

# **Virtual Wakeel**

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## Project Detail

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## Plagiarism Free Certificate

This is to certify that, I am **Babar Jawad Anjum S/D/o Arif Hussain**, group leader of FYP under registration no CIIT/ FA19-BSE-025/LHR at Computer Science Department, COMSATS University Islamabad, Lahore Campus. I declare that my FYP proposal is checked by my supervisor and the similarity index is \_\_\_\_\_% that is less than 20%, an acceptable limit by HEC. Report is attached herewith as Appendix A.

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## **Abstract**

A very formal and knowledgeable exchange takes place between an advocate and a client. Every time the client and the attorney communicate or engage, a relationship is present in the case. The need for legal services, the market for legal counsel, and the general public's awareness of the law are all expanding. We intend to develop an online platform to improve and make other responsibilities simpler. It includes all the essential details about Pakistani law, charges, punishments, and fines. It also includes necessary court documents that can be downloaded for free from our platform, information on how to get out on bail, precedent rulings from all courts, and lawyers who could help you defend your case. The website allows for discussions between the client and the advocate so that they may discuss the case's progress and any issues they may have. Our application safeguards the privacy of consumer information, which has ethical implications as well. Even more effort was taken to improve the software's security measures to ensure that customer data is never hacked or disclosed to an unauthorized third party.

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# 1. Project Introduction

A project introduction is a document that provides an overview of a project and its purpose, objectives, and scope. It is typically used to introduce the project to stakeholders, such as project sponsors, team members, and customers, and to provide a common understanding of the project's goals and deliverables.

## 1.1 Introduction

Now a day, legal issues are difficult for a lay man to counter. In Pakistan, crimes are at peak. Daily we see in news that people are murdered. Land mafias use to occupy others land. A huge growth in street crimes which include mobile snatching, harassment, rape, etc. Previously, people go to courts waste time to find an appropriate advocate for their case, documents needed to file the case. People don't know how to tackle these situation, where to approach to file complaint. Due to these circumstances we are planning to develop an application to resolve their worries.

This “**Virtual Wakeel**” application that we’re going to develop will have capability to sort out the legal issues. It includes all the basic information about the Pakistan’s Law, Charges, Punishments, Fine, required documents to file a case, Procedure to file a case, Procedure to bail, previous Judgements in all courts and advocates that will help you to defend your case.

Advocate dashboard will have all the enlisted advocates with their expertise to whom user will interact and discuss about the case. This advocates enlisting will be done by advocate himself by registering to the website. Later on, he can edit his own details in future when needed. Admin can view all the listing and can edit any information.

In this Project, we will also give an opportunity to users that they can use our application through web & mobile and use all the services we’ll provide them. Services includes:

1. Searching of Crime History
2. Law, Punishments & Fines
3. Required Documents
4. Procedures to File a Case and to bail
5. Previous Judgements in Supreme Court
6. Previous Judgements in High Courts
7. Advocates Panel
8. Live Chat between Advocates and User

## 1.2 Objectives

The major goal of this "Virtual Wakeel" application is to give users a platform where they may search for cases linked to the crimes they are interested in. Both our web and mobile applications are available to them. We'll give them all the details they need regarding the offences they want to look up. Additionally, they can locate all the records necessary to build a case against them. People can look up past closed and open cases that were heard in the Supreme and High courts. To resolve their ambiguities on the advocate panel, they can negotiate with the advocates.

### **1.3 Problem Statement**

The chore of going to court for legal matters is difficult in today's busy world. If you want to talk to your advocate about something, it will take you virtually the entire day. Due to their busy schedules, even advocates are not available in their chambers. Therefore, going to court is usually a complete waste of time.

These people can use our application to look for information on their legal issue on our website and learn completely about the issues they are presently dealing with.

### **1.4 Assumptions & Constraints**

Latest data will be provided on our application. Data will be added in database on daily basis.

### **1.5 Project Scope**

Our programme will display case information, including terms, penalties, bail procedures, related cases from the past, and necessary documents (in pdfs). We'll utilise MongoDB to store several types of data. Additionally, it will feature a lawyer panel where all attorneys will be posted. Users can access this panel's messenger to receive their contact information and arrange subsequent processes. We'll create user interfaces for our online and mobile applications so that users may engage with our system.

## **2. Requirement Analysis**

Requirement analysis is the process of gathering and documenting the requirements for a system or product. It involves identifying the needs and goals of the stakeholders, such as users, customers, and project sponsors, and determining how the system or product will meet those needs.

The goal of requirement analysis is to ensure that the system or product is designed and developed to meet the needs of the stakeholders. It is a crucial step in the software development process as it helps to define the scope of the project and establish a common understanding of the requirements among all team members.

### **2.1 Literature Review**

A literature review is a critical summary of the published research on a specific topic. It is an important part of the research process as it helps to identify gaps in the existing knowledge and to provide a context for the research being conducted.

#### **2.1.1 E-Lawyering & Virtual Law Practice:**

##### **A Paradigm Shift for Law Library System [1]**

This research study examines the unique legal service delivery method of e-lawyering and virtual law practise, as well as how the innovation has affected a new system of library management. The purpose of this article is to provide an overview of e-lawyering and virtual law practise, as well as information on their characteristics, the legal library system in the age of virtual advancements, the overlap between the importance of virtual law practise and virtual law libraries, cloud-based legal technologies in virtual law library systems, the advantages of cloud management software for virtual law practises, and the difficulties associated with using virtual law libraries effectively in Nigeria.

#### **2.1.2 Vakeel Online [2]**

With the aid of an online forum where users may ask questions about their situations and issues, this application is intended to assist users. Different lawyers can assist them in making the right decisions. We have two login options on this platform: User and Lawyer. Any query regarding what is going on in our social lives is welcome. Various lawyers offer free legal assistance to people. People can speak with them, case a file if necessary, and the lawyer can take care of their case in court.

#### **2.1.3 My Virtual Lawyer [3]**

People can discuss their objectives and identify their legal difficulties with the aid of this app. People receive assistance from this virtual attorney software based on their experience, education, and legal expertise. The use of a virtual lawyer application enables people to study their documents and comprehend the rights, obligations, and implications of such documents. Additionally, they offer the ability to look up information on many legal topics, such as traffic law, landlord-tenant law, family law, and criminal law.

#### **2.1.4 Virtual Justice [4]**

This study looks at how e-lawyering and virtual law practises differ from other ways of providing legal services and how the innovation has changed how libraries are managed. This article's goal is to give a general overview of electronic lawyering and virtual law practise, along with details on

their characteristics, the state of the legal library system in the age of technological development, how virtual law practise and virtual law libraries are related, and how cloud-based legal technologies are used in virtual law library systems. This was suggested in the COVID scenario to address the challenges brought on by the pandemic crisis in the USA.

### **2.1.5 Virtual Justice [5]**

The virtual frontier is booming as screens' pixels are bought and traded for billions of dollars. But sometimes things go wrong. To gain money in the real world, online groups are targeted by virtual burglars. People feel duped when malicious actors make their virtual possessions disappear from their avatars. Now more than ever, they turn to the legal systems for assistance. But if your avatar has been taken, to what laws can you turn for assistance?

In Virtual Justice, Greg Lastowka outlines the genuine legal issues that virtual worlds present. He outlines the most recent legal issues and discussions to show how governments are responding to the chaos on the edge of internet. After providing an interesting overview of the history and current economic structures of virtual worlds, he examines how changes are being made to existing laws governing property, jurisdiction, crime, and copyright in order to create new virtual laws.

## **2.2 Stakeholders Lists**

A stakeholders list is a document that identifies the individuals, groups, or organizations that are stakeholders in a project or business. Stakeholders are individuals or groups that have a vested interest in the success or failure of the project or business.

### **2.2.1 Admin**

Admin have complete control of application, and will add/remove data in application.

### **2.2.2 User**

User can search about the case, download related documents, previous cases and contact advocates through chat.

### **2.2.3 Advocate**

Advocate can contact users in chat those who are willing to discussing their problems.

## **2.3 Requirement Elicitation**

Requirement elicitation is the process of gathering the requirements for a system or product. It involves identifying the needs and goals of the stakeholders, such as users, customers, and project sponsors, and determining how the system or product will meet those needs.

### **2.3.1 Functional Requirements**

Functional requirements are the specific actions that a system or product must be able to perform. They describe what the system or product should do and how it should do it. Functional requirements are typically described in terms of inputs, outputs, and processes.

Functional requirements are an important part of the software development process as they help to define the capabilities of the system or product and ensure that it meets the needs of the end users. They are often used to create user stories or acceptance criteria, which are used to guide the development and testing of the system or product.

It is important to carefully document and prioritize functional requirements to ensure that they are accurately implemented and tested during the development process.

## **FR01: Sign Up**

*Table 2-1: FR01-Sign Up*

FR01-01	System will allow users to register as user and advocate.
FR01-02	System will allow user to add his personal information for registration.
i.	System will check the information is already available in database of system or not. If not, new record with the unique id will be added to the database.
ii.	System will successfully add user to the database.
iii.	System will redirect user to login page.
FR01-03	System will allow advocate to add his personal information and documents for registration.
i.	System will check the information is already available in database of system or not. If not, new record with the unique id will be added to the database.
ii	System will successfully add advocate to the database.
iii.	System will redirect advocate to login page.
FR01-04	Admin will verify the information of users advocates and approve or deny the their sign up request.

Table 2-1 above shows the functional requirements for FR01-Sign Up.

## **FR02: Login**

*Table 2-2: FR02-Login*

FR02-01	System will allow users to login as admin, user and advocate.
FR02-02	System will check the information of user is correct and exist in database.
i.	System will successfully login user to the user panel.
FR02-03	System will check the information of admin is correct and exist in database.
i.	System will successfully login admin to the admin panel.
FR02-04	System will check the information of admin is correct and exist in database.

i.	System will successfully login advocate to the advocate panel.
FR02-05	If user, admin and advocate information doesn't exist, system will show error.

Table 2-2 above shows the functional requirements for FR02-Login.

### **FR03: Search Case**

*Table 2-3: FR03-Search Case*

FR03-01	System will allow user to search case.
FR03-02	System will show error message, if searched information doesn't exist.
FR03-03	System will redirect user to case information page.
FR03-01	System will allow user to search case.
FR03-02	System will show error message, if searched information doesn't exist.
FR03-03	System will redirect user to case information page.

Table 2-3 above shows the functional requirements for FR03-Search Case.

### **FR04: View Case Information**

*Table 2-4: FR04-View Case Information*

FR04-01	System will show the information which user have searched.
FR04-02	System will show the information regarding bail.
FR04-03	System will show the information regarding possible punishment.

Table 2-4 above shows the functional requirements for FR04-View Case Information.

### **FR05: View Related Documents**

*Table 2-5: FR05-View Related Documents*

FR05-01	System will check that user is logged in or not.
i.	If user is not logged in, then system will redirect user to login page.
ii.	As the user login, user will be redirected to documents page.
FR05-02	If user is logged in, system will show related documents of High courts in High court tab.

FR05-03	System will allow user to download related documents of High courts in High court tab.
FR05-04	If user is logged in, system will show related documents of Supreme court in Supreme court tab.
FR05-05	System will allow user to download related documents of Supreme court in Supreme court tab.

Table 2-5 above shows the functional requirements for FR05-View Related Documents.

### **FR06: View Previous Cases**

*Table 2-6: FR06-View Previous Cases*

FR06-01	System will check that user is logged in or not.
i.	If user is not logged in, then system will redirect user to login page.
ii.	As the user login, user will be redirected to previous cases page.
FR06-02	If user is logged in, system will show related previous cases judgements of High courts in High court tab.
FR06-03	System will allow user to download related previous cases judgements of High courts in High court tab.
FR06-04	If user is logged in, system will show related previous cases judgements of Supreme court in Supreme court tab.
FR06-05	System will allow user to download related previous cases judgements of Supreme court in Supreme court tab.

Table 2-6 above shows the functional requirements for FR06-View Previous Cases.

### **FR07: Advocates**

*Table 2-7: FR07-Advocates*

FR07-01	System will check that user is logged in or not.
i.	If user is not logged in, then system will redirect user to login page.
ii.	As the user login, user will be redirected to advocate page.
FR07-02	If user is logged in, system will show advocate list.
FR07-03	System allow user to see advocate profile.



FR07-04	System will allow user to contact advocate.
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Table 2-7 above shows the functional requirements for FR07-Advocates.

### **FR08: Messenger (User)**

*Table 2-8: FR08-Messenger (User)*

FR08-01	System will check that user is logged in or not.
i.	If user is not logged in, then system will redirect user to login page.
ii.	As the user login, user will be redirected to messenger page.
FR08-02	If user is logged in, system allow user to chat with advocates.

Table 2-8 above shows the functional requirements for FR08-Messenger (User).

### **FR09: User Panel**

*Table 2-9: FR09-User Panel*

FR09-01	System will allow user to view his profile.
FR09-02	System will allow user to edit his profile.
FR09-03	System will allow user to access messenger (User).

Table 2-9 above shows the functional requirements for FR09-User Panel.

### **FR10: Advocate Panel**

*Table 2-10: FR10-Advocate Panel*

FR10-01	System will allow advocate to view his profile.
FR10-02	System will allow advocate to edit his profile.
FR10-03	System will allow advocate to chat with user.

Table 2-10 above shows the functional requirements for FR10-Advocate Panel.

### **FR11: Messenger (Advocate Panel)**

*Table 2-11: FR11-Messenger (Advocate Panel)*

FR11-01	System will allow advocate to chat with user who messaged.
---------	--

Table 2-11 above shows the functional requirements for FR11-Messenger (Advocate Panel).

## FR12: Admin Panel

Table 2-12: FR12-Admin Panel

FR12-01	System will allow admin to verify new users.
FR12-02	System will allow admin to verify new advocates.
FR12-03	System will allow admin to see registered users.
FR12-04	System will allow admin to see registered users.
FR12-05	System will allow admin to add new users.
FR12-06	System will allow admin to add new advocates.
FR12-07	System will allow admin to edit users.
FR12-08	System will allow admin to edit advocates.
FR12-09	System will allow admin to delete user.
FR12-10	System will allow admin to delete advocate.
FR12-11	System will allow admin to add information about cases in database.
FR12-12	System will allow admin to edit/delete information about cases in database.
FR12-13	System will allow admin to add previous cases in database.
FR12-14	System will allow admin to edit/delete previous cases in database.
FR12-15	System will allow admin to add documents in database.
FR12-16	System will allow admin to edit/delete documents in database.

Table 2-12 above shows the functional requirements for FR12-Admin Panel.

### 2.3.2 Non-Functional Requirements

Non-functional requirements are the characteristics of a system or product that describe how it should perform, rather than what it should do. These requirements are often called "quality attributes" and include things like reliability, security, performance, usability, and maintainability.

Non-functional requirements are an important part of the software development process as they help to ensure that the system or product is fit for purpose and meets the needs of the end users. They are often used to create acceptance criteria, which are used to guide the development and testing of the system or product.

It is important to carefully document and prioritize non-functional requirements to ensure that they are accurately implemented and tested during the development process. Neglecting to consider non-

functional requirements can lead to a system or product that is unreliable, insecure, or difficult to use, which can negatively impact the user experience and the overall success of the project.

### **NFR01: Performance**

*Table 2-13: NFR01-Performance*

NFR01-01	Home page must load within 10 seconds.
NFR01-02	System must respond within 10 seconds on user request.

Table 2-13 above shows the non-functional requirements for NFR01-Performance.

### **NFR02: User Friendly**

*Table 2-14: NFR02-User Friendly*

NFR02-01	Display of our application will be very user friendly.
----------	--

Table 2-14 above shows the non-functional requirements for NFR02-User Friendly.

### **NFR03: Portability**

*Table 2-15: NFR03-Portability*

NFR03-01	Our web application can be operating on any platform. (Mac, Windows, Linux)
NFR03-02	Our mobile application can be operating on Android platform.

Table 2-15 above shows the non-functional requirements for NFR03-Portability.

### **NFR04: Accuracy**

*Table 2-16: NFR04-Accuracy*

NFR04-01	Our application will generate results that will be reasonably accurate.
----------	---

Table 2-16 above shows the non-functional requirements for NFR04-Accuracy.

### **NFR05: Disaster Recovery**

*Table 2-17: NFR05-Disaster Recovery*

NFR05-01	If system crashes, all data should be recoverable within 30 minutes of the crash.
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Table 2-17 above shows the non-functional requirements for NFR05-Disaster Recovery.

### **NFR06: Defect Maintenance**

*Table 2-18: NFR06-Defect Maintenance*

NFR06-01	Post release bug fixing should not take more than 4 hours.
----------	--

Table 2-18 above shows the non-functional requirements for NFR06-Defect Maintenance.

## NFR07: Security

Table 2-19: NFR07-Security

NFR07-01	No user can access database except the Admin.
NFR07-02	System must provide access only through login module to authorized users.

Table 2-19 above shows the non-functional requirements for NFR07-Performance.

## 2.3.3 Requirement Traceability Matrix

Table 2-20: Requirement Traceability Matrix

ID	Associate ID	Requirement Description	Business Needs	Objectives	WBS Deliverable	Product Design	Product Development	Test Case
1	1.1	User Sign Up	BN-1	PG-1	SignUp Page	Completed	Completed	TC-01
	1.2	User Login	BN-1	PG-1	Login Page	Completed	Completed	TC-02
2	2.1	Search Case	BN-2	PG-3	Search Page	Completed	Completed	TC-03
	2.2	List of Previous Cases	BN-2	PG-3		In Progress	In Progress	TC-04
	2.3	Related Document	BN-2	PG-3		In Progress	In Progress	TC-05
	2.4	View/Download Document	BN-3	PG-2	Download Page	In Progress	In Progress	TC-05
	3.2	Search Advocate	BN-2	PG-3	Advocate Page	Not Started	Not Started	TC-07
3	3.3	Chat with Advocate	BN-3	PG-2	Chat Box	Not Started	Not Started	TC-06
Business Needs				Project Objectives				
BN-1		Data Collection		PG-1	User Friendly Interface			
BN-2		Provide All Cases and Solutions		PG-2	Data Provide			
BN-3		Save User Time and Resources		PG-3	Response Time Less than 1000ms			
				PG-4	DownTime Should be less than 5 hours in 6month			

Table 2-20 above shows the Requirement Traceability Matrix.

## 2.4 Use Case Descriptions

Use case descriptions are an important part of the software development process as they help to define the requirements for a system or product and ensure that it meets the needs of the end users. They are typically used to create user stories or acceptance criteria, which are used to guide the development and testing of the system or product.

### 2.4.1 Sign up

Table 2-21: Use Case Description-UC01-Sign Up

Use Case ID:	1
Use Case Name:	Sign Up

<b>Actors:</b>	Users, Advocates
<b>Description:</b>	User will get its login and will become registered user
<b>Pre-Condition:</b>	Advocate should have an advocate degree
<b>Post-Condition:</b>	User will be registered
<b>Normal Flow of Events:</b>	<ol style="list-style-type: none"> <li>1. User will add his details</li> <li>2. User details will be verified by admin</li> <li>3. User will get registered to the system</li> </ol>
<b>Alternatives Flow:</b>	<ol style="list-style-type: none"> <li>1. User isn't verified by admin</li> <li>2. User doesn't get system access</li> </ol>
<b>Exceptions:</b>	

Table 2-21 above shows the Use Case 01-Sign Up Description.

### 2.4.2 Login

*Table 2-22: Use Case Description-UC02-Login*

<b>Use Case ID:</b>	<b>2</b>
<b>Use Case Name:</b>	Login
<b>Actors:</b>	Users, Admin, Advocates
<b>Description:</b>	System access will be grant according to the role
<b>Pre-Condition:</b>	Correct credentials should be entered
<b>Post-Condition:</b>	System will provide access
<b>Normal Flow of Events:</b>	<ol style="list-style-type: none"> <li>1. User will access our application</li> <li>2. User will add credentials (Username, Password)</li> <li>3. System will verify credentials and grant access</li> </ol>
<b>Alternatives Flow:</b>	<ol style="list-style-type: none"> <li>1. User enter wrong credentials</li> <li>2. System will not grant access to the user</li> </ol>
<b>Exceptions:</b>	

Table 2-22 above shows the Use Case 02-Login Description.

### 2.4.3 Search Case

*Table 2-23: Use Case Description-UC03-Search Case*

<b>Use Case ID:</b>	<b>3</b>
<b>Use Case Name:</b>	Search Case
<b>Actors:</b>	Users

<b>Description:</b>	User will be search about the case
<b>Pre-Condition:</b>	
<b>Post-Condition:</b>	User will get information about the case
<b>Normal Flow of Events:</b>	<ol style="list-style-type: none"> <li>1. User will go to home page</li> <li>2. Search about the case</li> </ol>
<b>Alternatives Flow:</b>	
<b>Exceptions:</b>	

Table 2-23 above shows the Use Case 03-Search Case Description.

#### 2.4.4 View Case Information

*Table 2-24: Use Case Description-UC04-View Case Information*

<b>Use Case ID:</b>	<b>4</b>
<b>Use Case Name:</b>	View Case Information
<b>Actors:</b>	Users
<b>Description:</b>	User will see the information about the case user searched
<b>Pre-Condition:</b>	
<b>Post-Condition:</b>	User will see details about the case
<b>Normal Flow of Events:</b>	<ol style="list-style-type: none"> <li>1. User will write about the case</li> <li>2. System will show information which user searched</li> </ol>
<b>Alternatives Flow:</b>	
<b>Exceptions:</b>	

Table 2-24 above shows the Use Case 04-View Case Information Description.

#### 2.4.5 View Related Documents

*Table 2-25: Use Case Description-UC05-View Related Documents*

<b>Use Case ID:</b>	<b>5</b>
<b>Use Case Name:</b>	Download Related Documents
<b>Actors:</b>	Users
<b>Description:</b>	User will see related documents regarding searched case
<b>Pre-Condition:</b>	User should be logged in
<b>Post-Condition:</b>	User will get document in pdf which will be downloadable

<b>Normal Flow of Events:</b>	<ol style="list-style-type: none"> <li>1. User will go to related documents page</li> <li>2. User will download required documents in pdf format</li> </ol>
<b>Alternatives Flow:</b>	
<b>Exceptions:</b>	

Table 2-25 above shows the Use Case 05-View Related Documents Description.

#### 2.4.6 View Previous Cases

*Table 2-26: Use Case Description-UC06-View Previous Cases*

<b>Use Case ID:</b>	<b>6</b>
<b>Use Case Name:</b>	View Previous Cases
<b>Actors:</b>	Users
<b>Description:</b>	User will see previous cases regarding searched case
<b>Pre-Condition:</b>	User should be logged in
<b>Post-Condition:</b>	User will get previous cases in pdf which will be downloadable
<b>Normal Flow of Events:</b>	<ol style="list-style-type: none"> <li>1. User will go to previous cases page</li> <li>2. User will download previous case in pdf format</li> </ol>
<b>Alternatives Flow:</b>	
<b>Exceptions:</b>	

Table 2-26 above shows the Use Case 06-View Previous Cases Description.

#### 2.4.7 View Advocates

*Table 2-27: Use Case Description-UC07-View Advocates*

<b>Use Case ID:</b>	<b>7</b>
<b>Use Case Name:</b>	View Advocates
<b>Actors:</b>	Users
<b>Description:</b>	User will see appropriate advocates regarding searched case
<b>Pre-Condition:</b>	User should be logged in
<b>Post-Condition:</b>	User will get list of advocates and can contact advocates
<b>Normal Flow of Events:</b>	<ol style="list-style-type: none"> <li>1. User will go to advocates page</li> <li>2. User will contact advocate and discuss about case</li> </ol>
<b>Alternatives Flow:</b>	
<b>Exceptions:</b>	

Table 2-27 above shows the Use Case 07-View Advocates Description.

### 2.4.8 User Panel

Table 2-28: Use Case Description-UC08-User Panel

<b>Use Case ID:</b>	<b>8</b>
<b>Use Case Name:</b>	User Panel
<b>Actors:</b>	Users
<b>Description:</b>	User will see his profile and messenger.
<b>Pre-Condition:</b>	User should be logged in
<b>Post-Condition:</b>	User will get his information and chat module where user can contact advocates
<b>Normal Flow of Events:</b>	<ol style="list-style-type: none"><li>1. User will go to profile page</li><li>2. User will see his profile which could be edited and can contact advocates in messenger</li></ol>
<b>Alternatives Flow:</b>	
<b>Exceptions:</b>	

Table 2-28 above shows the Use Case 08-User Panel Description.

### 2.4.9 Advocate Panel

Table 2-29: Use Case Description-UC09-Advocate Panel

<b>Use Case ID:</b>	<b>9</b>
<b>Use Case Name:</b>	Advocate Panel
<b>Actors:</b>	Advocates
<b>Description:</b>	Advocate will see his profile and messenger.
<b>Pre-Condition:</b>	Advocate should be logged in
<b>Post-Condition:</b>	Advocate will get his information and chat module where user can contact users
<b>Normal Flow of Events:</b>	<ol style="list-style-type: none"><li>1. Advocate will go to profile page</li><li>2. Advocate will see his profile which could be edited and can contact users in messenger</li></ol>
<b>Alternatives Flow:</b>	
<b>Exceptions:</b>	
<b>Use Case ID:</b>	<b>9</b>
<b>Use Case Name:</b>	Advocate Panel
<b>Actors:</b>	Advocates



<b>Description:</b>	Advocate will see his profile and messenger.
<b>Pre-Condition:</b>	Advocate should be logged in
<b>Post-Condition:</b>	Advocate will get his information and chat module where user can contact users
<b>Normal Flow of Events:</b>	<ol style="list-style-type: none"> <li>1. Advocate will go to profile page</li> <li>2. Advocate will see his profile which could be edited and can contact users in messenger</li> </ol>
<b>Alternatives Flow:</b>	
<b>Exceptions:</b>	

Table 2-29 above shows the Use Case 09-Advocate Panel Description.

#### 2.4.10 Admin Panel

*Table 2-30: Use Case Description-UC10-Admin Panel*

<b>Use Case ID:</b>	<b>10</b>
<b>Use Case Name:</b>	Admin Panel
<b>Actors:</b>	Admin
<b>Description:</b>	Admin will see his dashboard where he can manage whole system
<b>Pre-Condition:</b>	Admin should be logged in
<b>Post-Condition:</b>	Admin will see the users/advocates registered and new users/advocates requests and upload documents and information
<b>Normal Flow of Events:</b>	<ol style="list-style-type: none"> <li>1. Admin will login and redirected to dashboard page</li> <li>2. Admin will see his user profiles and documents which he could edit, add and delete.</li> </ol>
<b>Alternatives Flow:</b>	
<b>Exceptions:</b>	

Table 2-30 above shows the Use Case 10-Admin Panel Description.

## 2.5 Use Case Design

Use case design is the process of defining the steps that a user will take to achieve a specific goal using a system or product. It involves creating a detailed description of the interaction between the user and the system, including the inputs, outputs, and processes involved.

Use case design is an important part of the software development process as it helps to define the requirements for a system or product and ensure that it meets the needs of the end users. It is important to carefully document and review the use case design to ensure that it accurately reflects the needs and goals of the stakeholders.

### 2.5.1 Sign Up

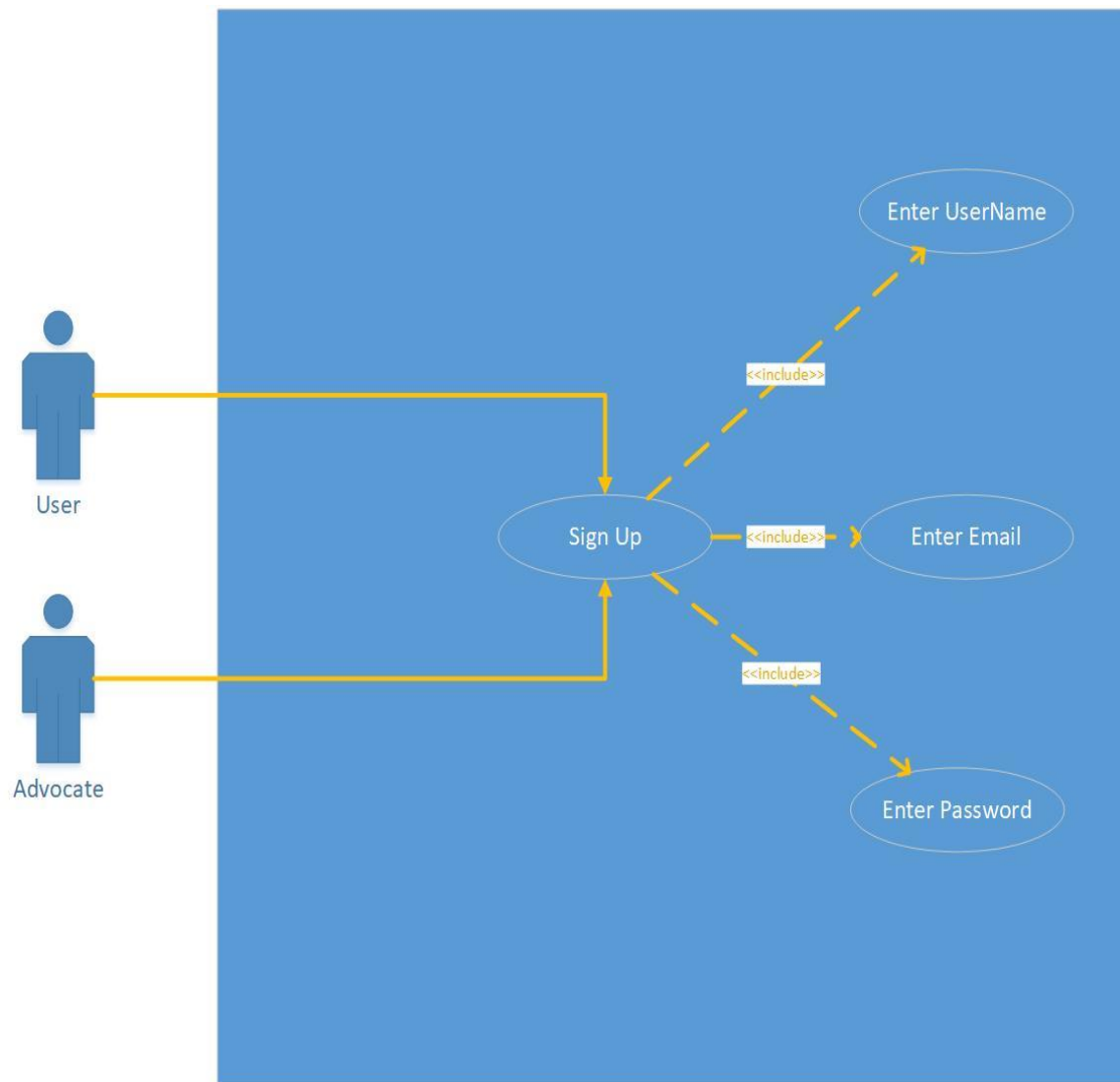


Figure 2-1: Use Case-UC01-Sign Up

Figure 2-1 above shows the Use Case-UC01-Sign Up Diagram.

### 2.5.2 Login

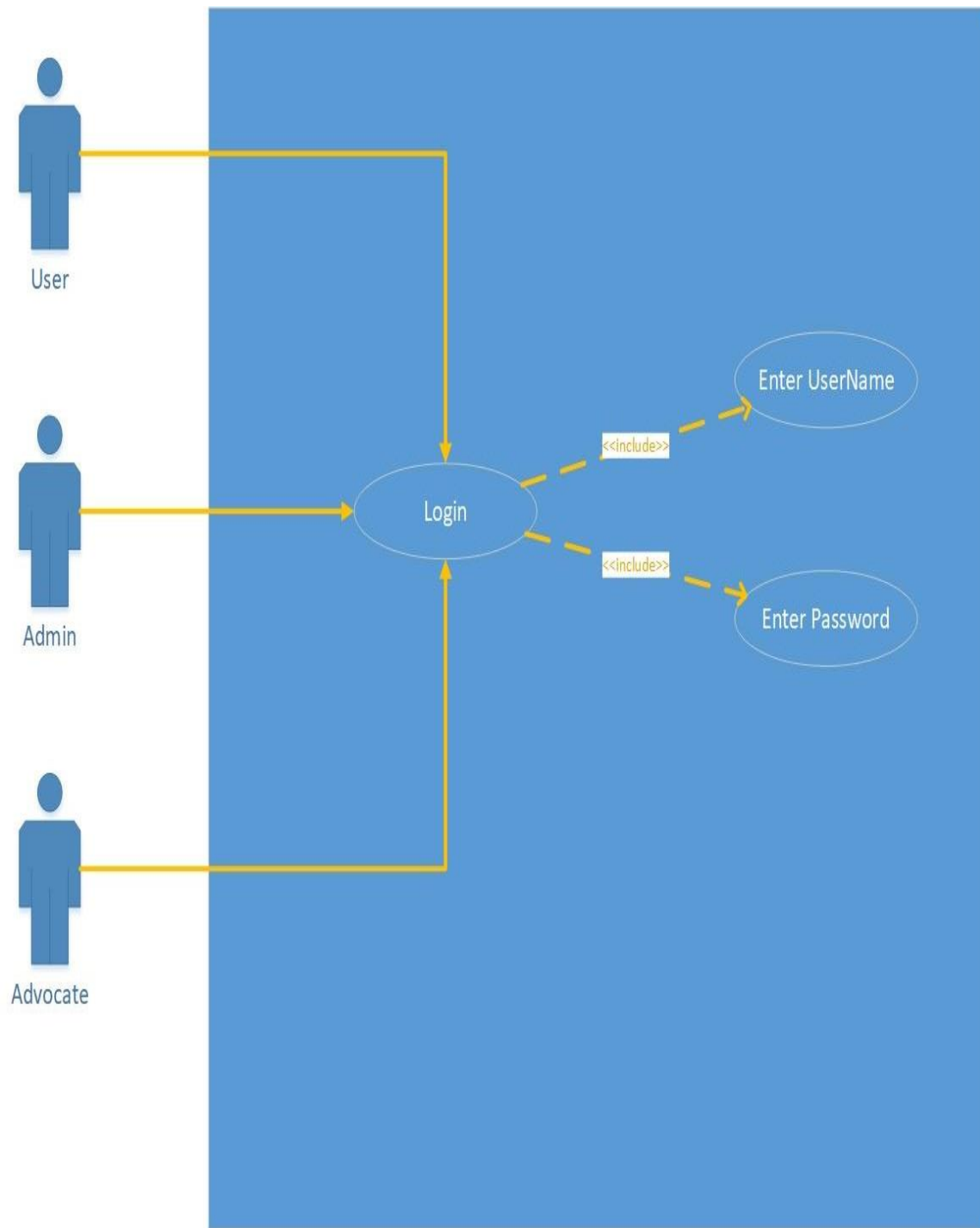


Figure 2-2: Use Case -UC02-Login

Figure 2-2 above shows the Use Case-UC02-Login Diagram.

### 2.5.3 Search Case

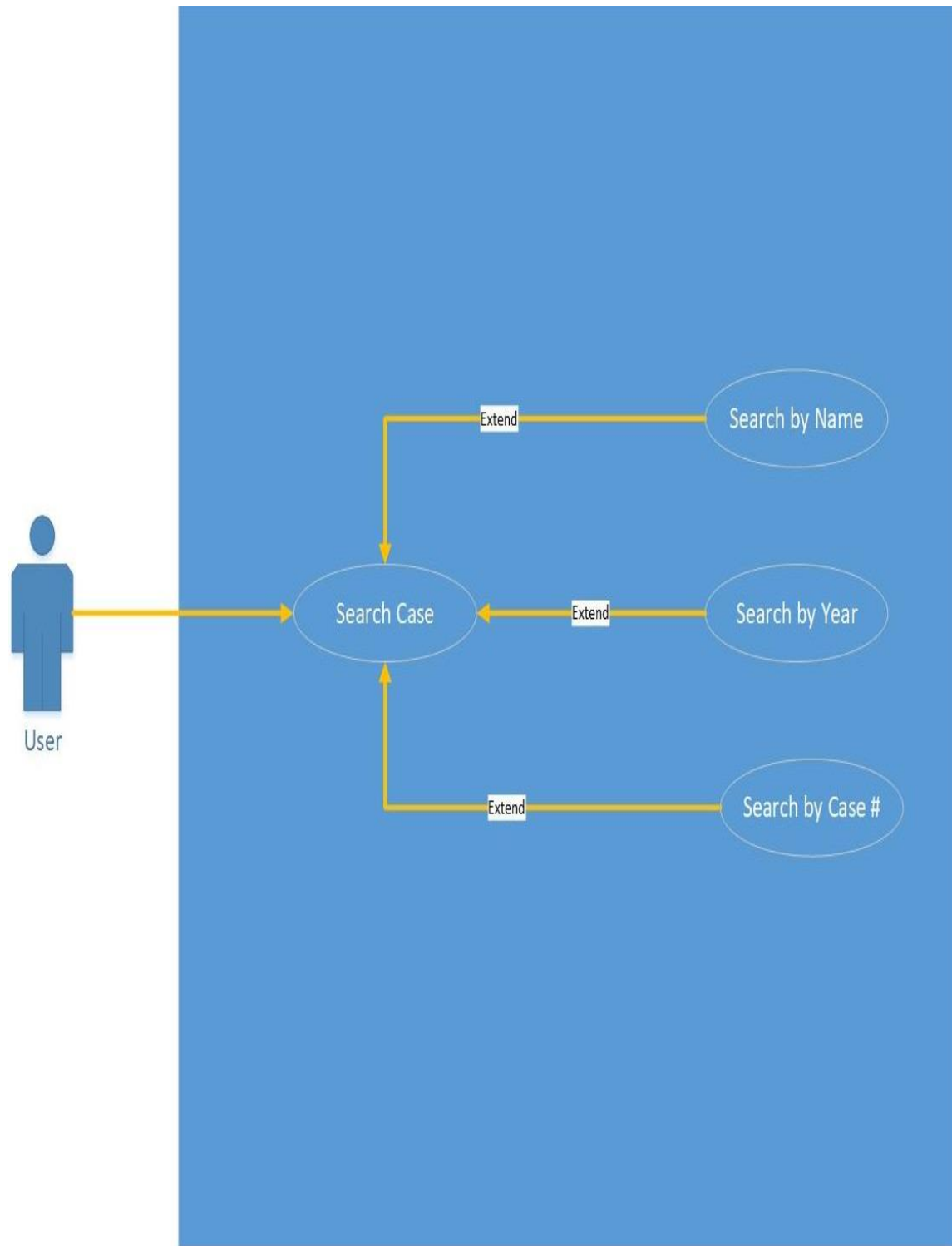


Figure 2-3: Use Case-UC03-Search Case

Figure 2-3 above shows the Use Case-UC03-Search Case Diagram.

#### 2.5.4 View Case Information

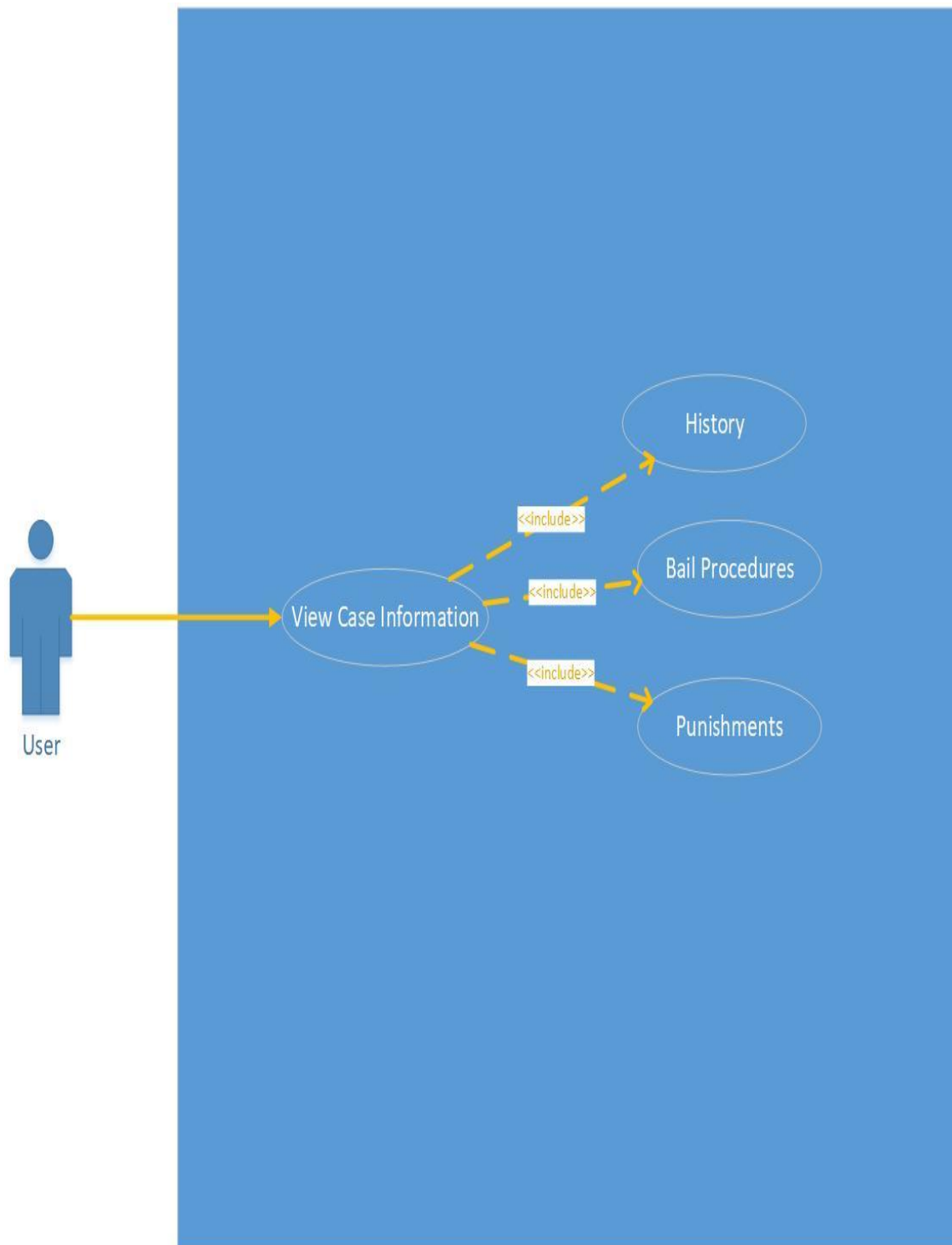


Figure 2-4: Use Case-UC04-View Case Information

Figure 2-4 above shows the Use Case-UC04-View Case Information Diagram.

### 2.5.5 View Related Documents

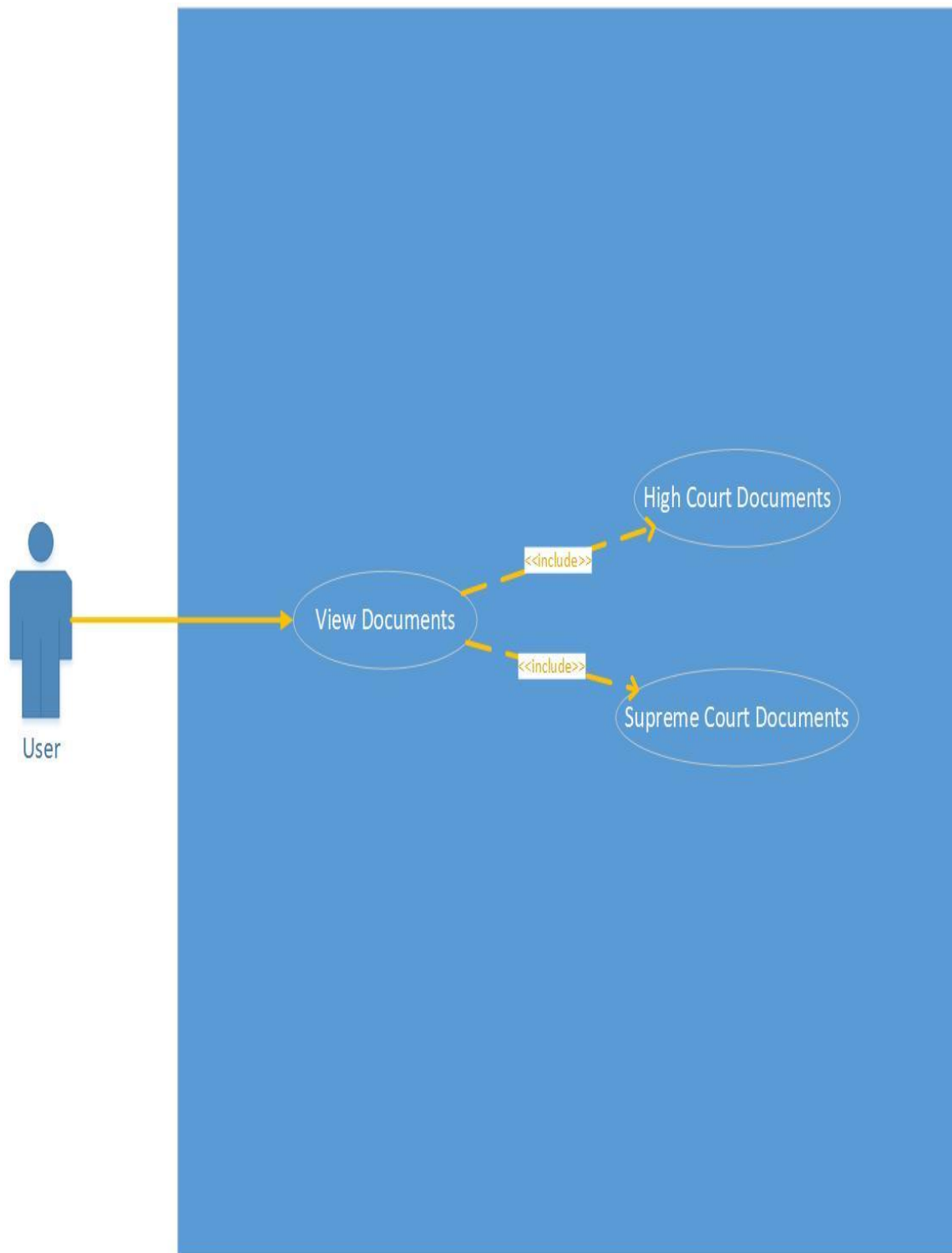


Figure 2-5: Use Case-UC05-View Related Documents

Figure 2-5 above shows the Use Case-UC05-View Related Documents Diagram.

### 2.5.6 View Previous Cases

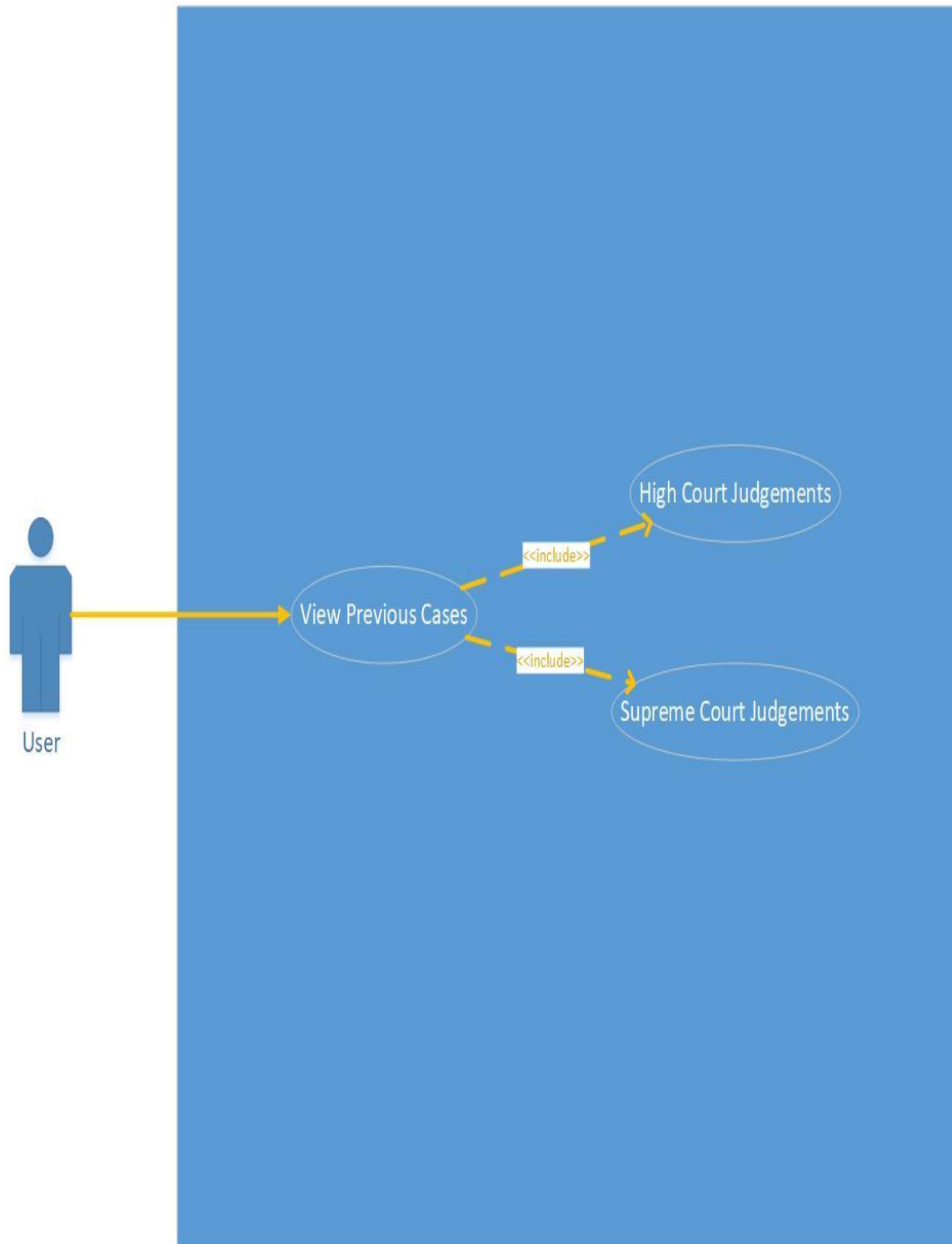


Figure 2-6: Use Case-UC06-View Previous Cases

Figure 2-6 above shows the Use Case-UC06-View Previous Cases Diagram.

### 2.5.7 View Advocates

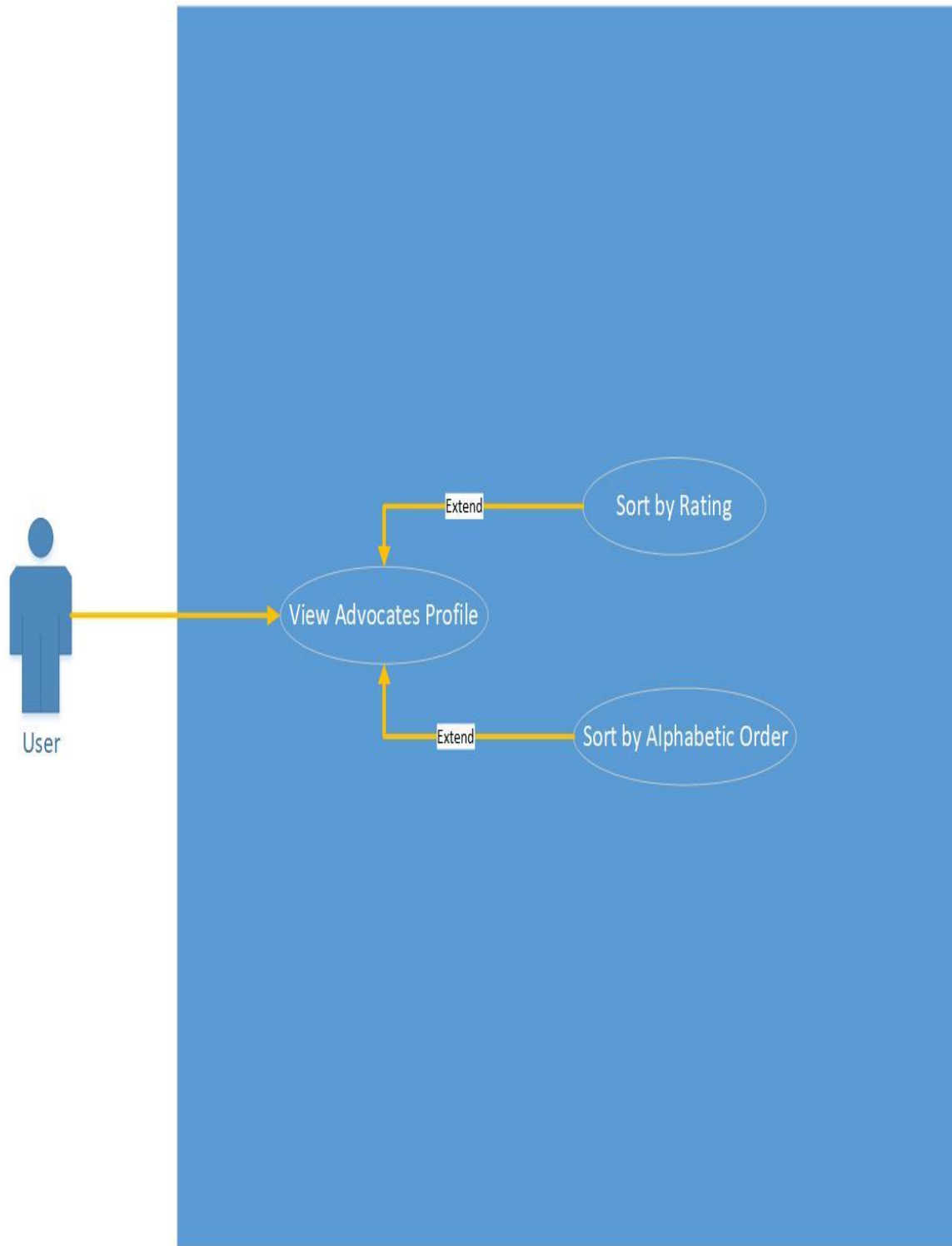


Figure 2-7: Use Case-UC07-View Advocates

Figure 2-7 above shows the Use Case-UC07-View Advocates Diagram.



### 2.5.8 User Panel

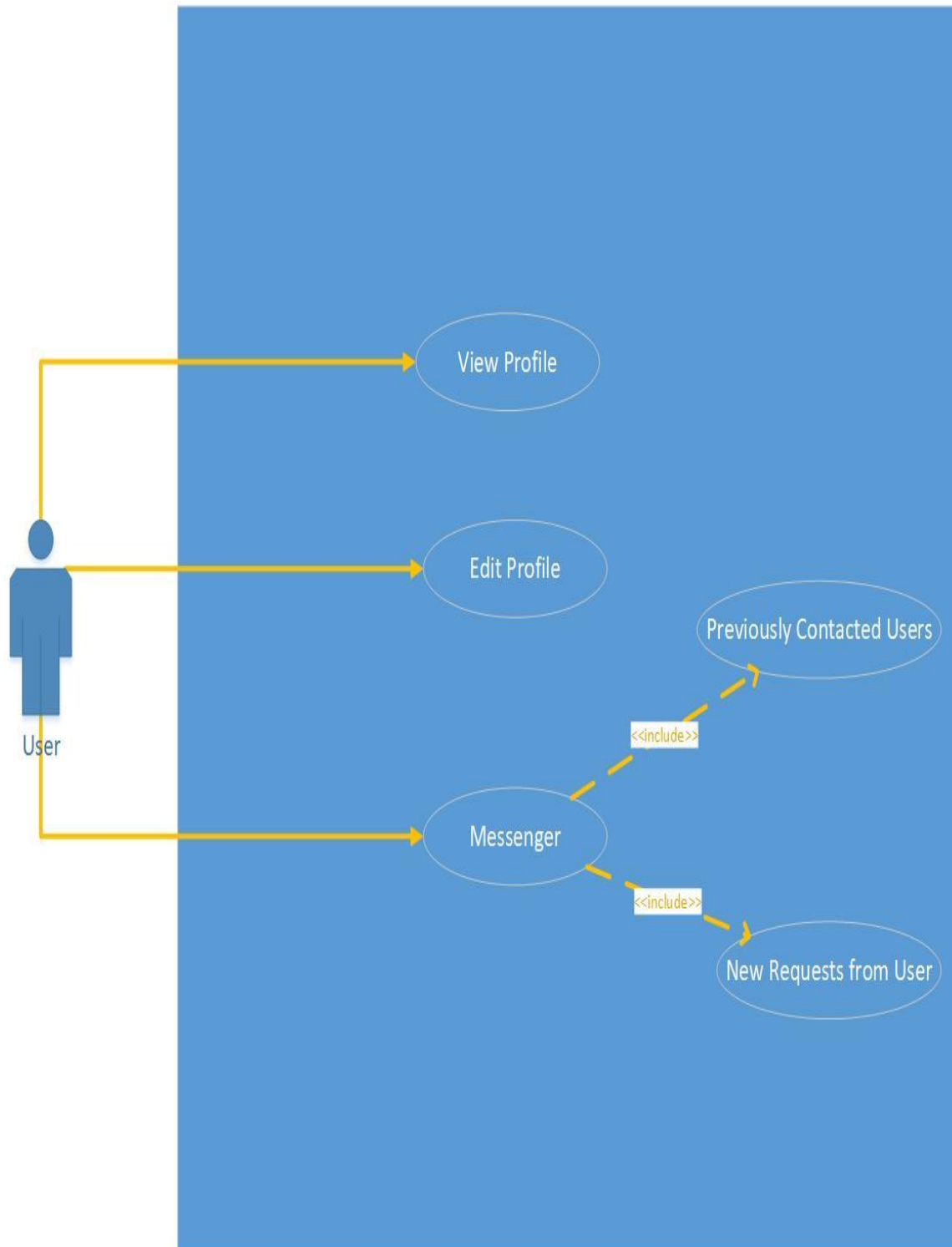


Figure 2-8: Use Case-UC08-User Panel

Figure 2-8 above shows the Use Case-UC08-User Panel Diagram.

### 2.5.9 Advocate Panel

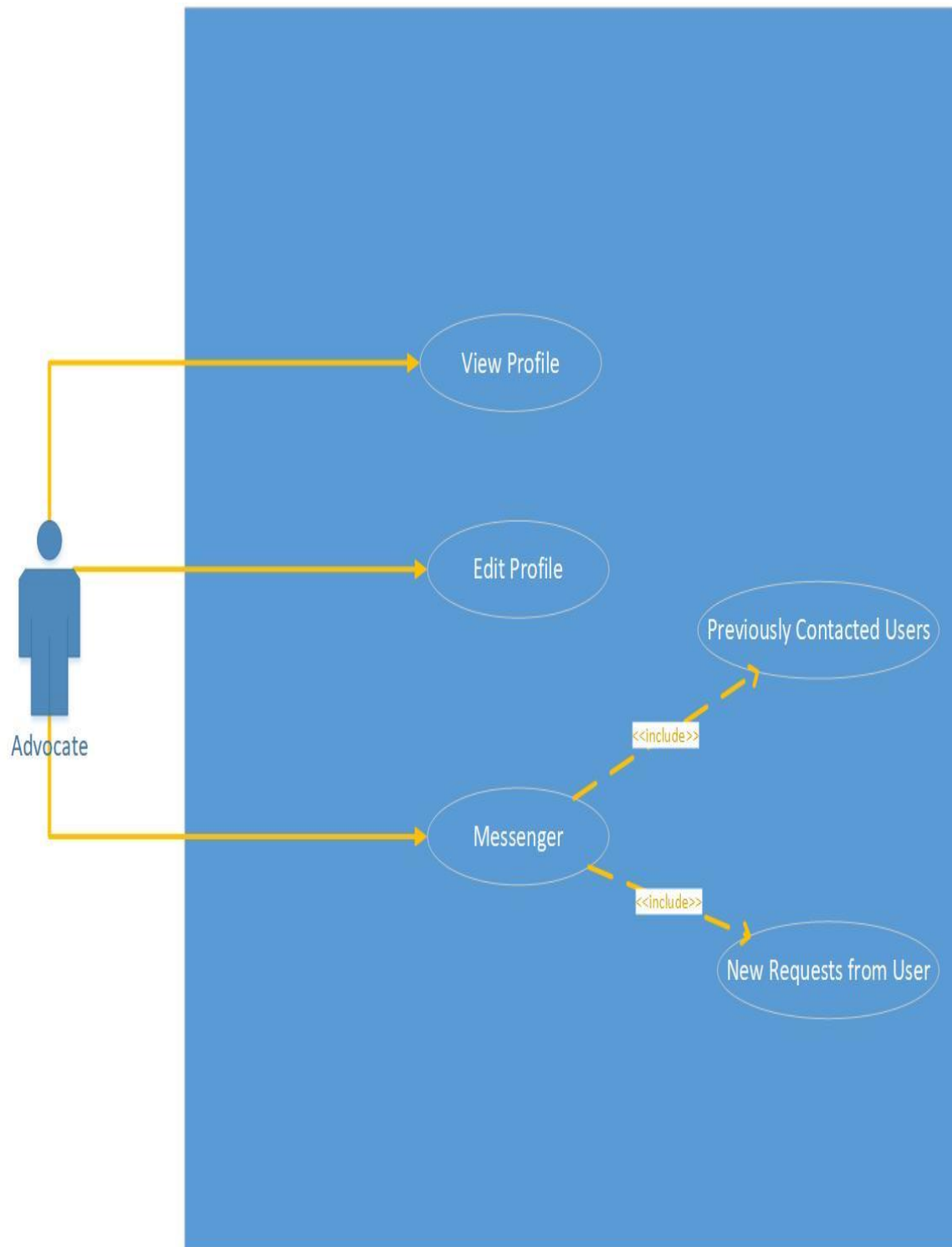


Figure 2-9: Use Case-UC09-Advocate Panel

Figure 2-9 above shows the Use Case-UC09-Advocate Panel Diagram.

### 2.5.10 Admin Panel

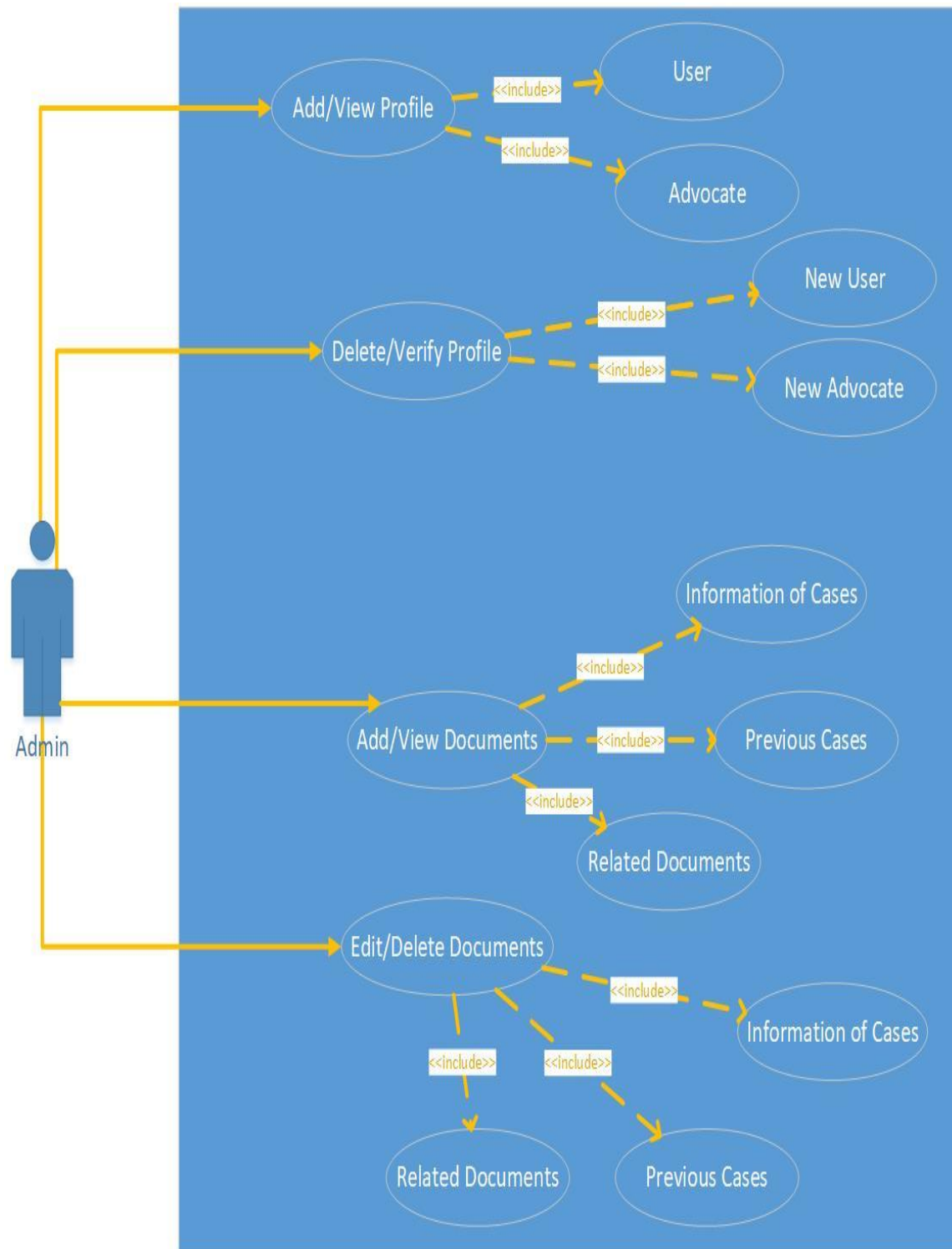


Figure 2-10: Use Case-UC10-Admin Panel

Figure 2-10 above shows the Use Case-UC10-Admin Panel Diagram.

## 2.6 Software Development Life Cycle Model

A **Prototype model** is a physical or digital representation of a product or system that is used to test and demonstrate its functionality and design. It is an early version of the product or system that is used to gather feedback and make improvements before the final version is developed.

We used **Prototype** model in our application.

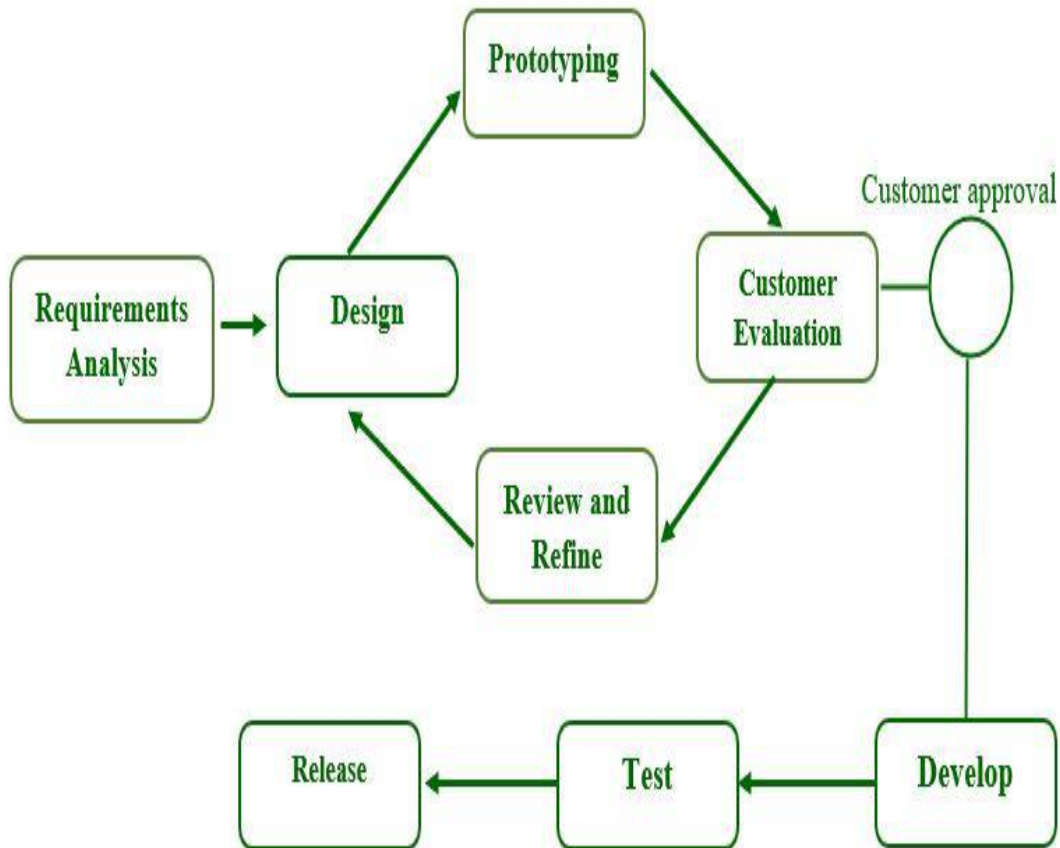


Figure 2-11: SDLC Model

Figure 2-11 above shows the Software Development Life Cycle Model Diagram.

### 3. System Design

System design is the process of defining the components, modules, interfaces, and data for a system to satisfy specified requirements. It involves designing the structure and behaviour of the system, as well as the hardware and software that will be used to build it.

#### 3.1 Work Breakdown Structure (WBS)

A work breakdown structure (WBS) is a hierarchical decomposition of the work that needs to be done in a project. It breaks down the project into smaller, manageable units called work packages, which are further broken down into tasks. The WBS is used to define the scope of the project and to create a clear and organized plan for completing the work.

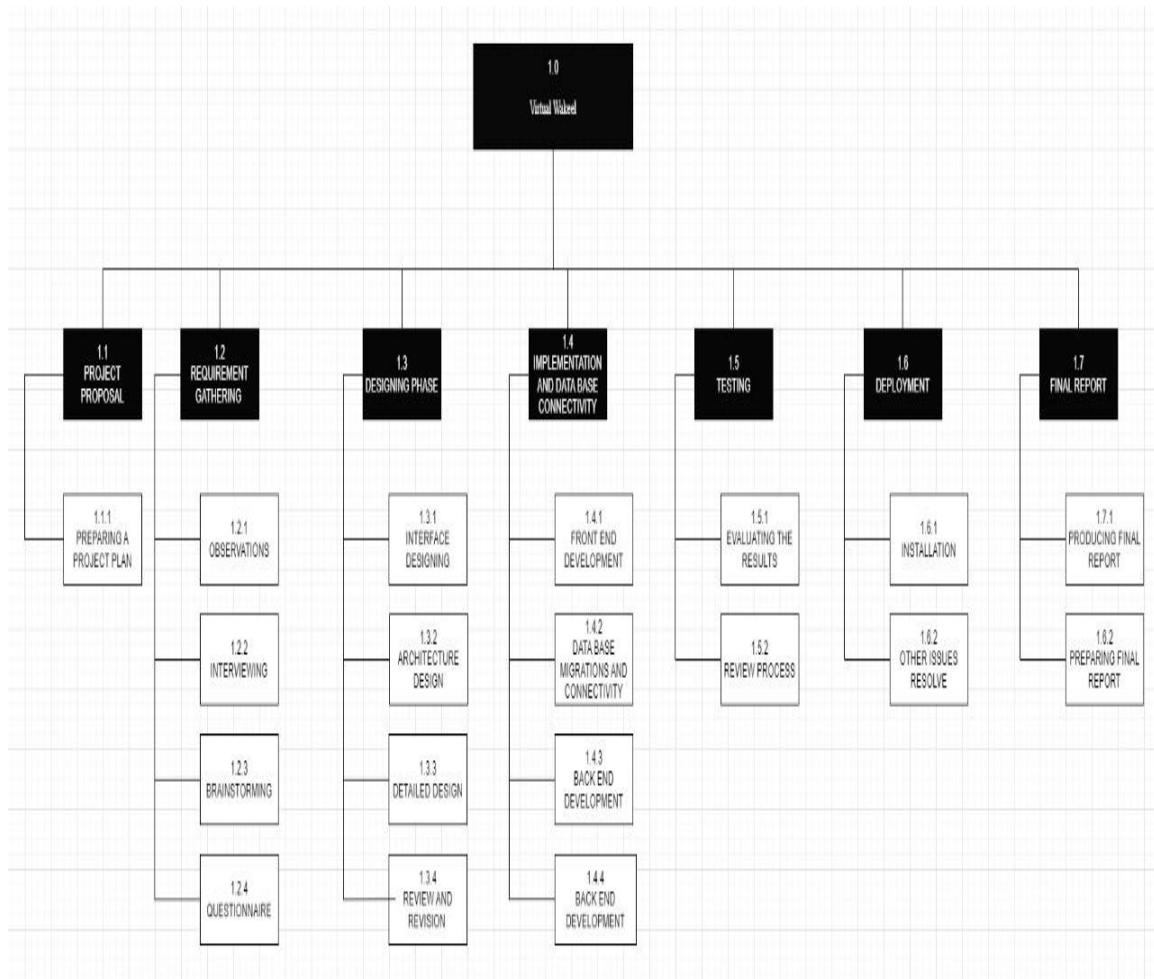


Figure 3-1: Work Breakdown Structure (WBS)

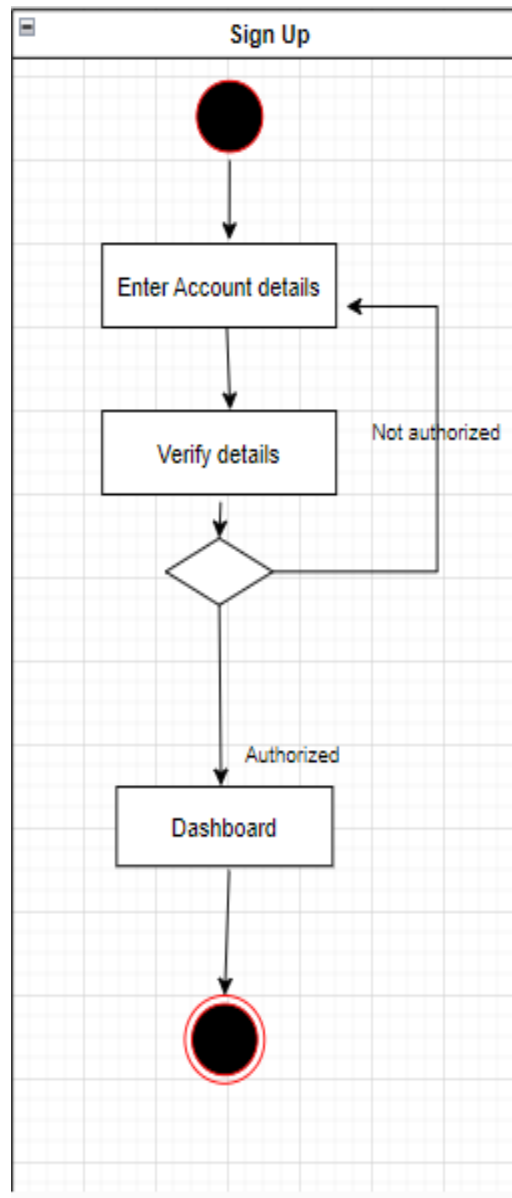
Figure 3-1 above shows the Work Breakdown Structure (WBS) Diagram.

## 3.2 Activity Diagram

An activity diagram is a type of flowchart that is used to represent the flow of activities in a process or system. It is a graphical representation of the steps that need to be taken to complete a task or process.

Activity diagrams are useful for showing the flow of activities in a process or system and for identifying bottlenecks or inefficiencies in the process. They are often used in conjunction with other types of diagrams, such as state diagrams and sequence diagrams, to provide a complete picture of a system or process.

### 3.2.1 Sign Up



*Figure 3-2: Activity Diagram-Sign Up*

Figure 3-2 above shows the Activity Diagram-Sign Up.

### 3.2.2 Login

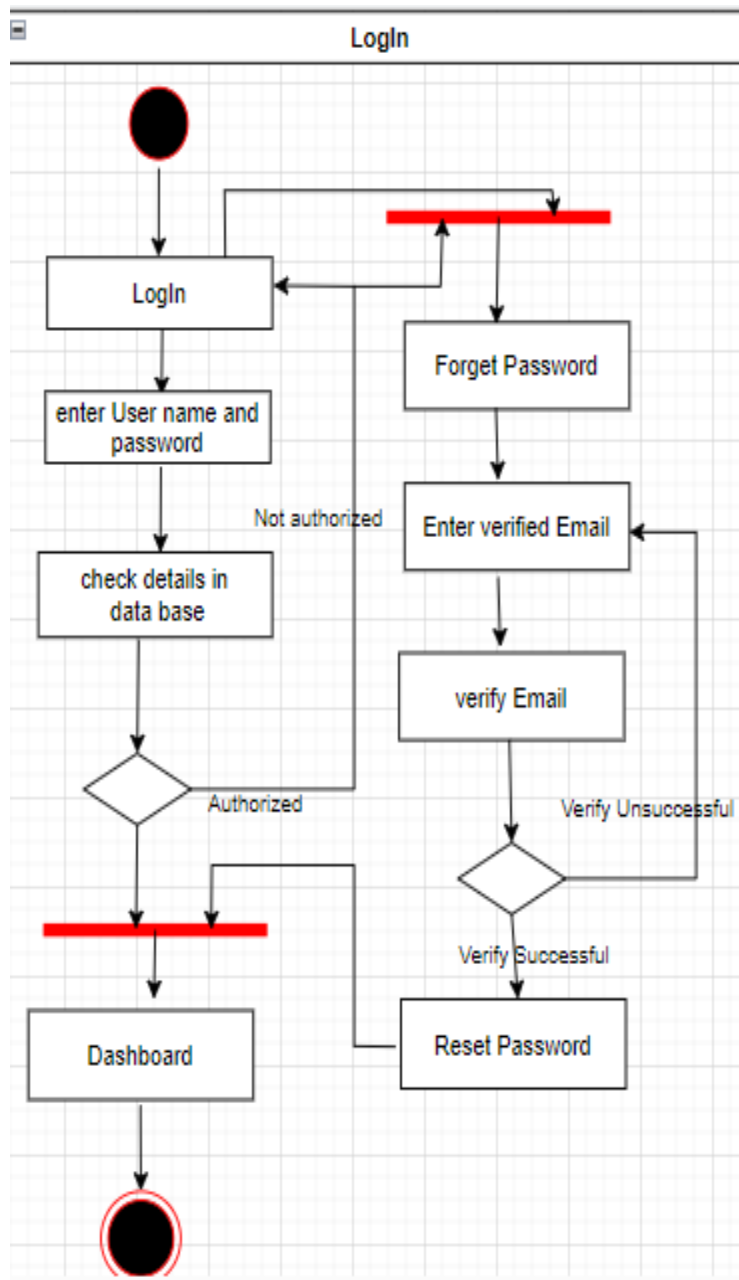


Figure 3-3: Activiy Diagram-Login

Figure 3-3 above shows the Activity Diagram-Login.

### 3.2.3 Users

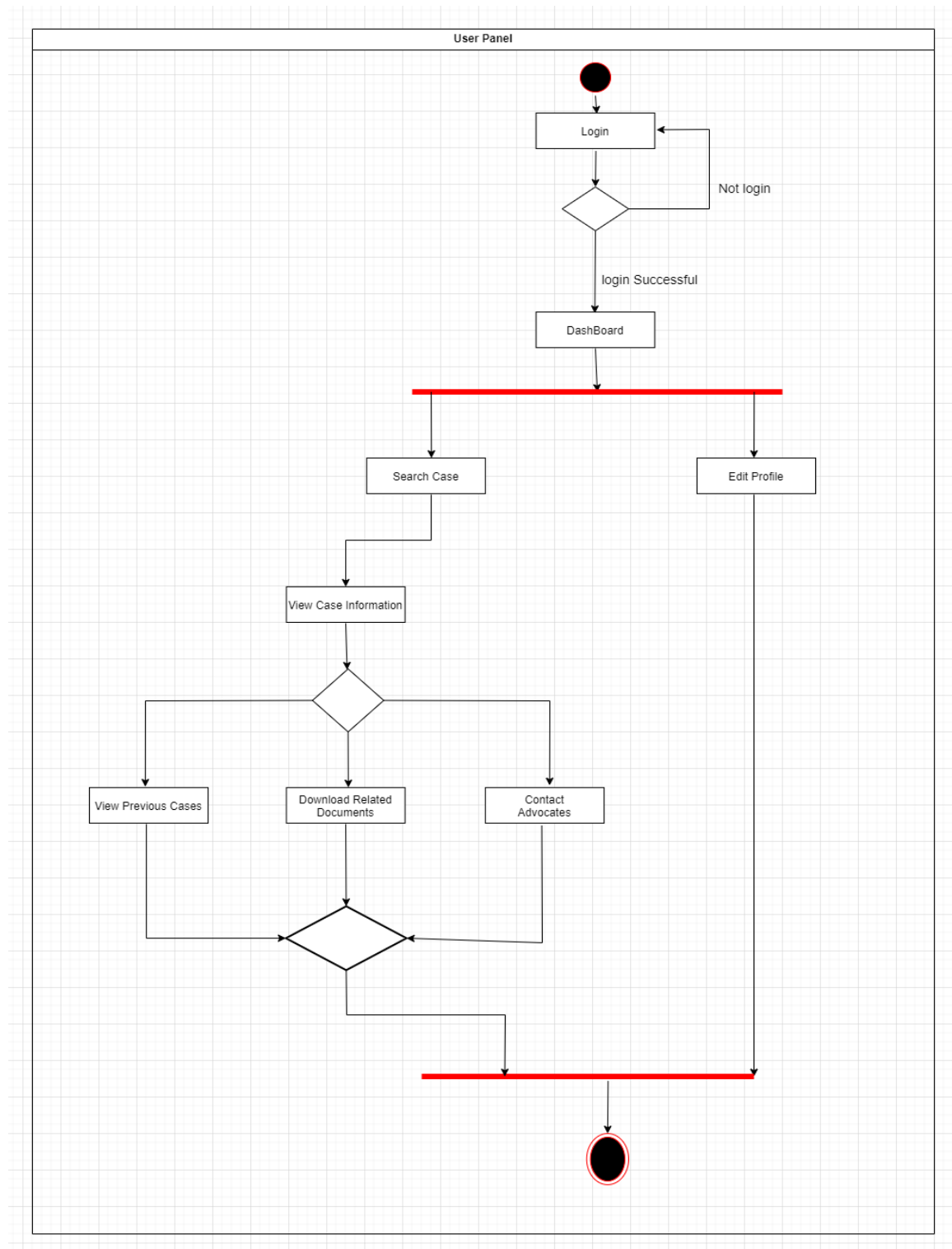


Figure 3-4: Activiy Diagram-Users

Figure 3-4 above shows the Activity Diagram-Users.



### 3.2.4 Advocate

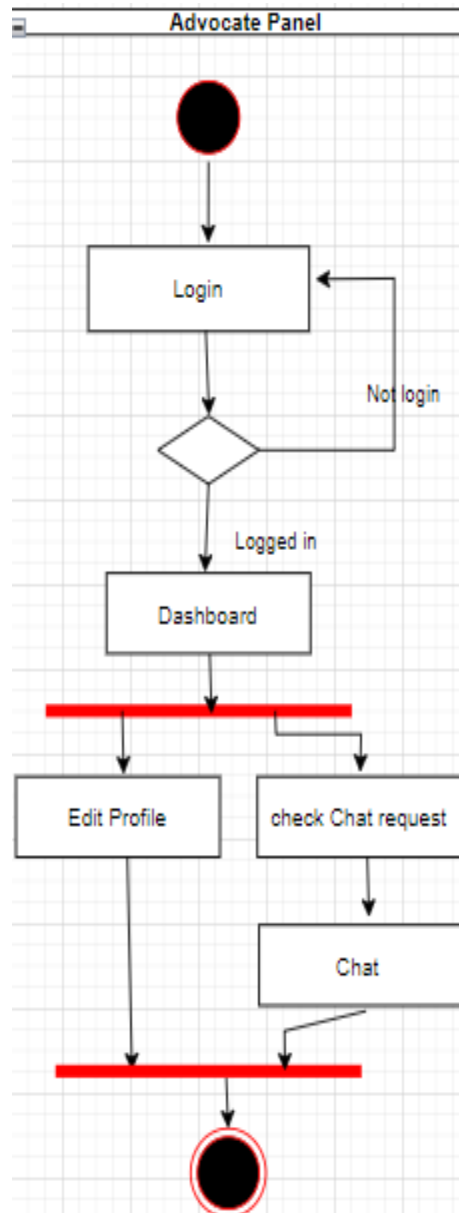


Figure 3-5: Activiy Diagram-Advocate

Figure 3-5 above shows the Activity Diagram-Advocate.

### 3.3 Sequence Diagram

A sequence diagram is a type of interaction diagram that shows the interactions between objects or components in a system or process. It is a graphical representation of the flow of messages between objects and is used to model the interactions between objects in a system or process.

Sequence diagrams are useful for showing the interactions between objects in a system or process and for identifying the flow of control and information exchange. They are often used in

conjunction with other types of diagrams, such as activity diagrams and state diagrams, to provide a complete picture of a system or process.

### 3.3.1 Sign Up

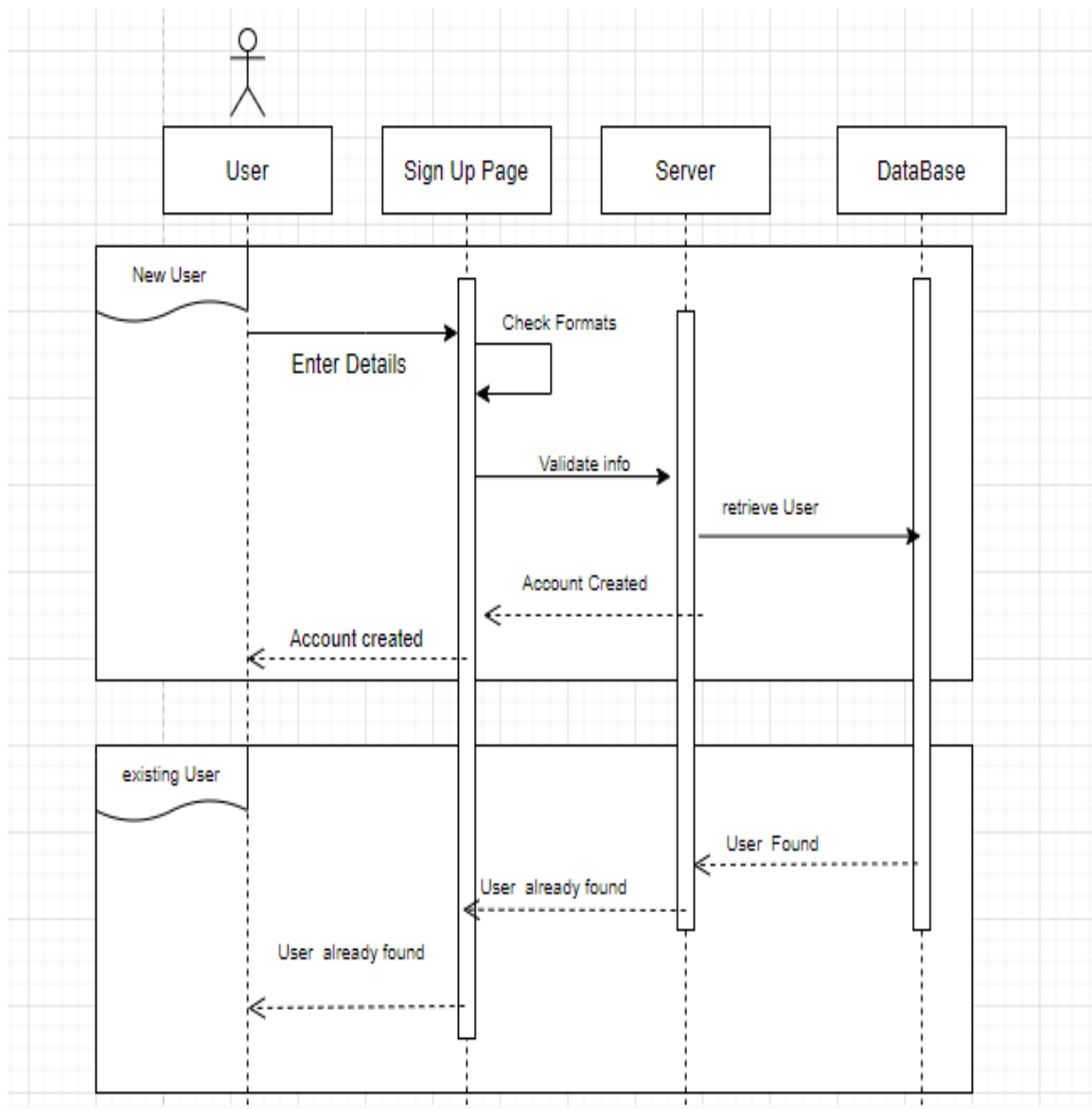


Figure 3-6: Sequence Diagram-Sign Up

Figure 3-6 above shows the Sequence Diagram-Sign Up.

### 3.3.2 Login

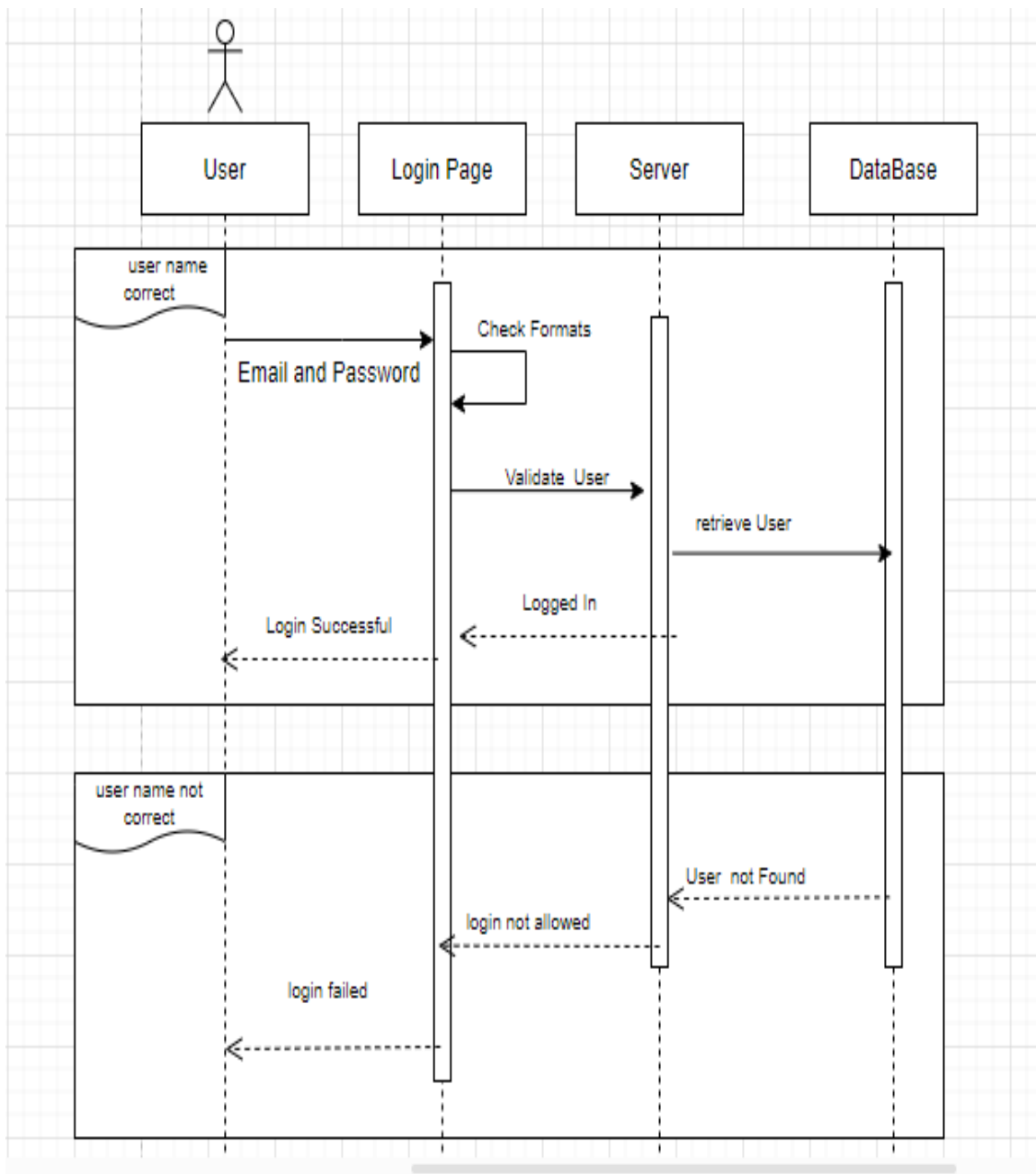


Figure 3-7: Sequence Diagram-Login

Figure 3-7 above shows the Sequence Diagram-Login.

### 3.3.3 Search Case

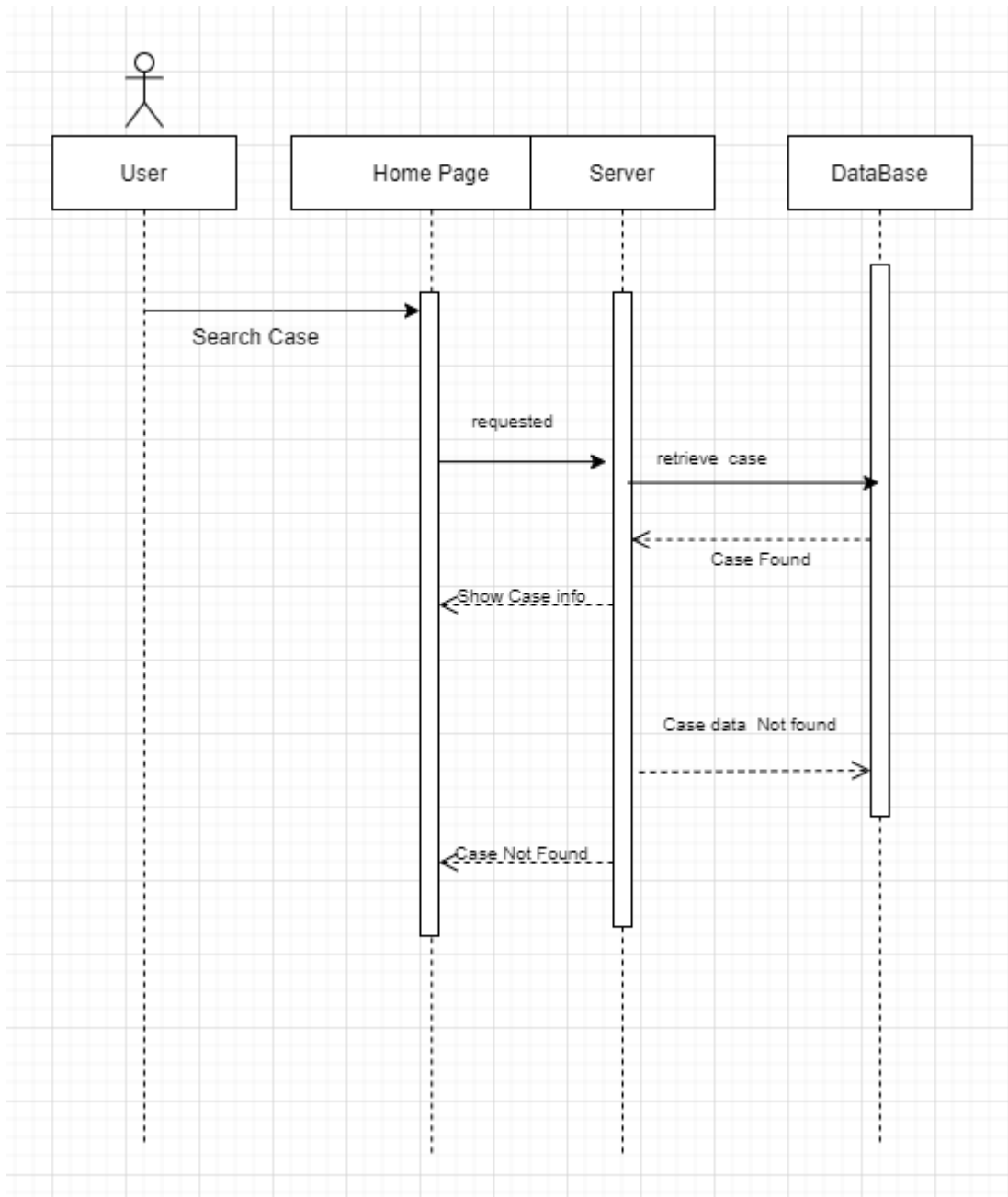


Figure 3-8: Sequence Diagram-Search Case

Figure 3-8 above shows the Sequence Diagram-Search Case.

### 3.3.4 View Related Documents

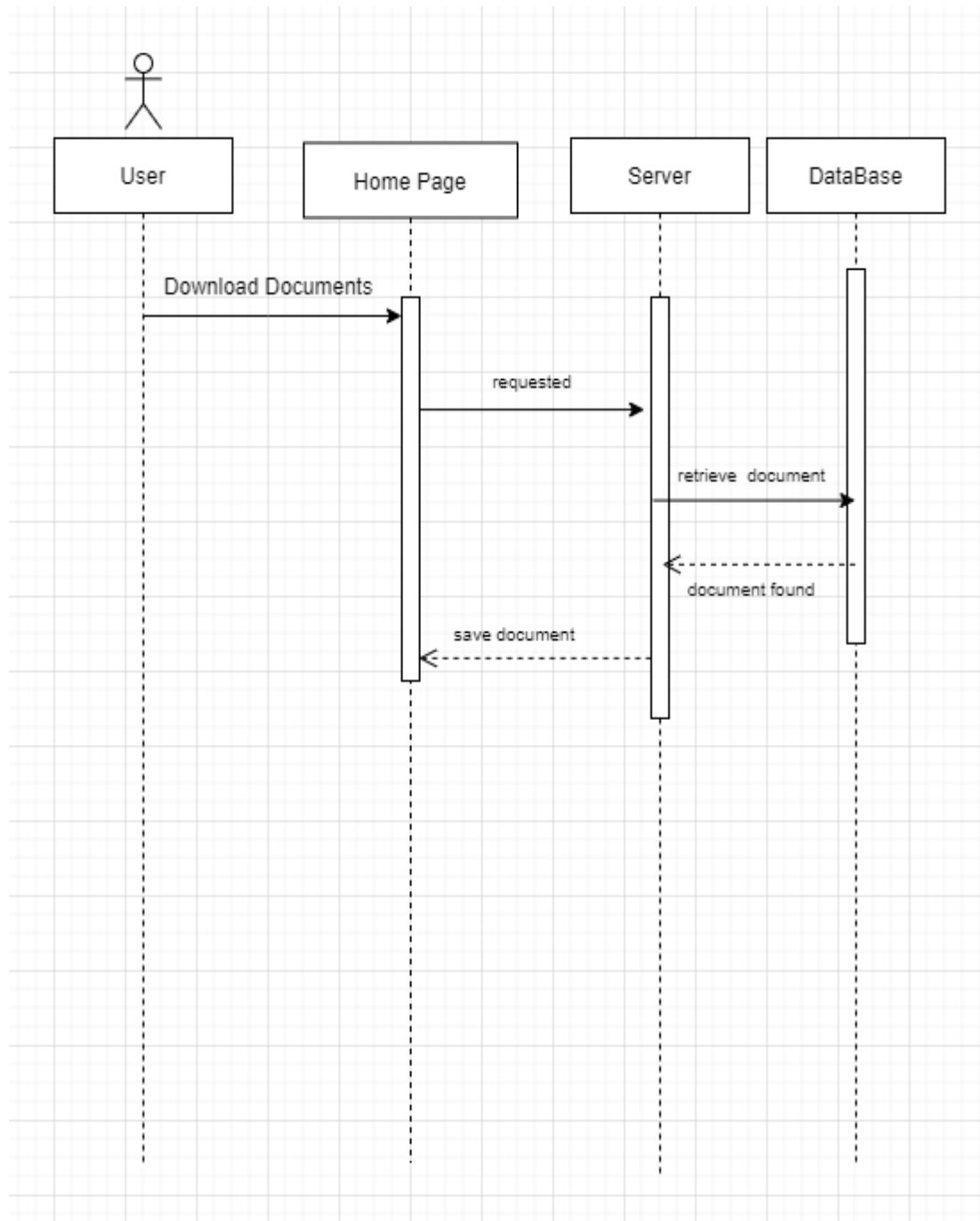


Figure 3-9: Sequence Diagram-View Related Documents

Figure 3-9 above shows the Sequence Diagram-View Related Documents.

### 3.3.5 View Previous Cases

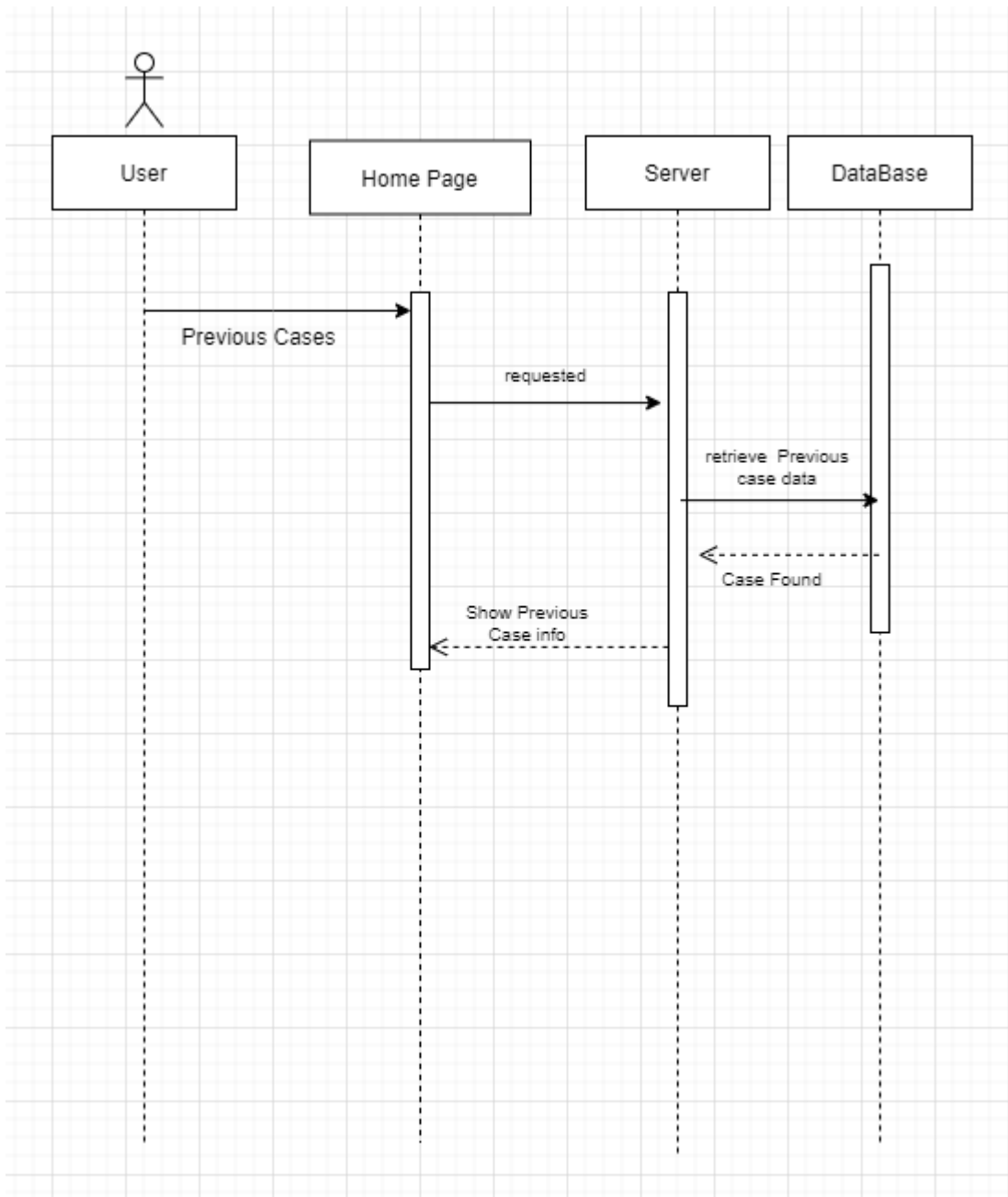


Figure 3-10: Sequence Diagram-View Previous Cases

Figure 3-10 above shows the Sequence Diagram-View Previous Cases.

### 3.3.6 Messenger

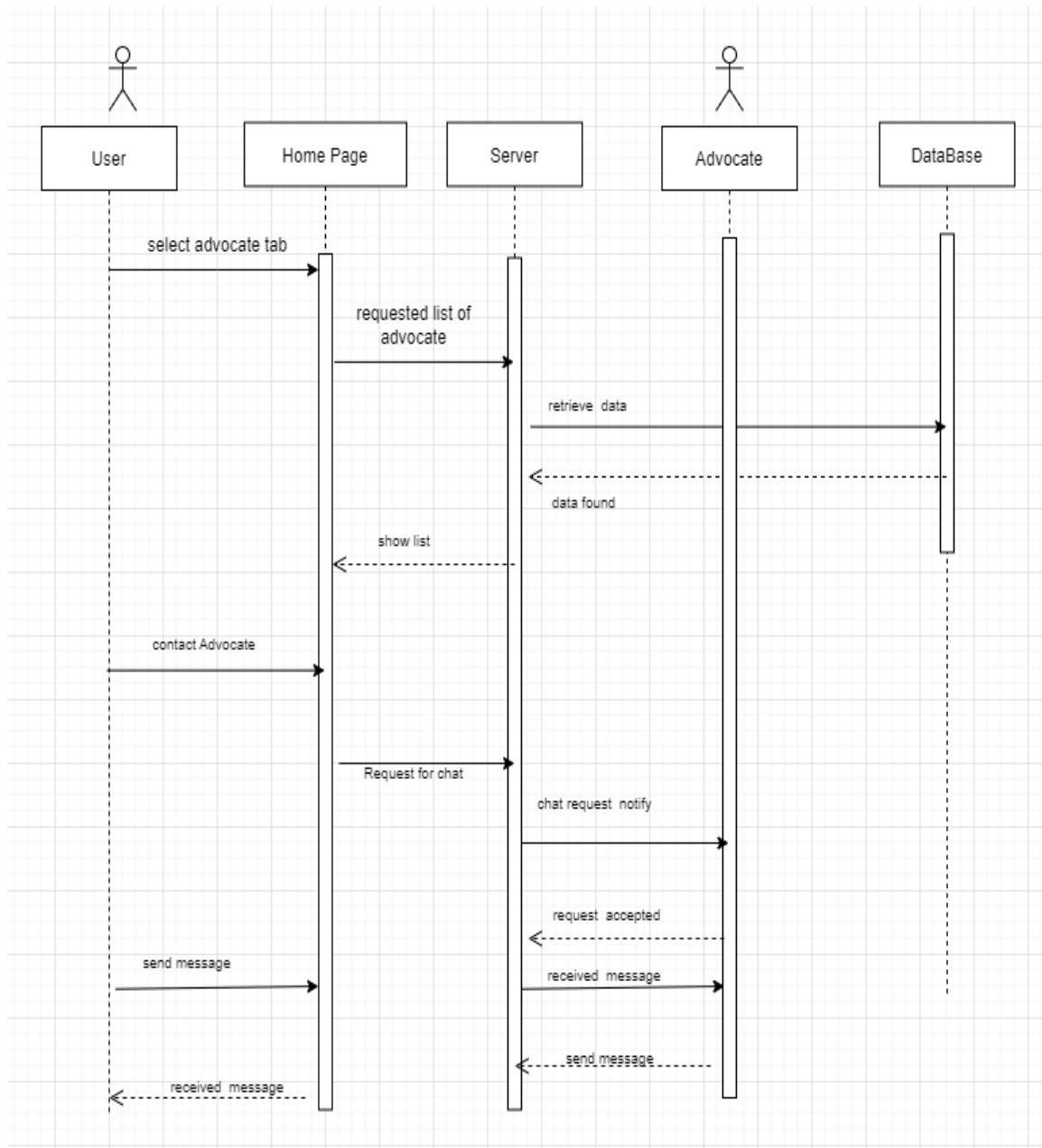


Figure 3-11: Sequence Diagram-Messenger

Figure 3-11 above shows the Sequence Diagram-Messenger.

## 3.4 Software Architecture

Software architecture refers to the high-level structure of a software system and the way that it is designed to meet the requirements of the stakeholders. It includes the software components, their relationships, and the principles that guide their design and evolution.

Software architecture is an important aspect of software development as it provides a blueprint for the design and implementation of a software system. It helps to ensure that the system is scalable, maintainable, and able to meet the needs of the end users.

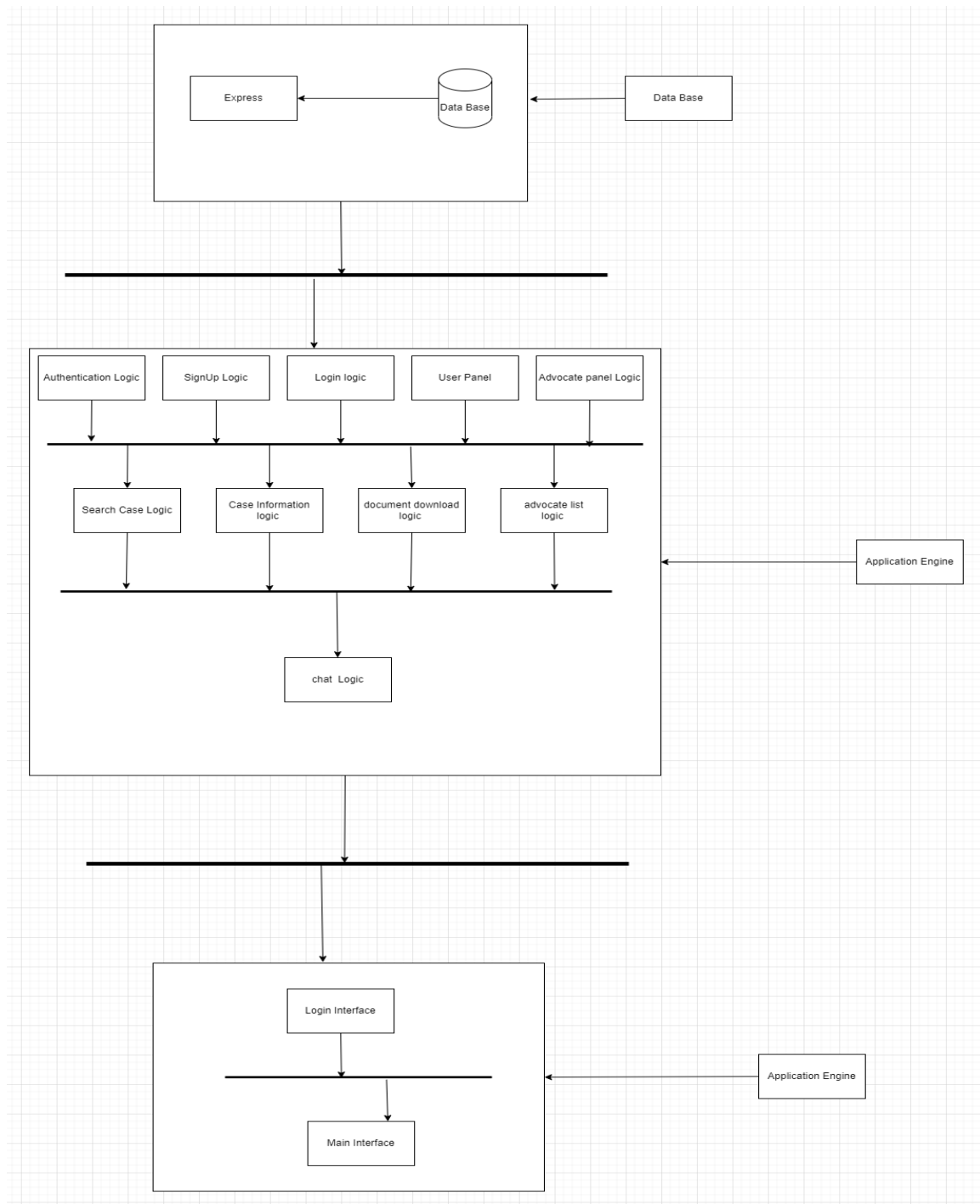


Figure 3-12: System Architecture Diagram

Figure 3-12 above shows the System Architecture Diagram.



### 3.5 Class Diagram

Not Applicable due to MERN Stack.

### 3.6 Database Diagram

A database diagram is a graphical representation of a database schema. It shows the relationships between the different tables and columns in the database and is used to design and visualize the structure of a database.

Database diagrams are useful for designing and visualizing the structure of a database and for understanding the relationships between the different tables and columns. They are often used in conjunction with other types of diagrams, such as entity-relationship diagrams, to provide a complete picture of the database schema.

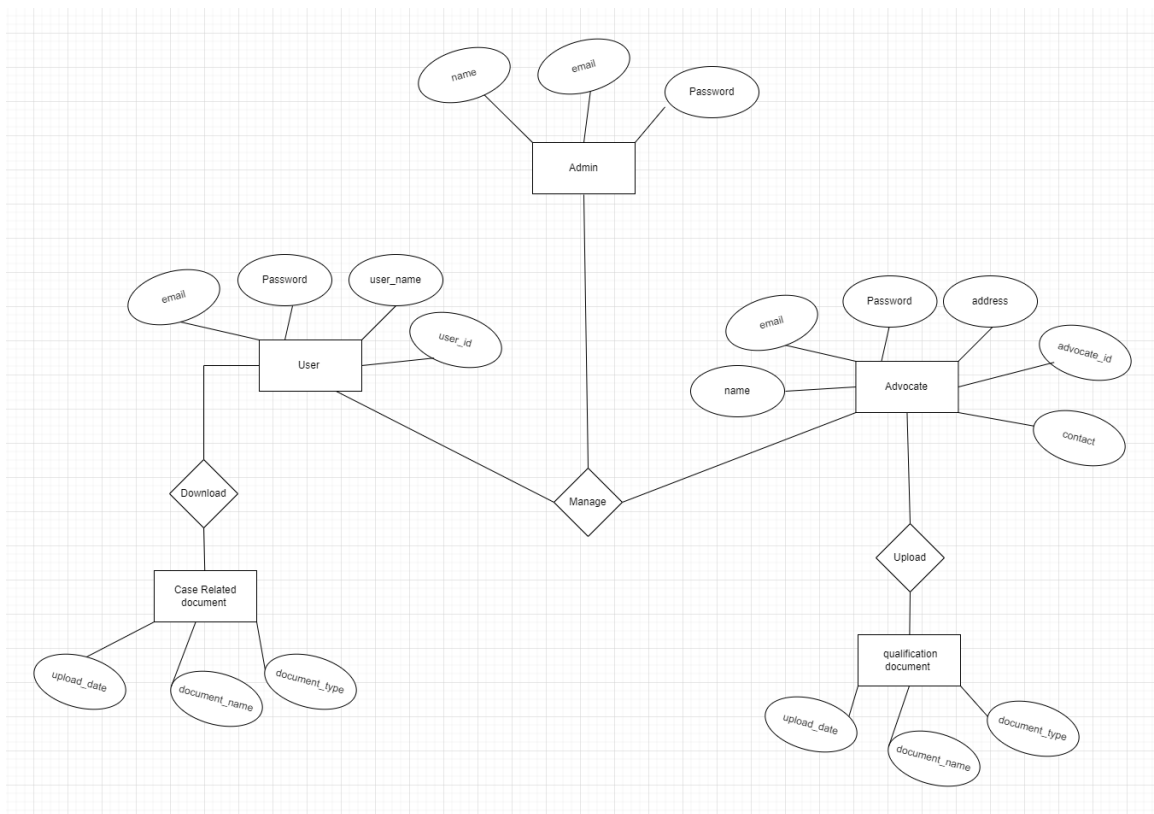


Figure 3-13: Database Diagram

Figure 3-13 above shows the Database Diagram.

### 3.7 Network Diagram (Gantt Chart)

A Gantt chart is a graphical representation of a project schedule. It shows the tasks that need to be completed, the start and end dates for each task, and the dependencies between tasks. It is a common tool used in project management to track the progress of a project and to identify any delays or issues.

Gantt charts are useful for visualizing the project schedule and for tracking the progress of a project. They can be used to identify any delays or issues and to adjust the project plan as needed. Gantt charts are commonly used in conjunction with other project management tools, such as a project charter and a project management plan.

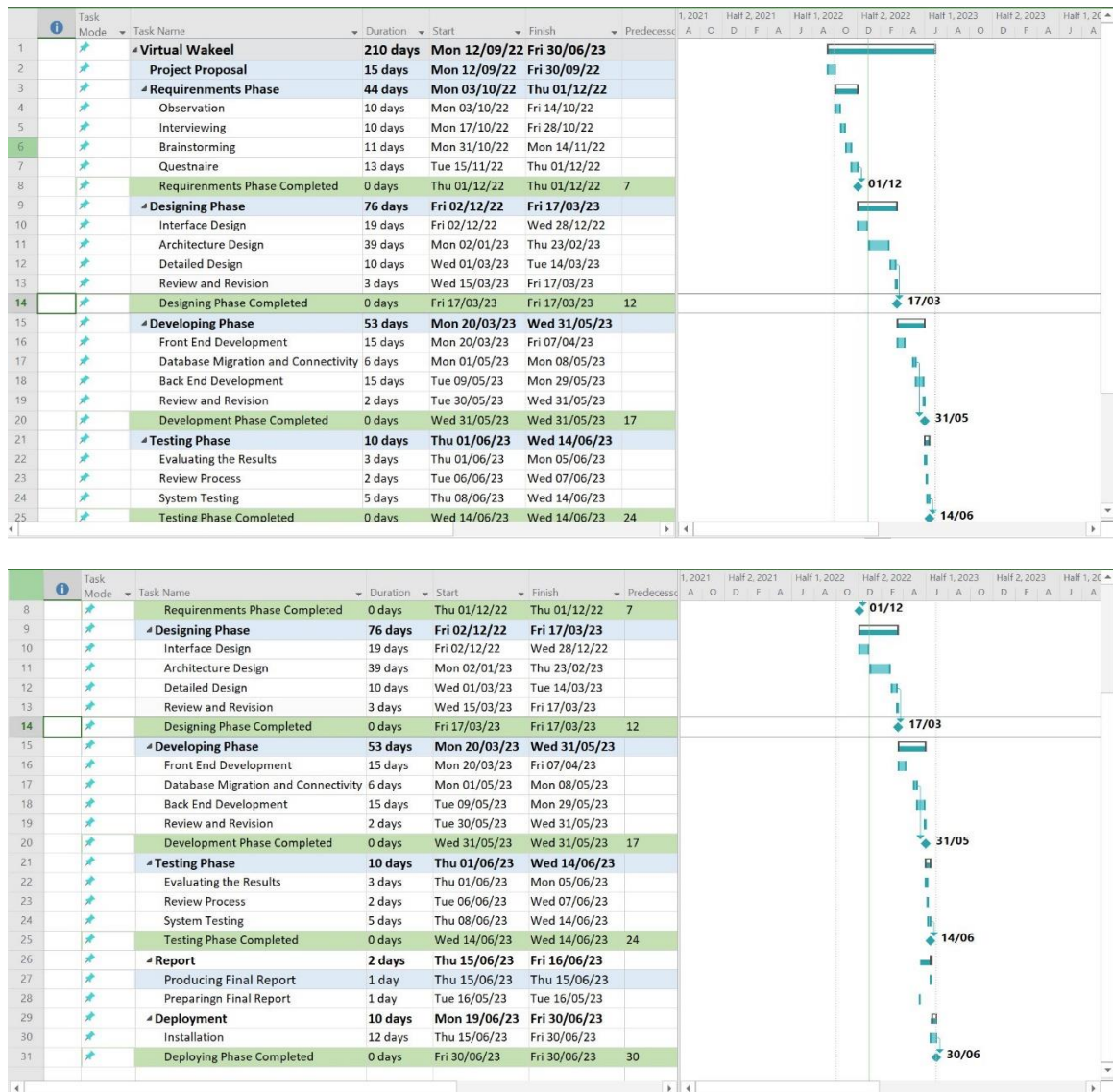


Figure 3-14: Gantt Chart

Figure 3-14 above shows the Gantt Chart.

### 3.8 Collaboration Diagram

A collaboration diagram is a type of interaction diagram that shows the interactions between objects or components in a system or process. It is similar to a sequence diagram, but it focuses on the relationships between the objects rather than the flow of messages between them.

Collaboration diagrams are useful for showing the relationships between objects in a system or process and for identifying the flow of control and information exchange. They are often used in

conjunction with other types of diagrams, such as activity diagrams and state diagrams, to provide a complete picture of a system or process.

### 3.8.1 Sign Up

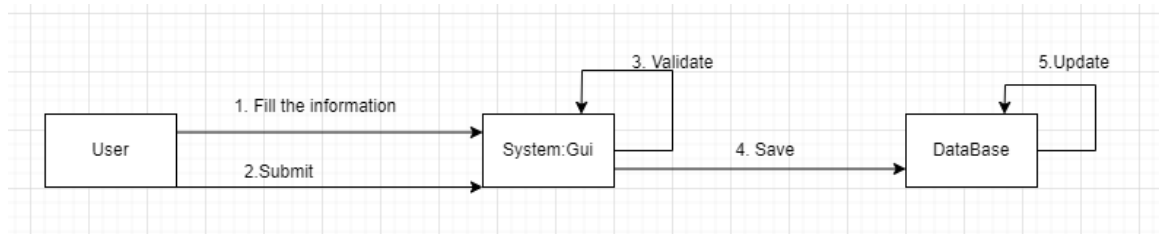


Figure 3-15: Collaboration Diagram-Sign Up

Figure 3-15 above shows the Collaboration Diagram-Sign Up.

### 3.8.2 Login

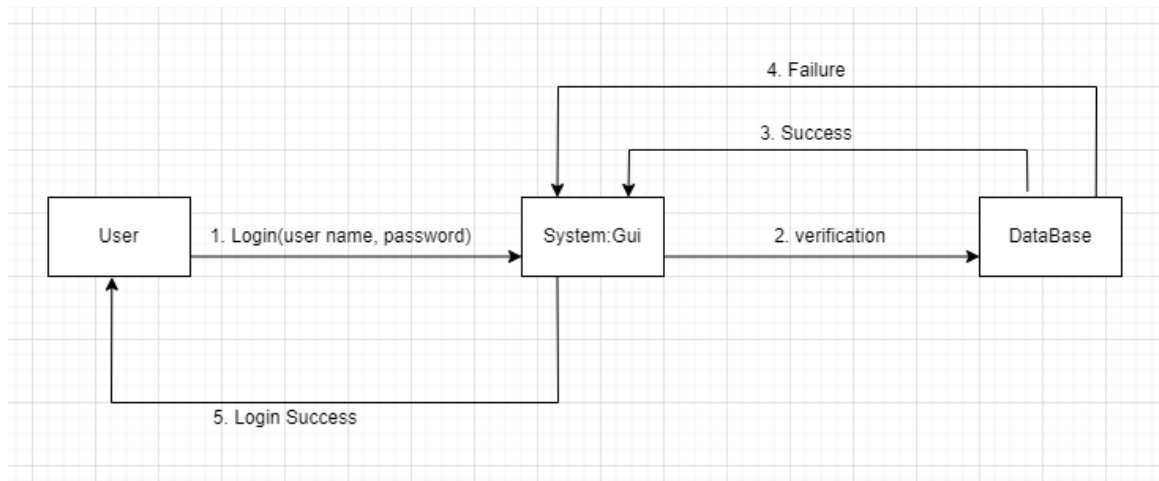


Figure 3-16: Collaboration Diagram-Login

Figure 3-16 above shows the Collaboration Diagram-Login.

### 3.8.3 Search Case

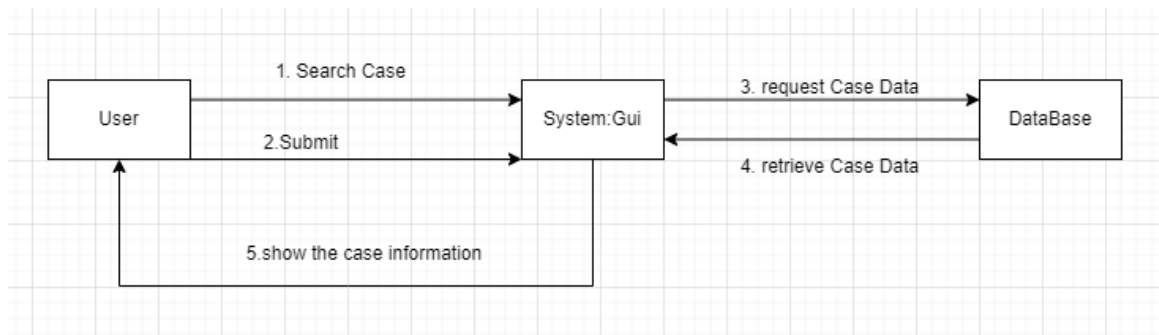


Figure 3-17: Collaboration Diagram-Search Case

Figure 3-17 above shows the Collaboration Diagram-Search Case.

### 3.8.4 View Related Documents

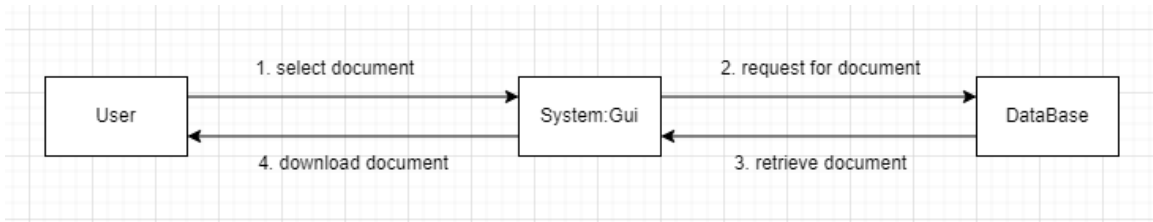


Figure 3-18: Collaboration Diagram-View Related Documents

Figure 3-18 above shows the Collaboration Diagram-View Related Documents.

### 3.8.5 View Previous Cases

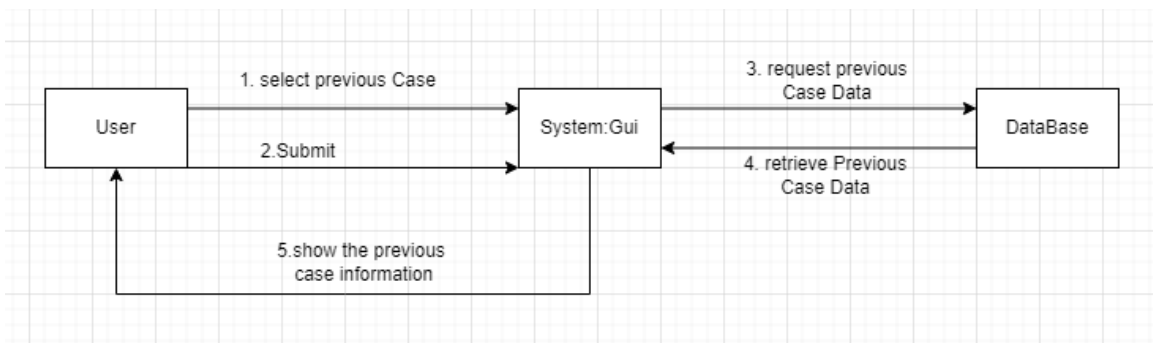
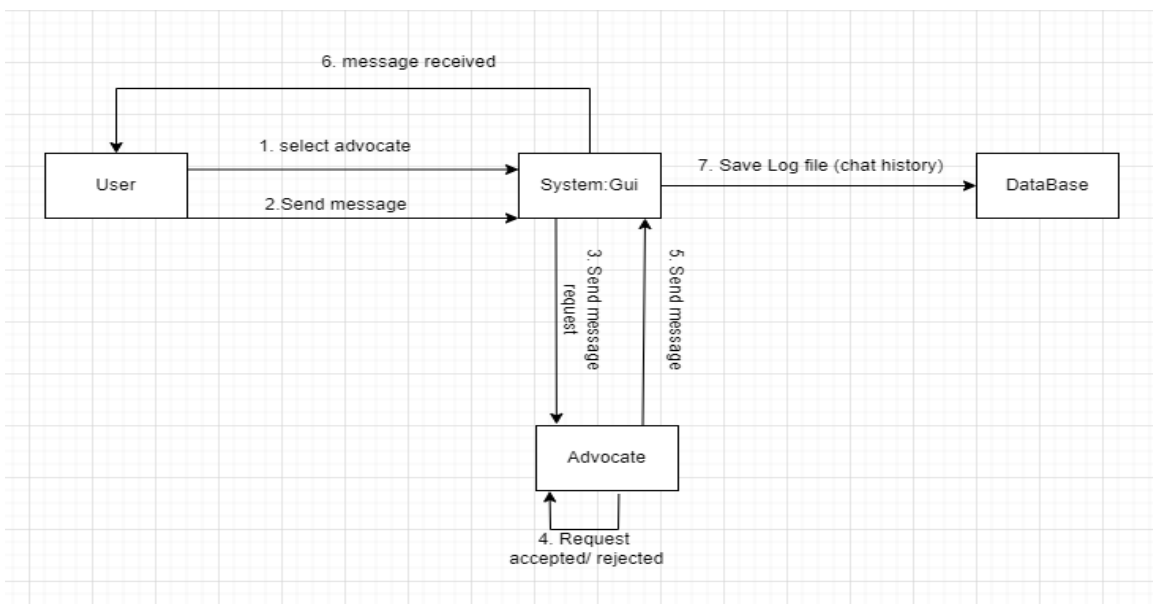


Figure 3-19: Collaboration Diagram-View Previous Cases

Figure 3-19 above shows the Collaboration Diagram-View Previous Case.

### 3.8.6 Messenger



3.8.6.1.1 Figure 3-20: Collaboration Diagram-Messenger

Figure 3-20 above shows the Collaboration Diagram-Messenger.

### 3.8.7 Advocate Panel

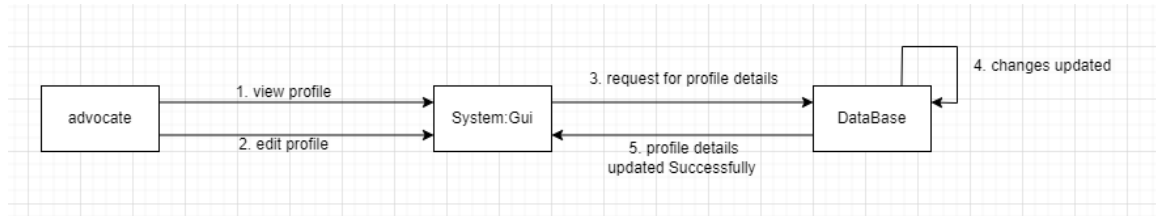


Figure 3-21: Advocate Panel

Figure 3-21 above shows the Collaboration Diagram-Advocate Panel.

## 4. System Testing

System testing is a type of software testing that focuses on testing a complete and integrated software product or system. It aims to validate that the system meets the specified requirements and is fit for purpose. System testing is usually done after the unit testing and integration testing phases, and it involves testing the system as a whole.

### 4.1 Test Cases

Test cases are sets of conditions or variables under which a tester will determine whether an application, system, or component is working correctly.

Test cases are an important part of the software testing process as they help to ensure that an application, system, or component is functioning correctly and meeting the requirements of the stakeholders. They are typically created by the tester and reviewed by the development team to ensure that they are comprehensive and accurate.

#### 4.1.1 Sign Up

Table 4-1: Test Case-TC01-Sign Up

<b>Test Case ID:</b> TC-01	
<b>Application Name:</b>	Virtual Wakeel
<b>Use Case(s):</b>	Sign Up
<b>Created By:</b>	Muhammad Faraz Anjum
<b>Test Case Description:</b>	User will go to our application and tap on sign up to register as new user/ advocate.
<b>Action/ Test Steps:</b> 1. Enter valid details. 2. Click on Sign Up Button.	
<b>Test Data:</b> UserName: XYZ, Email: xyz@gmail.com, Password:xxxx	

<b>Pre-conditions:</b> User must enter valid credentials to sign up.
<b>Post-conditions:</b> User will be redirected to login page.
<b>Expected Result:</b> Successfully Sign Up
<b>Actual Result:</b>
<b>Status:</b>

Table 4-1 above shows the Test Case-TC01-Sign Up.

#### 4.1.2 Login

*Table 4-2: Test Case-TC02-Login*

<b>Test Case ID:</b> TC-02	
<b>Application Name:</b>	Virtual Wakeel
<b>Use Case(s):</b>	Login
<b>Created By:</b>	Muhammad Faraz Anjum
<b>Test Case Description:</b>	User will go to our application and tap on sign in to sign in as user, advocate or admin.
<b>Action/ Test Steps:</b> 1. Enter valid details. 2. Click on Login Button.	
<b>Test Data:</b> Email: xyz@gmail.com, Password:xxxx	
<b>Pre-conditions:</b> User must have an internet connection.	
<b>Post-conditions:</b> User will be redirected to Home page.	
<b>Expected Result:</b> Successfully Login	
<b>Actual Result:</b>	
<b>Status:</b>	

Table 4-2 above shows the Test Case-TC02-Login.

#### 4.1.3 Search Case

*Table 4-3: Test Case-TC03-Search Case*

<b>Test Case ID:</b> TC-03	
<b>Application Name:</b>	Virtual Wakeel
<b>Use Case(s):</b>	Search Case

<b>Created By:</b>	Muhammad Faraz Anjum
<b>Test Case Description:</b>	User will go to our application and search case on our Home page.
<b>Action/ Test Steps:</b> 1. User will enter case he wants to search. 2. Click on Search Button	
<b>Pre-conditions:</b> User must have an internet connection.	
<b>Post-conditions:</b> Information about the searched case will be displayed.	
<b>Expected Result:</b> Case Information will be displayed.	
<b>Actual Result:</b>	
<b>Status:</b>	

Table 4-3 above shows the Test Case-TC03-Search Case.

#### 4.1.4 View Related Documents

*Table 4-4: Test Case-TC04-View Related Documents*

<b>Test Case ID:</b> TC-04	
<b>Application Name:</b>	Virtual Wakeel
<b>Use Case(s):</b>	View Related Documents
<b>Created By:</b>	Muhammad Faraz Anjum
<b>Test Case Description:</b>	User will go to our application and tap on related documents to see related document for his search.
<b>Action/ Test Steps:</b> 1. User will go to Related Documents tab. 2. User will download the document.	
<b>Pre-conditions:</b> User must have logged in.	
<b>Post-conditions:</b> User will see high court and supreme court related documents on different tabs.	
<b>Expected Result:</b> Related documents will be displayed.	
<b>Actual Result:</b>	
<b>Status:</b>	

Table 4-4 above shows the Test Case-TC04-View Related Documents.

#### 4.1.5 View Previous Cases

Table 4-5: Test Case-TC05-View Previous Cases

<b>Test Case ID:</b> TC-05	
<b>Application Name:</b>	Virtual Wakeel
<b>Use Case(s):</b>	View Previous Cases
<b>Created By:</b>	Muhammad Faraz Anjum
<b>Test Case Description:</b>	User will go to our application and tap on previous cases to see previous cases.
<b>Action/ Test Steps:</b> 1. User will go to Previous Cases tab. 2. User will download the document.	
<b>Pre-conditions:</b> User must have an internet connection. User must have logged in.	
<b>Post-conditions:</b> User will see high court and supreme court judgement on different tabs.	
<b>Expected Result:</b> Previous Cases will be displayed.	
<b>Actual Result:</b>	
<b>Status:</b>	

Table 4-5 above shows the Test Case-TC05-View Previous Cases.

#### 4.1.6 Messenger

Table 4-6: Test Case-TC06-Messenger

<b>Test Case ID:</b> TC-06	
<b>Application Name:</b>	Virtual Wakeel
<b>Use Case(s):</b>	Messenger
<b>Created By:</b>	Muhammad Faraz Anjum
<b>Test Case Description:</b>	User will go to our application and tap on Messenger to see his chats.
<b>Action/ Test Steps:</b> 1. User will go to Messenger tab. 2. User will chat with advocates.	
<b>Pre-conditions:</b> User must have logged in.	
<b>Post-conditions:</b> User can see all conversations which he had with different advocates.	
<b>Expected Result:</b> Message will be sent to advocate.	



<b>Actual Result:</b>
<b>Status:</b>

Table 4-6 above shows the Test Case-TC06-Messenger.

#### 4.1.7 Integration Testing

We combine all the system modules and tested them in following phases:

- **Bottom-Up Testing**  
We test the system from base modules to top modules.
- **Up-Bottom Testing**  
We test the system from top modules to base modules.

#### 4.1.8 Advocate Panel

*Table 4-7: Test Case-TC07-Advocate Panel*

<b>Test Case ID:</b> TC-07	
<b>Application Name:</b>	Virtual Wakeel
<b>Use Case(s):</b>	Advocate Panel
<b>Created By:</b>	Muhammad Faraz Anjum
<b>Test Case Description:</b>	User will go to our application and sign in as advocate.
<b>Action/ Test Steps:</b> Advocate will see the chat with the users which have contacted before and which want to contact him.	
<b>Pre-conditions:</b> Advocate must have logged in with advocate profile.	
<b>Post-conditions:</b> Advocate can see all conversations which he had with different user. Moreover, he can edit his profile.	
<b>Expected Result:</b> Advocate panel will be displayed.	
<b>Actual Result:</b>	
<b>Status:</b>	

Table 4-7 above shows the Test Case-TC07-Advocate Panel.

#### 4.1.9 Admin Panel

*Table 4-8: Test Case-TC08-Admin Panel*

<b>Test Case ID:</b> TC-08
----------------------------

<b>Application Name:</b>	Virtual Wakeel
<b>Use Case(s):</b>	Admin Panel
<b>Created By:</b>	Muhammad Faraz Anjum
<b>Test Case Description:</b>	User will go to our application and sign in as admin.
<b>Action/ Test Steps:</b> Admin will see the document, user profile and advocate profiles.	
<b>Pre-conditions:</b> Admin must have logged in with admin profile.	
<b>Post-conditions:</b> Admin can see all related documents, previous cases, pending requests for new users and advocates, database and registered users and advocates.	
<b>Expected Result:</b> Admin panel will be displayed.	
<b>Actual Result:</b>	
<b>Status:</b>	

Table 4-8 above shows the Test Case-TC08-Admin Panel.

#### 4.1.10 User Panel

*Table 4-9: Test Case-TC09-User Panel*

<b>Test Case ID:</b> TC-09	
<b>Application Name:</b>	Virtual Wakeel
<b>Use Case(s):</b>	User Panel
<b>Created By:</b>	Muhammad Faraz Anjum
<b>Test Case Description:</b>	User will go to our application and sign in as user.
<b>Action/ Test Steps:</b> User will see his profile and can edit his information.	
<b>Pre-conditions:</b> User must have logged in with user profile.	
<b>Post-conditions:</b> User can see his personal information. User can edit his information.	
<b>Expected Result:</b> User panel will be displayed.	
<b>Actual Result:</b>	
<b>Status:</b>	

Table 4-9 above shows the Test Case-TC09-User Panel.

## **4.2 Testing**

Testing is the process of evaluating a system or its components with the intent to find whether it satisfies the specified requirements or not. It can also be used to identify any missing or incomplete requirements. Testing is a critical part of the software development process as it helps to ensure that the system is of high quality and fit for its intended purpose.

Effective testing is essential for ensuring the quality and reliability of a system. It is important to carefully plan and execute the testing process to ensure that all aspects of the system are thoroughly tested and any issues are identified and addressed.

There are different approaches to testing, including:

### **4.2.1 Unit Testing**

In unit testing, we tested all the modules of system separately in following phases:

- **Black Box Testing**  
Inputs and outputs are made for testing purpose in this phase.
- **White Box Testing**  
Code and design is tested in this phase.

### **4.2.2 Acceptance Testing**

Here we tested that our system is complete and verified that is our system providing us accurate result which are we expecting.

## **5. Conclusion**

### **5.1 Problem Faced & Lessons Learned**

#### **5.1.1 Problem Faced**

We intended to use the most recent technologies to develop our project, but we found it difficult to understand them because we lacked knowledge and experience in them. As a result, we chose many online courses from various websites, like coursera.com, code with mosh, UDEMY, and others. We are sufficiently proficient after taking these courses to begin our research and development in modern technology.

#### **5.1.2 Lessons Learned**

The lessons we have discovered while working on this project are outlined below:

- Acquired the skill of time management.
- Acquired the ability to complete our tasks quickly despite ongoing requirement changes.
- Investigated and acclimated to the most recent tools and technology.
- Acquired knowledge and comprehension of the subject matter of our project.
- Acquired knowledge of good teamwork.

By paying attention to each group member, supporting one another, and exchanging ideas and opinions, we have learnt how to manage a team. We've succeeded in solidifying our teamwork.

### **5.2 Project Summary**

The project that follows is for persons who want to handle their own legal matters but lack the time to go to court. Our project will give them thorough instructions and a directory of advocates who can assist them with their problems.

### **5.3 Future Work**

In the future, we intend to link our application to the databases on the websites of the High Courts and the Supreme Court, enabling real-time online searching. In addition, we've made the decision to include fees for the documents we provide and integrate a payment portal within the application. Additionally, we'll provide memberships for our customers, allowing them to access the full functionality of the application by paying a nominal fee.

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