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[Version 1.3]

# SOFTWARE ARCHITECTURE DOCUMENT

*for* wellib

Presented by :  
**Group 9 - The Hand (21CLC10)**

Project Name:  
**Wellib**

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**Group 9 - The Hand**

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**Wellib**  
**Software Architecture Document**

**Version 1.3**

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## Revision History

Date	Version	Description	Author
28/Jul/23	1.0	Finish: Introduction, Architectural Goals and Constraints.	Nguyễn Tuấn Tuấn
01/Aug/23	1.1	Finish: Logical View	Nguyễn Tuấn Tuấn
03/Aug/23	1.2	Finish and update: Use-Case Model	Trần Hiếu Tâm
04/Aug/23	1.3	Update: Logical View	Trần Hiếu Tâm

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# Software Architecture Document

## 1. Introduction

This Software Architecture Document provides an overview of the entire document, which includes many of its categories, such as purpose, scope, definitions, acronyms, abbreviations, references, and total document overview. And the categories will display information about each segment of the document with great details.

## 2. Architectural Goals and Constraints

This segment describes the software requirements and objectives that have some significant impact on the architecture such as safety, security, privacy, use of an off-the-shelf product, portability, distribution, and reuse. It also captures the special constraints that may apply: design and implementation strategy, development tools, team structure, schedule, legacy code, etc.

### Architectural Goals:

- **Security:** Provides a secure and protected system, to make sure users experience is a safe and error-free one, with authorized access and regulated control.
- **Maintainability:** The system design is to be clear and easy-to-understand, so further maintenance and updates might be possible in the future and poses almost to none difficulty.
- **Performance:** Provides good services that have no performance issues, and be able to handle a peak load of 1000 users simultaneously and up to 100000 transactions per day.
- **Usability:** The system should be easy to use, provides effective tools for intended purposes, is efficient and engaging for the users to acquaintance themselves with and continue to utilize our services.
- **Legal and Copyrights:** Must abide by all copy rights laws and such to avoid lawsuits and legal conflicts.
- **Support-ability:** The website for the library system must be able to run in the following browsers:
  - + Google Chrome 54 or later.
  - + Microsoft Internet Explorer 11 or later.
  - + Mozilla Firefox ESR 45 or version 48 or later.

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- **Accessibility:** Upon launch, the system shall be modified to become most accessible to all users, including those with disabilities including visual impairment, audio impairments, mobility impairments,...
- **Extendability:** To be able to add new features to the website at any point in the future by creating a system that allow for models to be easily implemented.
- **Online manual:** Provides a manual with instructions and guides for new readers to use and navigate the website.

### Architectural Constraints:

- **System Design:** Since the system has many moving parts and components to manage, trying to achieve efficiency while implementing the system is a running problem of the development process, therefore system design must be well-thought-out, accommodate for all requirements and must be adaptive.
- **Tools:** While Django serves well at providing the main framework for the project, there are still many requirements lacking which prompts for further research for other tools to address the problems at hand and is a cause for time loss in development.
- **Team collaboration:** While the process of diving work and managing team members for the project is going smoothly, further improvement is still warranted to keep up with project demands.
- **Time:** Since the project have many stages, deadlines must be implemented into the process and must be followed. However, unexpected errors and other outside matters and interference could still affect the overall workflow of the group, making it harder to meet the proposed deadline as intended.

## 3. Use-Case Model

*[This section includes the use case diagrams that are already modeled and presented in the use-case specification document.]*

This segment includes a use-case diagram to demonstrate the inner workings of the system as intended.

### 3.1 Overview Use-Case Model

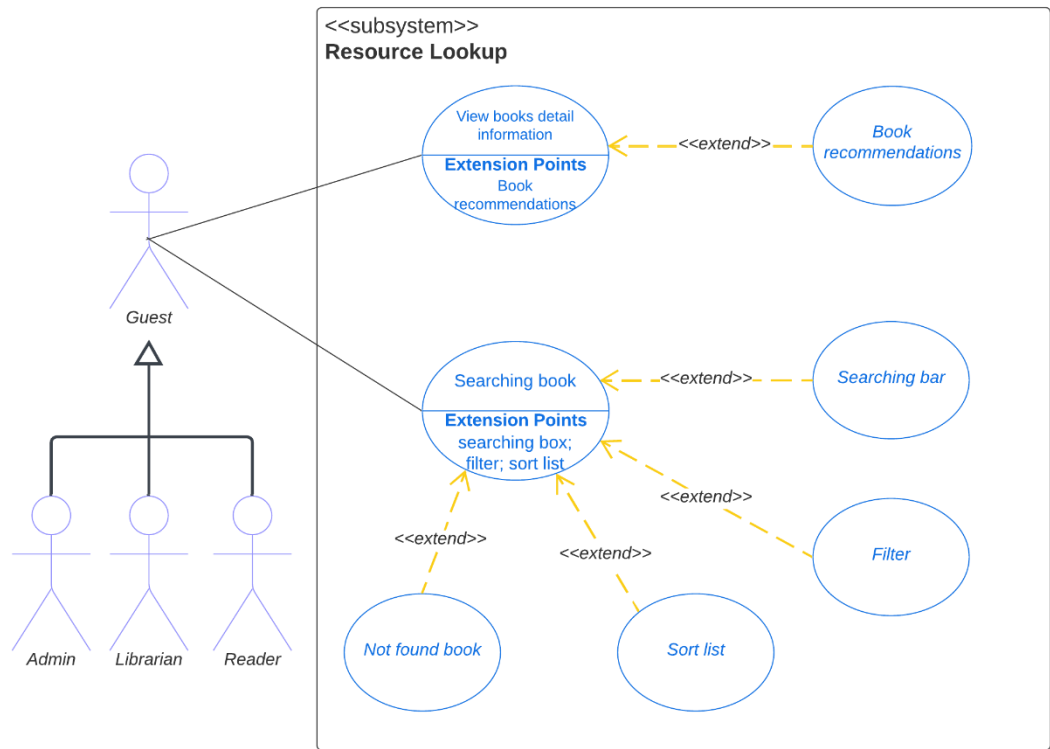
This Use-Case Model consists 5 subsystems:

1. Resource Lookup

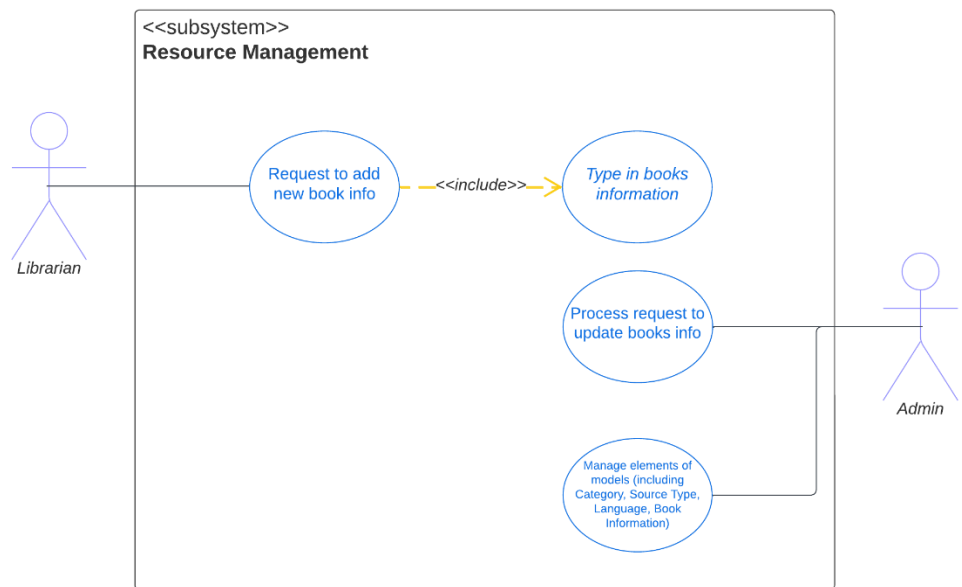


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### 3.2 Resource Lookup Use-Case Model



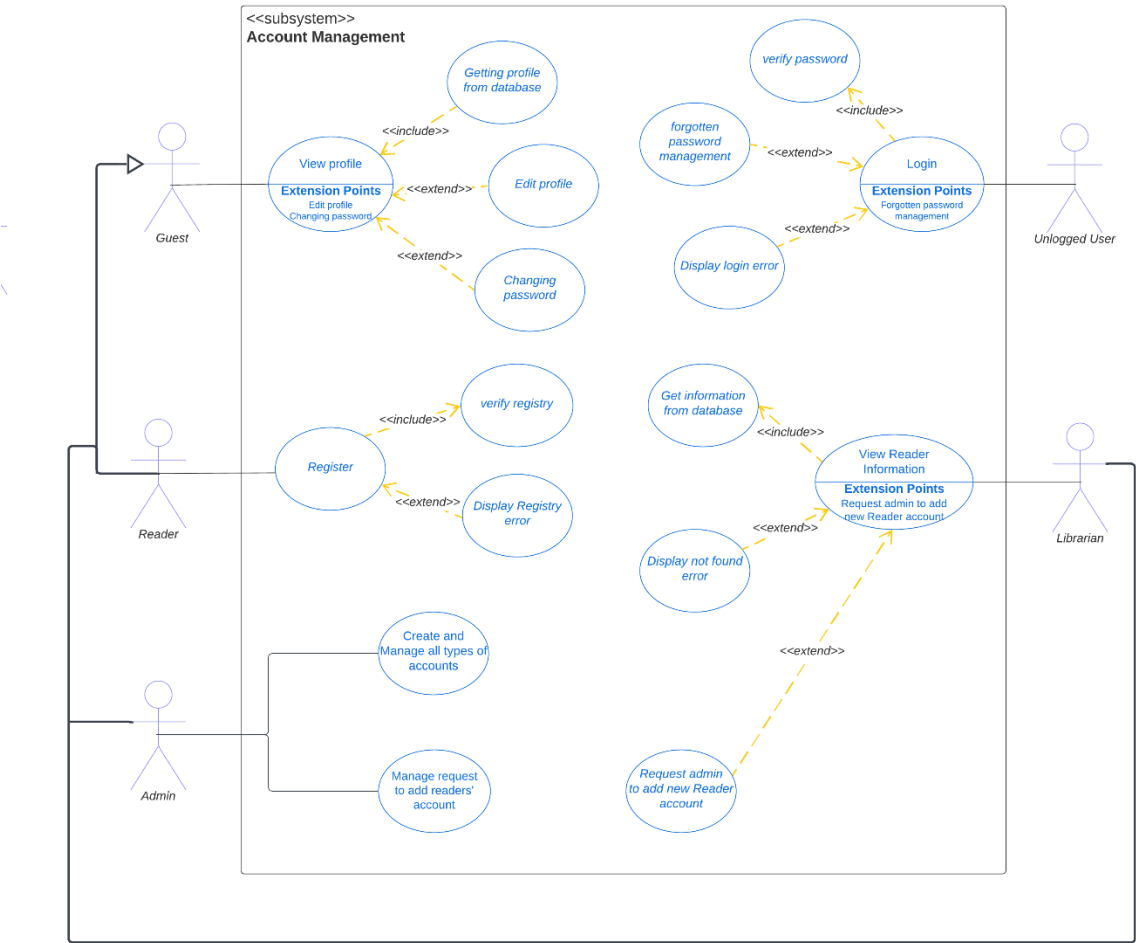
### 3.3 Resource Management Use-Case Model





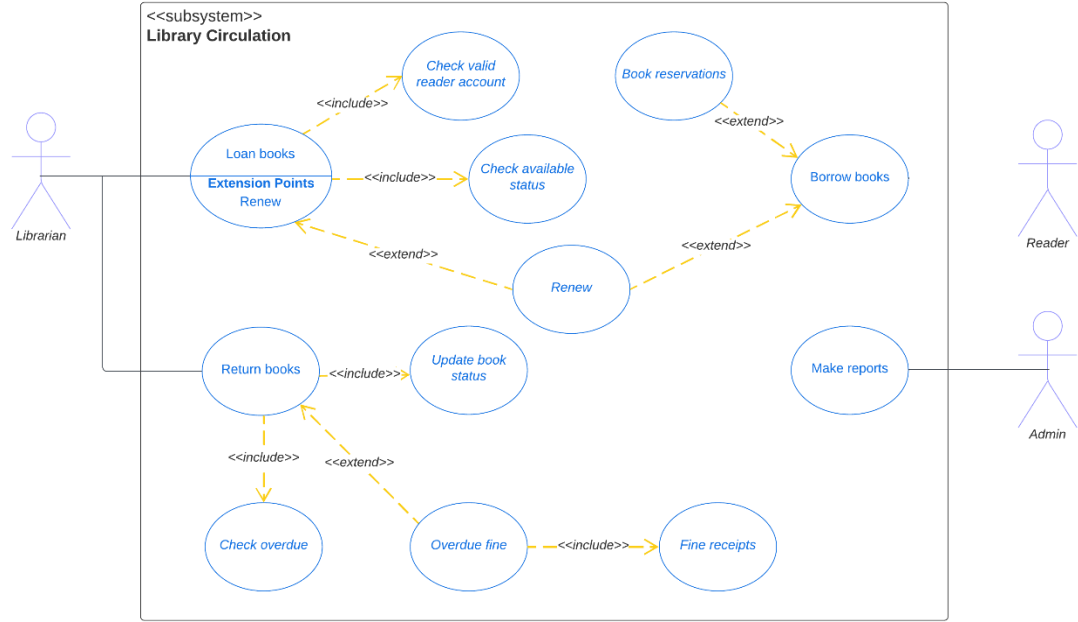
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### 3.4 Account Management Use-Case Model

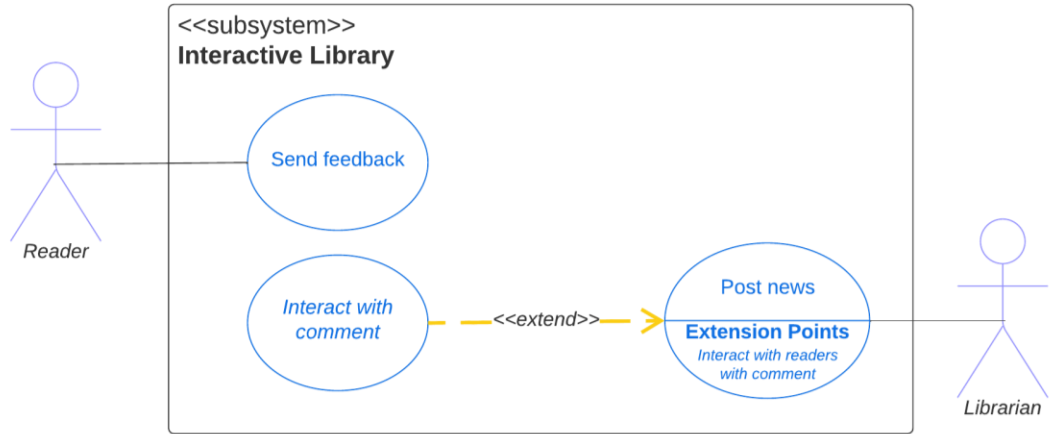


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### 3.5 Library Circulation Use-Case Model



### 3.6 Interactive Library Use-Case Model

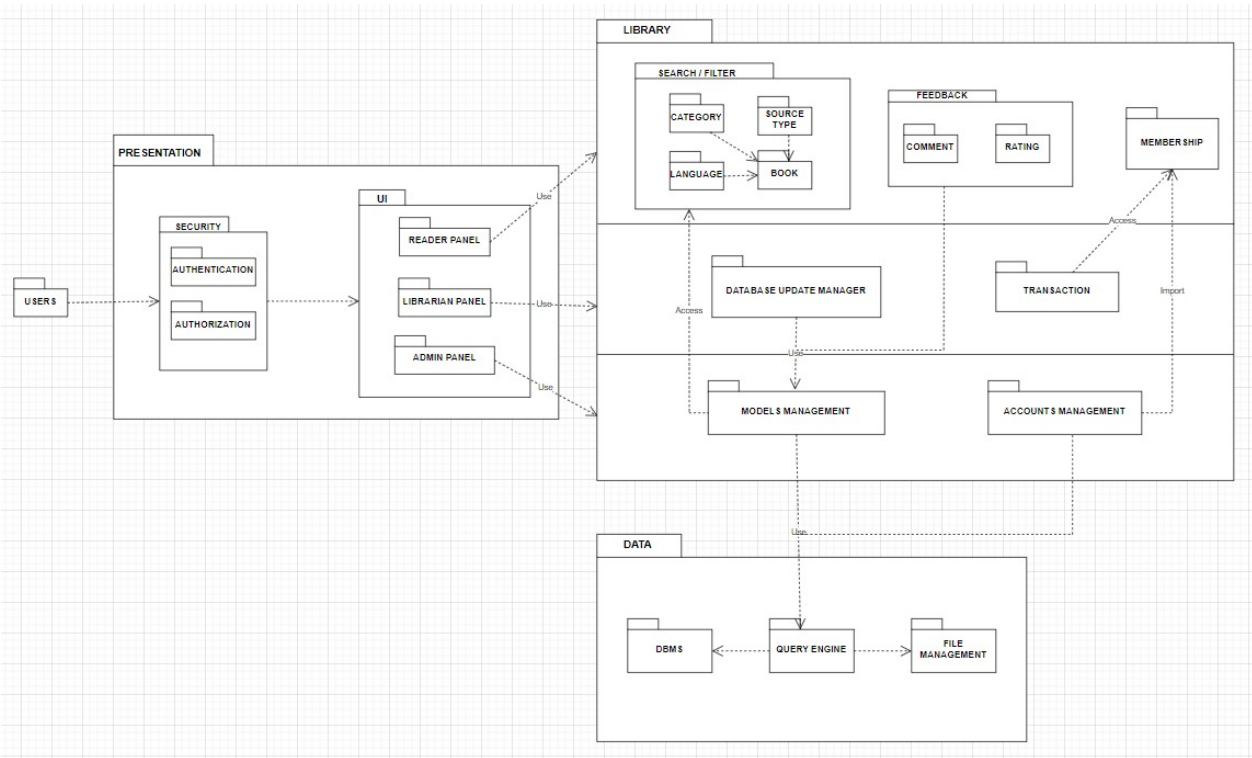


## 4. Logical View

This section the architecture of the system along with it's main components and relationships among them. This will includes the main flow of the workings between components and demonstrate how the links and relationships inside the system operates.

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The following diagram provides a high-level view of the main packages composing the system. The diagram demonstrates how the users of the website will interact with the UI layers as well as the main functionalities of the website and its main components stored within the database. This is an overview representing different application layers and give an overview of the organization of the project's code.

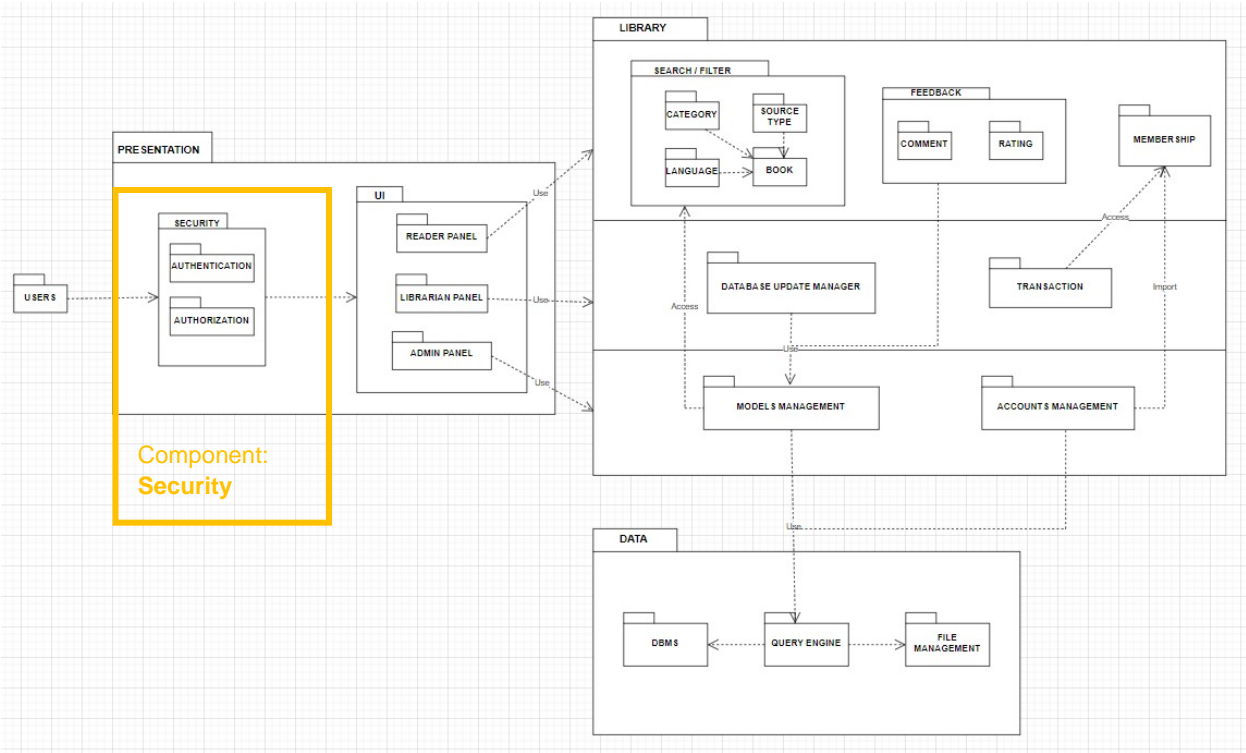


The system comprises of three main layers. With presentation, the users connects to the web page via the Internet, they will perform a login that will be validated and sorted into the right interface for that particular user, these separate panels will have distinct functionalities provided by the system based on their role in the library, a Search / Filter tool, a Feedback tool and Membership are all functionalities available to the reader, librarian can perform Transactions of books in the library as well as track and update the database notice and the admin will manage the page's abilities and users accounts.

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### 4.1 Component: Security

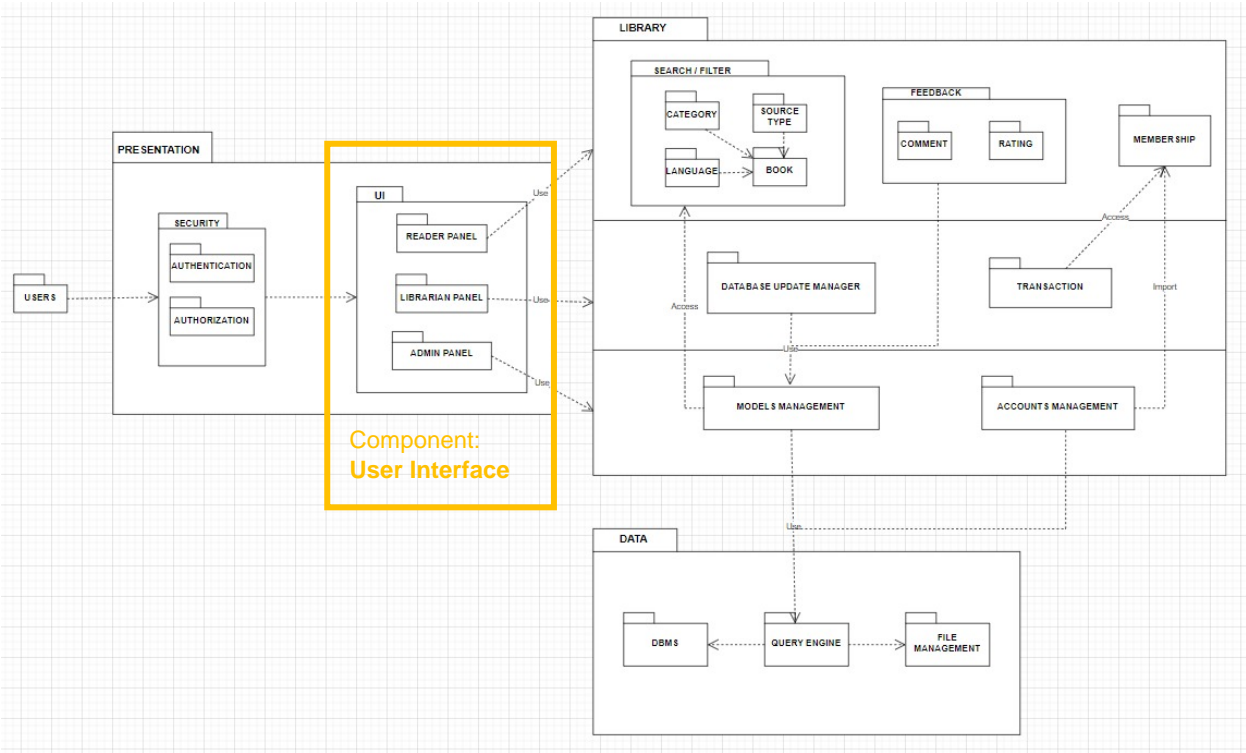
The system will asked users for ID, afterwards it will check the validation of said ID and sort users to their specific role, ensuring authentication and the correct authorization.



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## 4.2 Component: User Interface

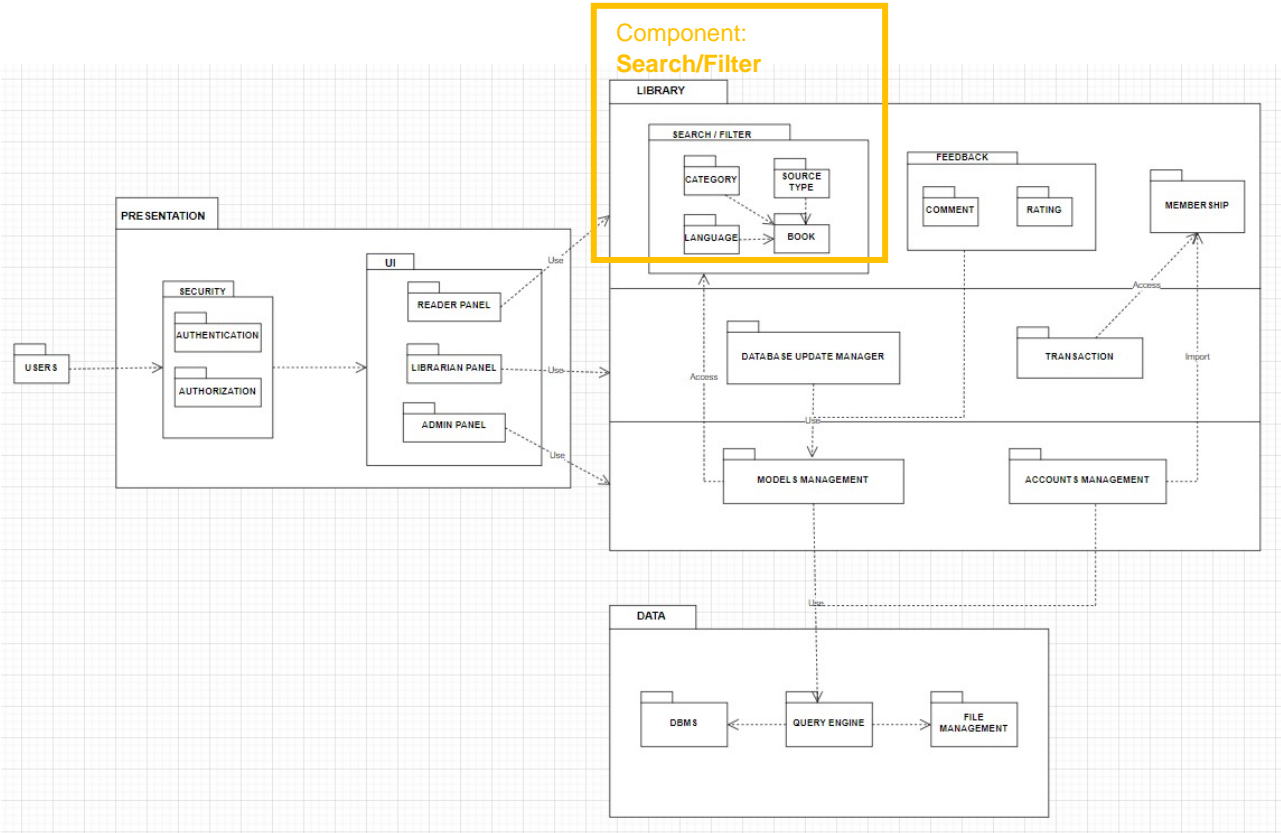
Due to website's purposes, the UI is separated depending on roles and will provide according services.



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### 4.3 Component: Search/Filter tool

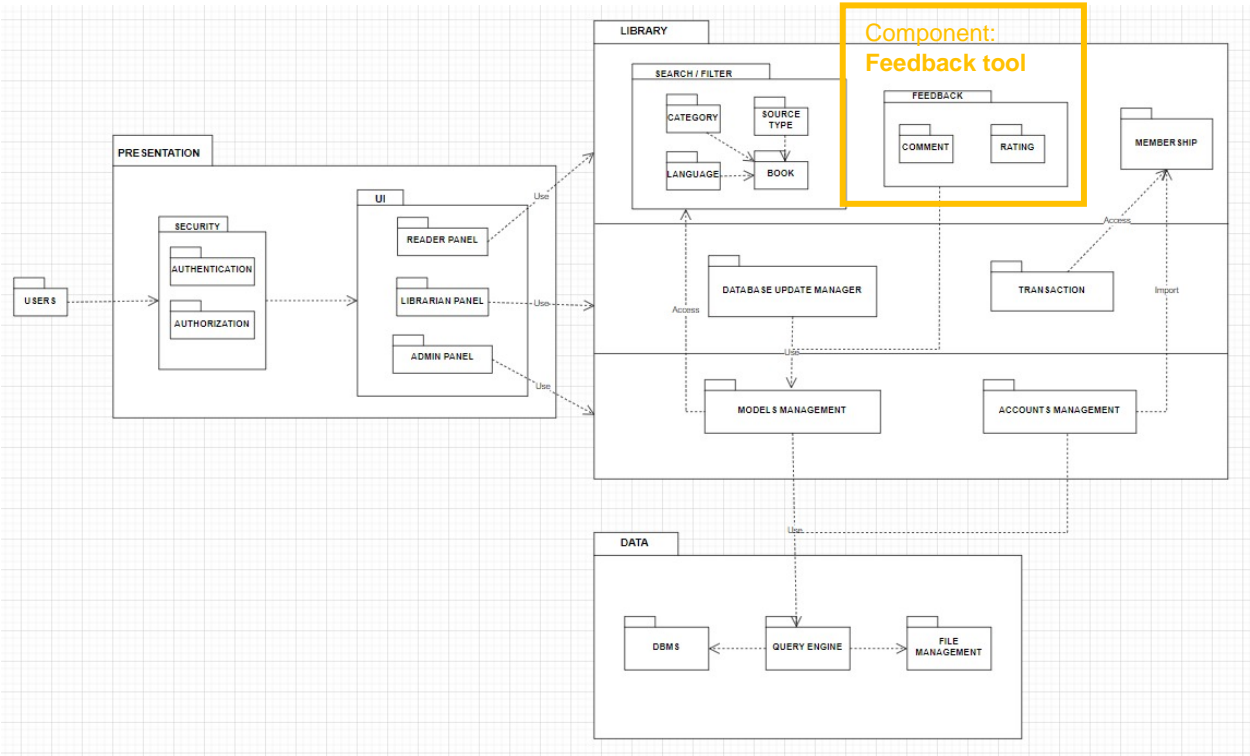
The main functionality of the library for readers, it is comprised of many classes that provides secondary traits to the main product of the library - books, this enable users to easily find the right book by sending data back through to the Database and running a check algorithm via the https protocol.



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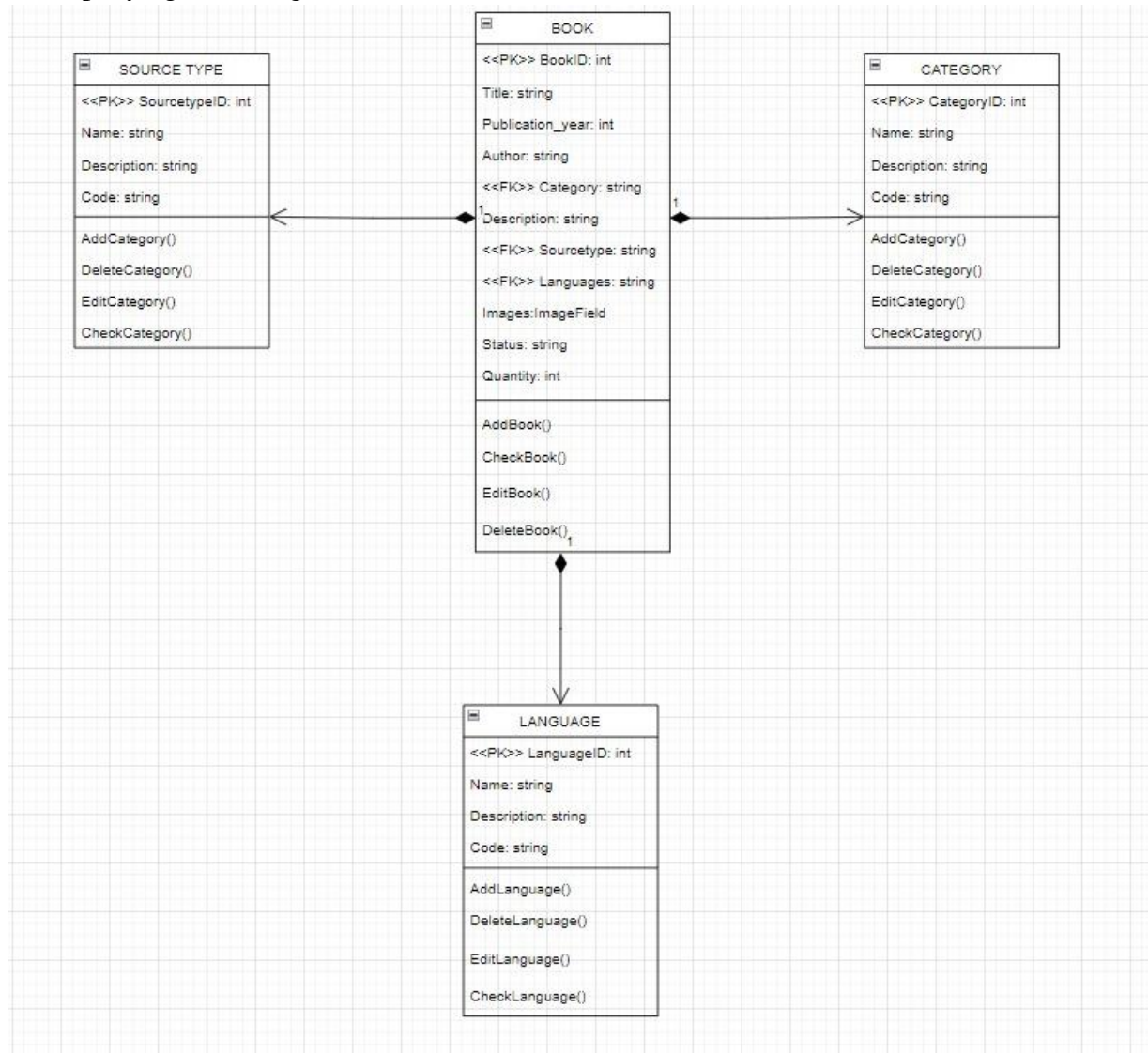
#### 4.4 Component: Feedback tool

A readers exclusive tool, this give users the ability to rate and comment on certain books and will add the information directly to the data within the database also via the https protocol.



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Accompanying class diagram:

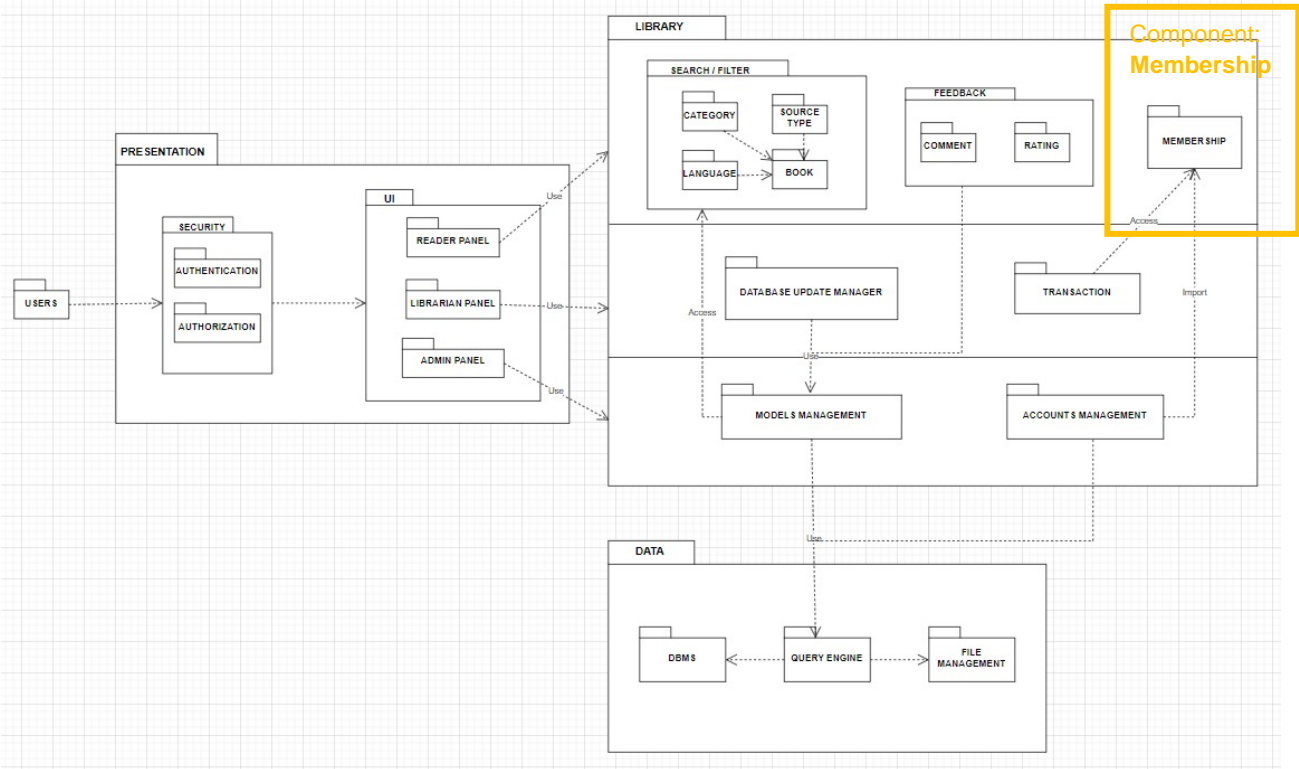




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#### 4.5 Component: Membership

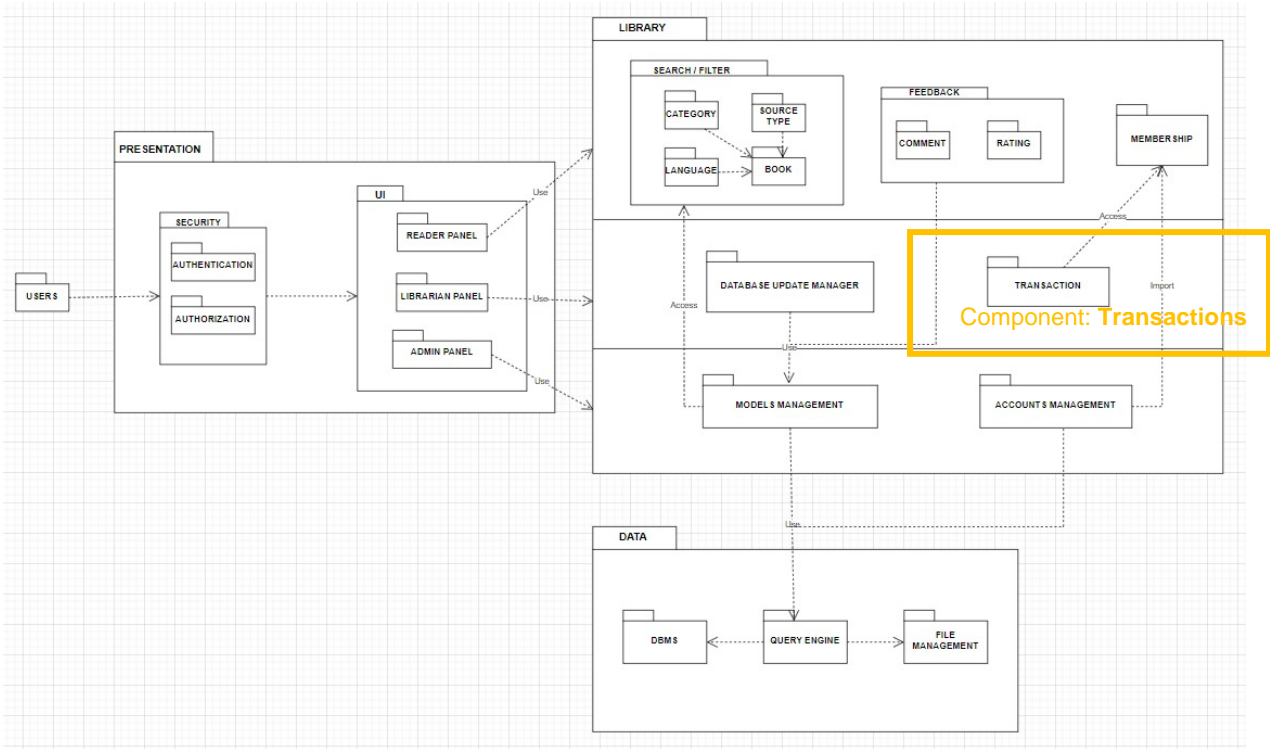
A function that allows users to sign up to access more advance functionalities within the web page, it's status is directly connected to the user's account and will be updated accordingly when signing up is completed.



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#### 4.6 Component: Transactions

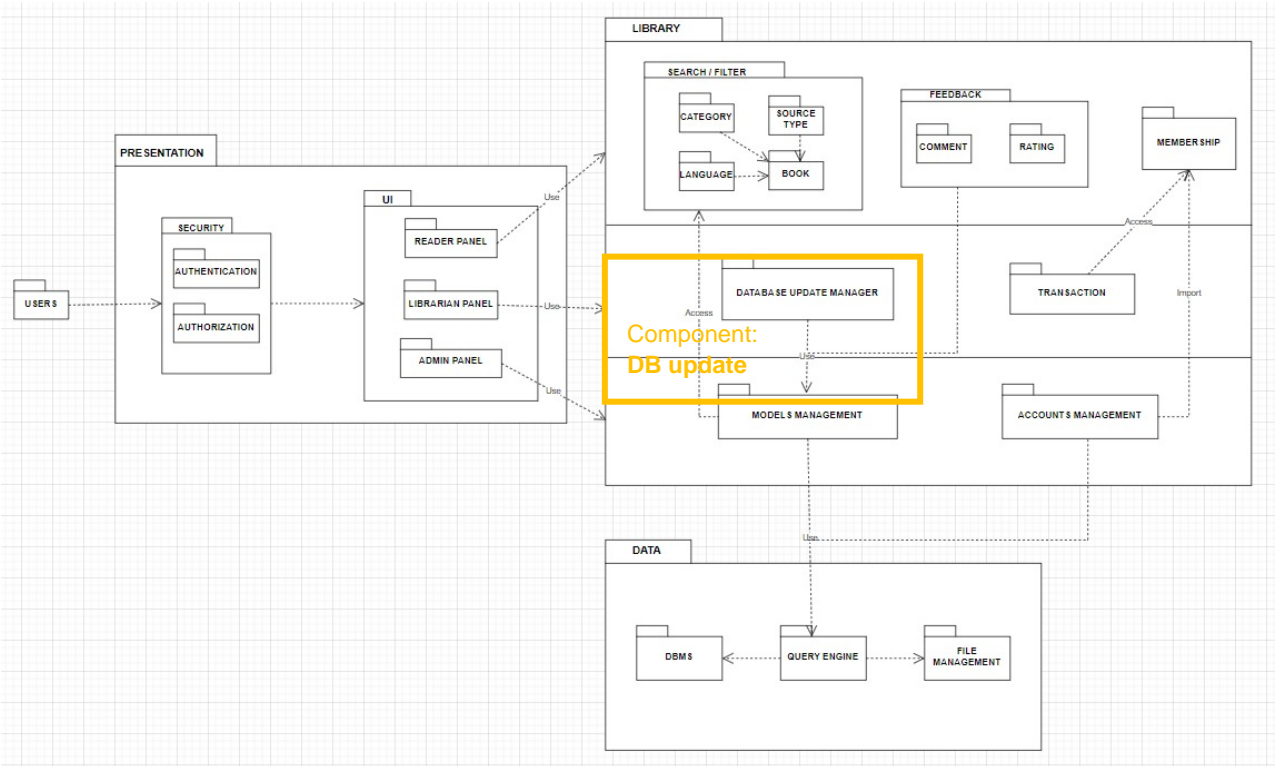
One of two librarians main objective within the system is to manage books within the system and lending them to users online in conjunction with the actual physical copy IRL, this is an advanced function that only unlocks for members of the website with abilities for the librarian to keep track of a loaned book as well as the member to return or extend the return date as they wish.



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#### 4.7 Component: Database update

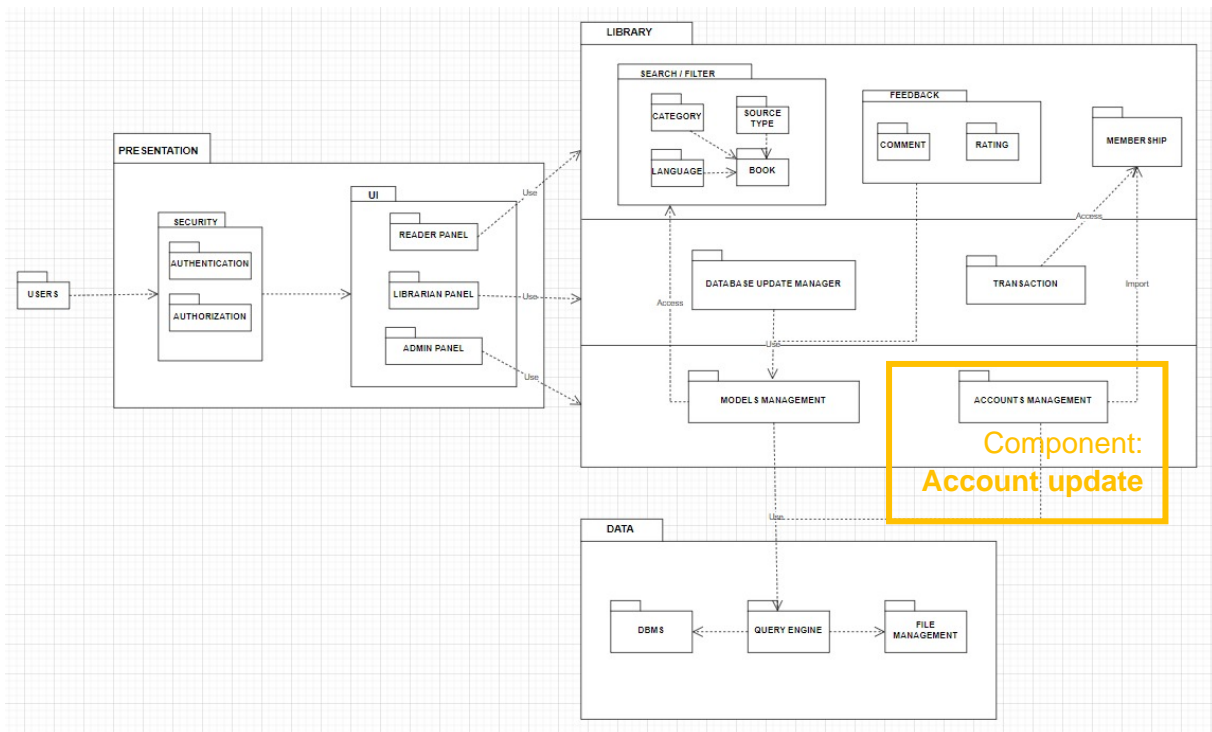
To manage books efficiently, Librarians are tasked with keeping track of books, whether they are imported or exported, the need to make changes to the system's database is needed to be regulated accordingly, therefore this functionality provides librarians to observe the state of the library and make request to make changes if necessary.



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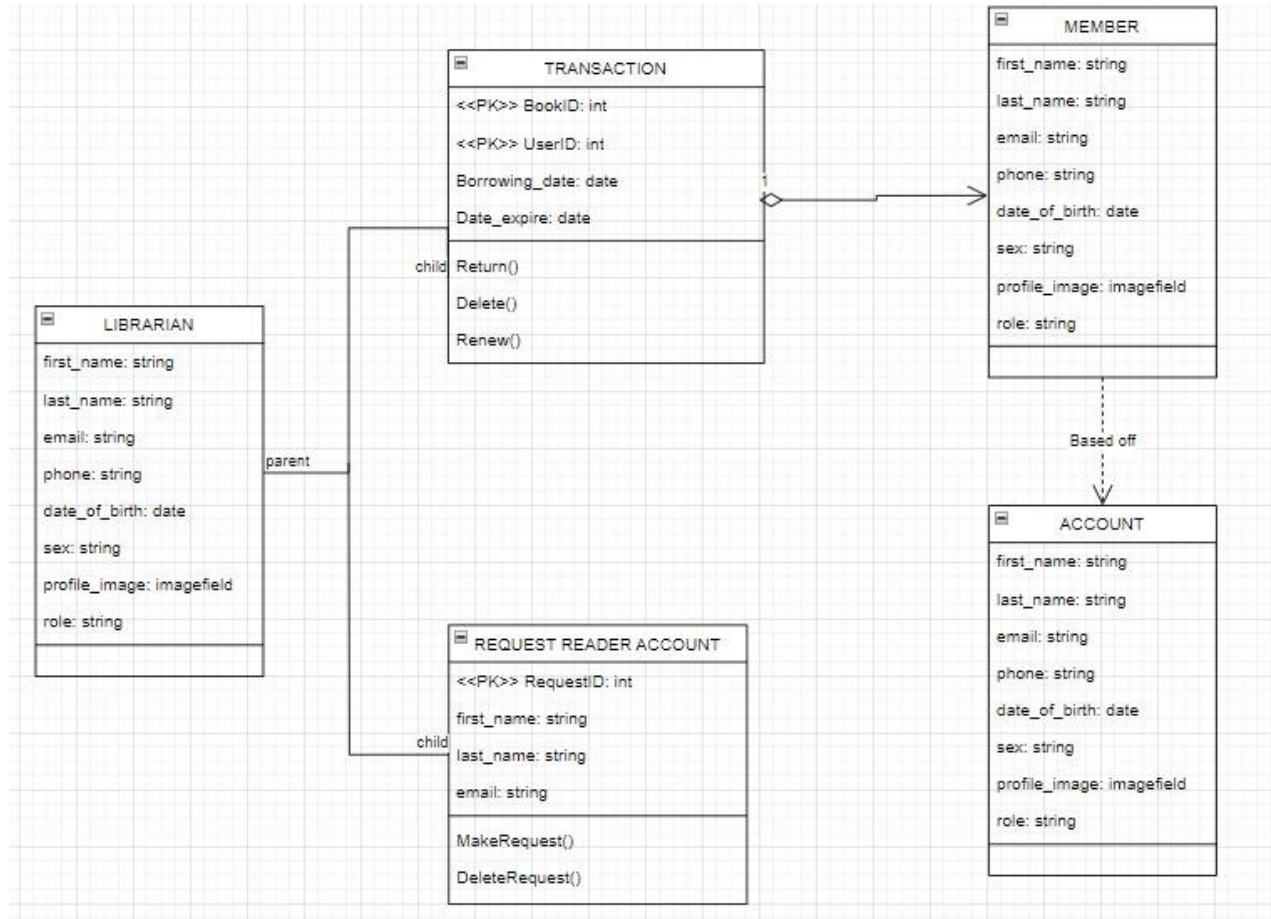
#### 4.8 Component: Account update

Same as books, librarian also help mange users accounts and will make request directly to the Admins interface allowing them to accept and create accounts as per users need.



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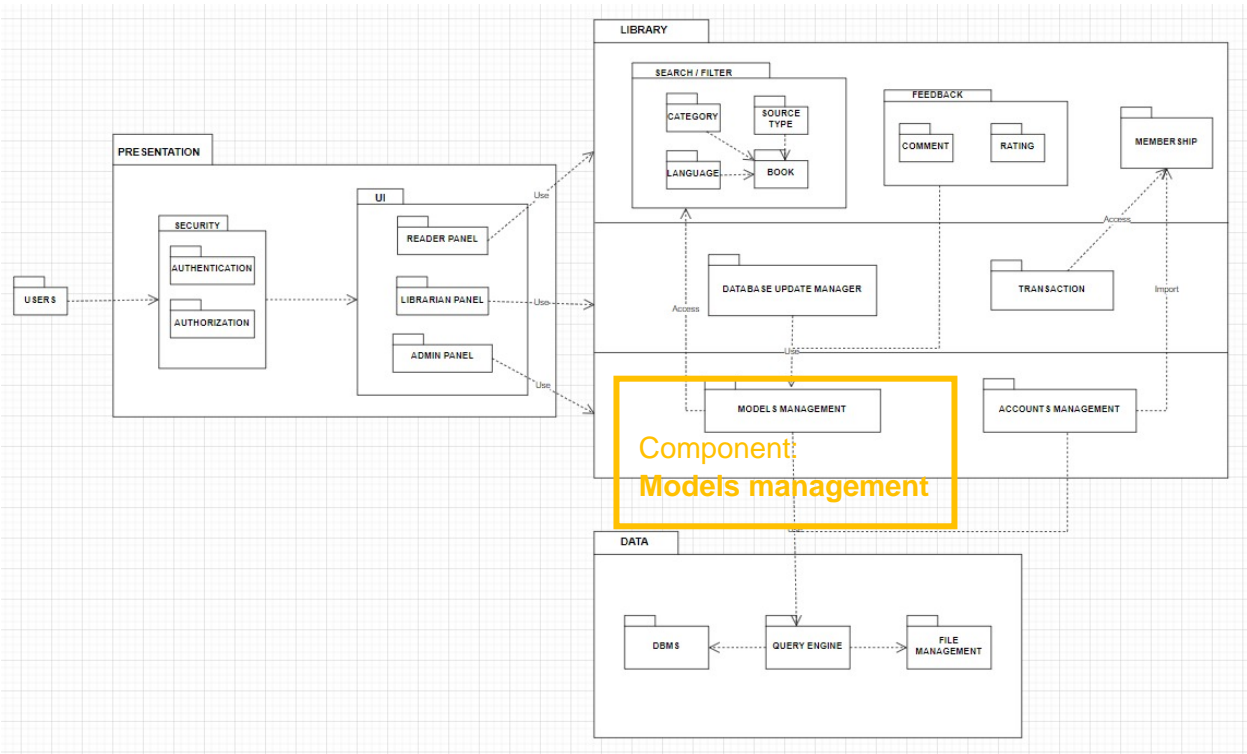
Accompanying class diagram:



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#### 4.9 Component: Models Mangament

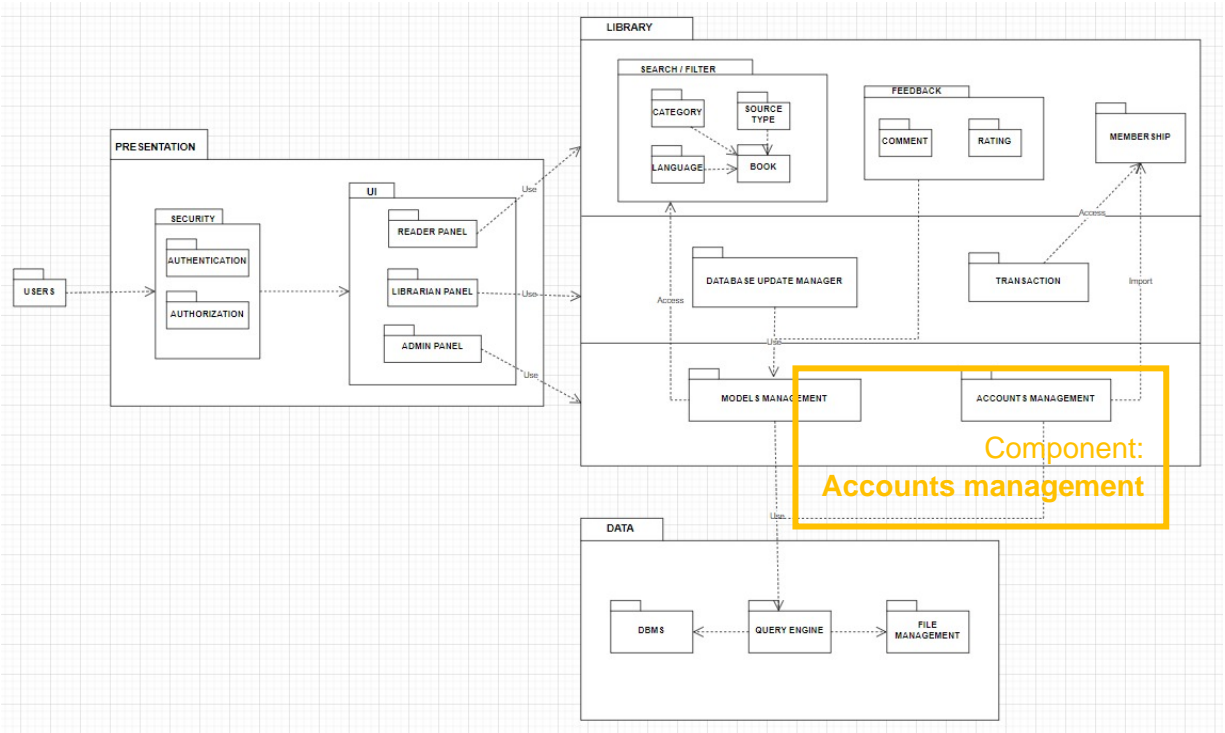
A UI specifically coded to easily add or remove many of the functionalities of the web page at a moment's notice. The administrator is provided with many ways to influenced other components of the systems as to make suitable changes to the library to fil the users needs, the changes will be transported to the database and the update will reflect immediatly back on the website, accessible for the readers to utilize.



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#### 4.10 Component: Accounts Management

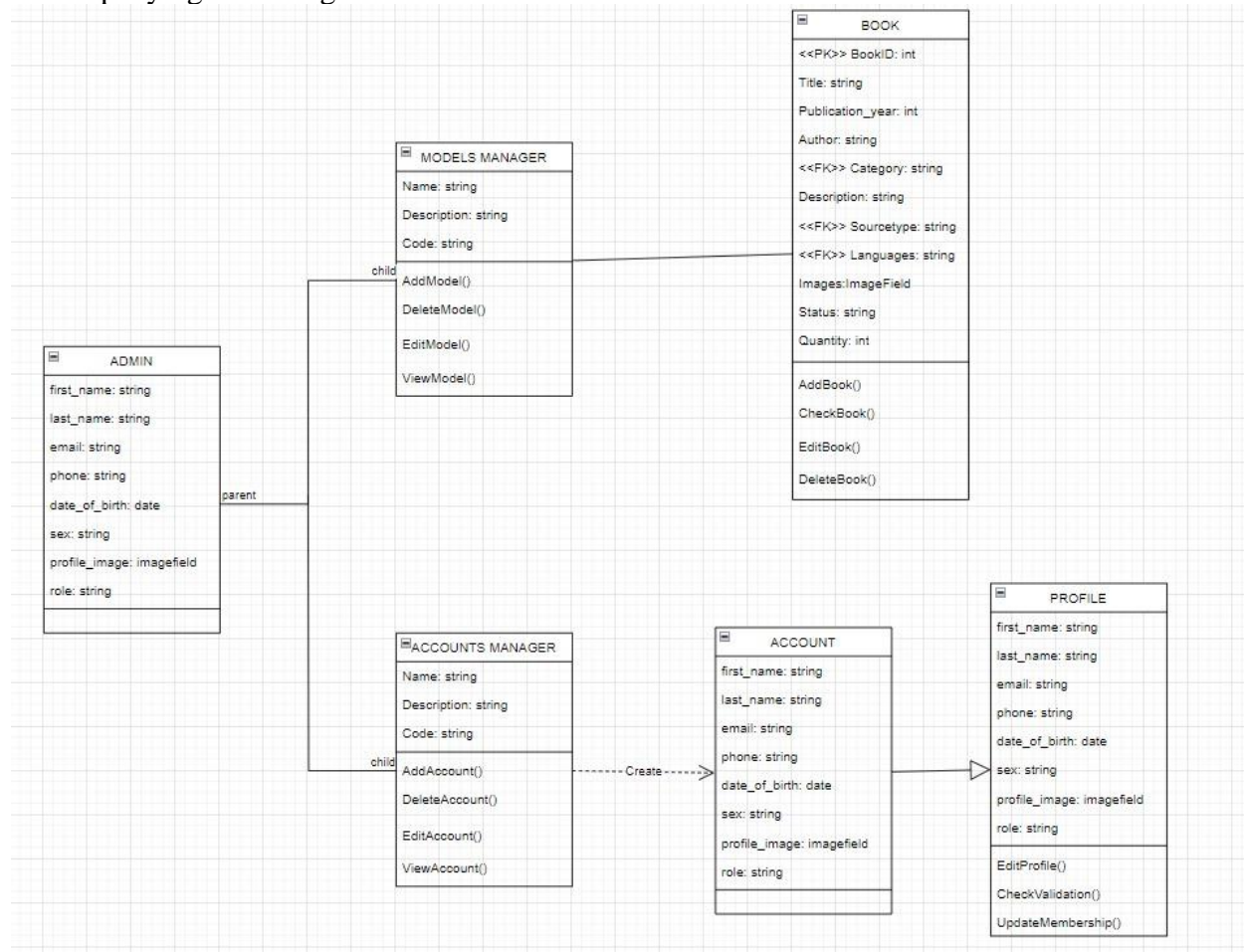
Readers of the web page will create an influx of accounts according to the amount user that traffic the website, therefore regulation is necessary and if permitted, the admin will create an account readily available with all of the existing profile created for the users to fill in and complete their accounts and having access to the library many services.





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Accompanying class diagram:





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## 5. Deployment

## 6. Implementation View