanesi

Address: Rasimpaşa, Nüzhet Efendi Sk. No:53, 34716 Kadıköy/İstanbul

Manager: Jack Johnson

Library ID: 0004

4) Name:Maltepe Library

Address: Maltepe

Manager: Wade Williams

Library ID: 0005

4

Registration is successful.

T2 – Login reader

```
Your name:  
Joshua  
Your password:  
12345  
Welcome Joshua
```

T3 – Login reader with wrong password

```
Your name:  
Jane  
Your password:  
Doe  
Wrong ID or Password.
```

T4 Check stock

```
Enter book name :  
1984  
Choose book language:  
0) Turkish  
1) English  
2) German  
3) French  
4) Italian  
5) Russian  
6) Japanese  
1  
The book is in stock !
```

T5 Borrow book

```
Enter book name:  
Le-Petite Prince  
Choose book language:  
0) Turkish  
1) English  
2) German  
3) French  
4) Italian  
5) Russian  
6) Japanese  
3  
The book is borrowed !
```

T6 borrowing failed

```
Enter book name:  
Le-petite Prince  
Choose book language:  
0) Turkish  
1) English  
2) German  
3) French  
4) Italian  
5) Russian  
6) Japanese  
3  
The book is not in library !
```

T7 return book

```
[Name: Le-Petite Prince
Page Amount: 100
Language: French
ID: 10000
Author's info:
Name: Anthony
Surname: Saint-Exupéry
DateOfBirth: not-added or unknownPublications:[]
Comments: []
Genre: Classic]
Which book do you want to return? :
0
The book is returned !
```

T10 View event

```
Name: J.K Rowling signature day
Date: not-added or unknown
Participants:[]
Name: Movie Day
Date: not-added or unknown
Participants:[]
```

T11 Vote event

T9 vote event

```
Name: J.K Rowling signature day
Date: not-added or unknown
Participants:[]
Choose vote :
1
What is your comment? :
Everyone should read this book!
```

```
Name: J.K Rowling signature day
Date: not-added or unknown
Participants:[]
Choose vote :
1
```

T12

```
Name: J.K Rowling signature day
Date: not-added or unknown
Participants:[]
```

T13 Request event

```
Enter event name :
J.K Rowling imza günü
The event is requested !
```

T14 Demand book

```
Enter book name :
Nutuk
Choose book language:
0) Turkish
1) English
2) German
3) French
4) Italian
5) Russian
6) Japanese
0
The book is demanded !
```

T15 Admin login


```
Your name:  
Gökbey  
Your password:  
123456  
Welcome, Gökbey.
```

```
1)Add Library  
2)Remove Library  
3)Add Manager  
4)Remove Manager  
5)List Libraries  
6)Search Library  
7)Search Manager  
8)Exit
```

T16 Login admin failed

```
Choose Account Type:
1)Admin
2)Library Manager
3)Librarian
4)Janitor
5)Standard Reader
6)Premium Reader
7)Exit
1
Your name:
Jane
Your password:
Doe
Wrong ID or Password.
```

T17 Create library

```
Name of the new Library:
Aziz Berker İlçe Halk Kütüphanesi
Address of the new Library:
Rasimpaşa, Nüzhet Efendi Sk. No:53, 34716 Kadıköy/İstanbul
ID of the new library:
100001
Library successfully created.
```

T18 Create library failed

Name of the new Library:

Aziz Berker İlçe Halk Kütüphanesi

Address of the new Library:

Rasimpaşa, Nuzhet Efendi Sk. No:53, 34716 Kadıköy/İstanbul

ID of the new library:

100001

Library creation not successful. ID already exists.

T19 Remove library

Name:Nevmekan

Address: Üsküdar Sahili

Manager: No current Manager

Library ID: 10000

Name:Aziz Berker İlçe Halk Kütüphanesi

Address: Rasimpaşa, Nüzhet Efendi Sk. No:53, 34716 Kadıköy/İstanbul

Manager: No current Manager

Library ID: 100001

Name:Maltepe Kütüphanesi

Address: Maltepe

Manager: No current Manager

Library ID: 100002

Enter the ID of the library.

100002

Library successfully removed.

T20 Remove library failed

Name:Nevmekan

Address: Üsküdar Sahili

Manager: No current Manager

Library ID: 10000

Name:Aziz Berker İlçe Halk Kütüphanesi

Address: Rasimpaşa, Nüzhet Efendi Sk. No:53, 34716 Kadıköy/İstanbul

Manager: No current Manager

Library ID: 100001

Enter the ID of the library.

3

There is no such library.

T21 Add manager

Name of the Manager:

Enter name:

John

Enter surname:

Doe

Enter password:

123456

Which Library will the manager be working at?

0) Name:Nevmekan

Address: Üsküdar Sahili

Manager: No current Manager

Library ID: 10000

1) Name:Aziz Berker İlçe Halk Kütüphanesi

Address: Rasimpaşa, Nüzhet Efendi Sk. No:53, 34716 Kadıköy/İstanbul

Manager: No current Manager

Library ID: 100001

2) Name:Maltepe Kütüphanesi

Address: Maltepe

Manager: No current Manager

Library ID: 100002

0

Manager is successfully added.

T23 Add manager to the not existing library

```
Enter name:
John
Enter surname:
Doe
Enter password:
123456
Which Library will the manager be working at?
0) Name:Nevmekan
Address: Üsküdar Sahili
Manager: John Doe
Library ID: 10000
1) Name:Aziz Berker İlçe Halk Kütüphanesi
Address: Rasimpaşa, Nüzhet Efendi Sk. No:53, 34716 Kadıköy/İstanbul
Manager: No current Manager
Library ID: 100001
2) Name:Maltepe Kütüphanesi
Address: Maltepe
Manager: No current Manager
Library ID: 100002
3
Wrong input.
```

T24 Remove manager failed

Name:Kadikoy
Address: Sahil
Manager: Big Boss
Library ID: 0001

Name:Nevmekan
Address: Uskudar Istanbul
Manager: John Doe
Library ID: 0002

Name:Beyazit Devlet
Address: Fatih Istanbul
Manager: No current Manager
Library ID: 0003

Name:Aziz Berker İlçe Halk Kütüphanesi
Address: Rasimpaşa, Nüzhet Efendi Sk. No:53, 34716 Kadıköy/İstanbul
Manager: Jack Johnson
Library ID: 0004

Name:Maltepe Library
Address: Maltepe
Manager: No current Manager
Library ID: 0005

Enter the ID of the library to remove Manager.

0009

There is no such library or library has no manager.

T25 Search library

Enter the search text:

Aziz Berker

Name:Aziz Berker İlçe Halk Kütüphanesi

Address: Rasimpaşa, Nüzhet Efendi Sk. No:53, 34716 Kadıköy/İstanbul

Manager: Jack Johnson

Library ID: 0004

T26

John

Jack Johnson

Working Library: Name:Aziz Berker İlçe Halk Kütüphanesi

Address: Rasimpaşa, Nüzhet Efendi Sk. No:53, 34716 Kadıköy/İstanbul

Manager: Jack Johnson

Library ID: 0004

T27

Your name:

Karl

Your password:

12345

Welcome, Karl.

T28

Your name:

Jane

Your password:

12345

Wrong ID or Password.

T33 Demand book

```
Enter book name:
Cesur Yeni Dünya
Choose book language:
1) Turkish
2) English
3) German
4) French
5) Italian
6) Russian
7) Japanese
1
The book is demanded !
```

```
Enter book name:  
Cesur Yeni Dünya  
Choose book language:  
0) Turkish  
1) English  
2) German  
3) French  
4) Italian  
5) Russian  
6) Japanese  
0  
Enter name:  
Gökbey  
Enter surname:  
Keskın  
1-Standart Reader:  
2-Premium Reader:  
Choose User type:  
1
```

```
Enter book name :  
Le-Petite Prince  
Choose book language:  
0) Turkish  
1) English  
2) German  
3) French  
4) Italian  
5) Russian  
6) Japanese  
3  
The book is in stock !
```

T39 add book

Choose type of the publication.

- 1)Book
- 2)Encyclopedia
- 3)Magazine

1

Enter book name:

Le-Petite Prince

Enter book page amount:

100

Choose book language:

- 1) Turkish
- 2) English
- 3) German
- 4) French
- 5) Italian
- 6) Russian
- 7) Japanese

4

Enter author information:

Name:

Anthony

Surname:

Saint-Exupéry

Choose book genre:

- 1) Classic
- 2) Comic
- 3) Detective
- 4) Fantasy
- 5) HistoricalFiction
- 6) SciFi
- 7) Horror
- 8) Romance
- 9) Dystopian

T40 Remove book

Enter book name:

Le-Petite Prince

Choose book language:

0) Turkish

1) English

2) German

3) French

4) Italian

5) Russian

6) Japanese

3

The book is removed from library : Name: Le-Petite Prince

Page Amount: 100

Language: French

ID: 10000

Author's info:

Name: Anthony

Surname: Saint-Exupéry

Comments: [Everyone should read this book., I didn't liked it.]

Genre: Classic

T41 Add already existing book

```
Enter book name:  
Clockwork Orange  
Choose book language:  
0) Turkish  
1) English  
2) German  
3) French  
4) Italian  
5) Russian  
6) Japanese  
1  
The book is not in library.
```

T42 Add encyclopedia

Enter book name:

Encyclopædia Britannica

Enter book page amount:

2000

Choose book language:

- 1) Turkish
- 2) English
- 3) German
- 4) French
- 5) Italian
- 6) Russian
- 7) Japanese

2

Enter author information:

Name:

William

Surname:

Benton

Enter encyclopedia sections: (example: 20 Insects (Section Insects starts from page 20
(type 0 to stop)

1 Contents

50 Introduction

1800 Appendix A

1873 Appendix B

1950 References

0 0

Publication is successfully added

T45

Enter book name:

Bilim Çocuk

Enter book page amount:

100

Choose book language:

- 1) Turkish
- 2) English
- 3) German
- 4) French
- 5) Italian
- 6) Russian
- 7) Japanese

1

Enter author information:

Name:

Tübitak

Surname:

Enter the issue number:

200

Publication is successfully added

T48 Add librarian

```
Name of the Librarian:  
Enter name:  
John  
Enter surname:  
Doe  
Enter password:  
123456
```

T49 Remove librarian

```
Enter the ID of the librarian to remove from library.  
John  
Librarian is succesfully removed.
```

T50 Remove not-existing librarian

```
6  
Enter the ID of the librarian to remove from library.  
Ahmet  
There is no such librarian.
```

T51 Add janitor

```
Name of the Janitor:  
Enter name:  
John|  
Enter surname:  
Doe  
Enter password:  
123456
```

T53 Remove not existing janitor

```
.  
Enter the Name of the janitor to remove from library.  
John  
There is no such janitor.
```

T54 Add task to janitor

```
Enter the name of the janitor.  
John  
Enter the ID of the Task.  
101  
The task is added succesfully.
```

T55

```
.  
Enter the name of the janitor.  
Mahmut  
There is no such janitor.
```

T59 Accept event

```
Name: Sinema gecesi  
Date: not-added or unknown  
Participants:[]  
Choose:  
1)Accept  
2)Decline  
1
```

T60 Decline event

```
Name: J.K Rowling imza günü
Date: not-added or unknown
Participants:[]
Choose:
1)Accept
2)Decline
2
```

T61 End event

```
11
Last event:Name: Sinema gecesi
Date: not-added or unknown
Participants:[] has ended.
```

T62 Find Shortest path to the target place

```
9-)Third Floor Third Section      8-)Third Floor Second Section      7-)Third Floor First Section
11-)Stairs
6-)Second Floor Third Section      5-)Second Floor Second Section      4-)Second Floor First Section
12-)Stairs
3-)First Floor Second Section      2-)First Floor First Section      1-)First Floor Entrance
13-)Stairs
10-)Garage

Where are you?
9
Where do you want to go
10
You need to go Third Floor Second Section
You need to go Third Floor First Section
You need to go Stairs
You need to go Second Floor First Section
You need to go Stairs
You need to go First Floor Entrance
You need to go Stairs
You need to go Garage
***Destination has been found!!
```

T67 List Library

Name:Kadikoy
Address: Sahil
Manager: Big Boss
Library ID: 0001

Name:Nevmekan
Address: Uskudar Istanbul
Manager: John Doe
Library ID: 0002

Name:Beyazit Devlet
Address: Fatih Istanbul
Manager: No current Manager
Library ID: 0003

Name:Aziz Berker İlçe Halk Kütüphanesi
Address: Rasimpaşa, Nüzhet Efendi Sk. No:53, 34716 Kadıköy/İstanbul
Manager: Jack Johnson
Library ID: 0004

Name:Maltepe Library
Address: Maltepe
Manager: No current Manager
Library ID: 0005

T69 List books

```
1:
Name: Nutuk
Page Amount: null
Language: Turkish
ID: 10015
Author's info:
null
Comments: []
Genre: null
2:
Name: Animal Farm
Page Amount: null
Language: English
ID: 10017
Author's info:
null
Comments: []
Genre: null
3:
Name: 1984
Page Amount: null
Language: English
ID: 10019
Author's info:
null
Comments: []
Genre: null
Choose book:
1
Choose Proper Selection
1-Accept
2-Dcline
1
Book is accepted
```


T70 List demanded books

Demanded Books:

1:

Name: Nutuk

Page Amount: null

Language: Turkish

ID: 10015

Author's info:

null

Comments: []

Genre: null

2:

Name: 1984

Page Amount: null

Language: English

ID: 10019

Author's info:

null

Comments: []

Genre: null

Choose book:

1

Choose Proper Selection

1-Accept

2-Decline

2

Book is declined.