islington college
(इस्लिङ्टन कलेज)

LONDON METROPOLITAN UNIVERSITY

**Final Year Project Report**

# Find your lawyer web app


**Student Name: Anima Lama**

**London Met ID: 17031133**

**Group: C8**

**Semester: 2nd semester**

**Word Count: 8425**

**Internal Supervisor: Subeksha Shrestha**

**External Supervisor: Ishwor Shrestha**

**Module Code: CS6P05**

**Year: 3rd Year**

**Submission date: 5 June, 2020**


*I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a mark of zero will be awarded*

## Abstract

This report is written based on a web application, ‘lawyer booking web app’. This project falls under the part of the interim report for the final year project. This document showcases Introduction, background, work progress and further planning of the project. This report showcases the current initial progress of the system which determines the workflow of our project and accordingly improve our working pace.

# Table of Contents

## Table Of Figures

# 1. Introduction

## Section 1.1. Subject of the report

### 1.1.1 History, Terminology related to the project

Over the last fifty years, technology has become an important source of knowledge in today's generation. Throughout the history, the extensive amount of books were our predominant source of knowledge but, today's generation is all about web technology and web application is one of them. (Modern Technology, 2018) A Web application is an application program that is stored on a remote server and delivered over the Internet through a browser interface. Web services are Web apps but, not all websites contain Web apps. A web app operates, when there are a Web server, application server, and a database. Web servers manage the requests that come from a client, while the application server completes the requested task. A database is used to store needed information for the app. (Rouse, 2019) We do everything on web. On a single click, we get to know about everything.

Most of the people do not have proper knowledge on law as well as legal issues. Comparatively, people are still unknown about this matter. Legal issue is a legal question which is the foundation of a case which requires a court's decision. (Legal Issue Law and Legal Definition | USLegal, Inc., 1997-2019)

### 1.1.2 Project Features

The following features are included in my web application:

1. Registration for Admin and Lawyers.
2. Showcasing lawyers with their details.
3. A search function for lawyers showing minimal info of a lawyer which leads to lawyer's profile.
4. Booking system for lawyers where clients can contact or book a lawyer for meeting.
5. Verification of the lawyers by admin.

### 1.1.3 AIMS & OBJECTIVES

The main goal of this project is to create a web app in which people can easily contact with lawyers according to their requirements.

The main objectives of this project are:

1. To stop problems before they start through legal advices.
2. To help lawyers increase the efficiency of service delivery.
3. To save money and time as we can hire a lawyer from home too.

### 1.1.4 Problem Domain

With lots of advantages, web technology comes with disadvantages too. One of the major problem when it comes to web is privacy and security risks. The data collected by apps could be vulnerable to collection and misused by unauthorized third parties (i.e. hackers) which gives rise to a significant set of privacy and security risks. Another problem is the delivery of legal services by non-lawyers —known as the unauthorized practice of law which is illegal. This problem can be tackled by developing lawyer booking web application.

### 1.1.5 Project as a solution

By creating a lawyer booking application, it will be convenient for people to seek consultancy regarding law and legal matters directly from the application which would save them a great amount of time as. Clients would feel comfortable sharing their cases through application rather than in person with the lawyers. The application will also help lawyers expand their work and publicity among clients. The unauthorized practice of law by non-lawyers can be solved by my application as my application requires lawyers to be approved by the admin for the registration in the application.

### 1.1.6 Motivational Factors

The main reason for developing a lawyer booking web application is to make a booking system in law field as there are a very few online lawyer booking system which also lacks a lot of important features. Today's generation are always busy and time is very precious to them. So, the main focus of this application is to make the clients save their valuable time and money.

## Section 1.2 Introduction to Structure

**Abstract**

The abstract section shows the summary of the overall report.

**Introduction**

This section introduces about the subject matter of the project followed by its history, terminology and developments in that specific field. Further, it also includes the problem domain and how this project solves that problem along with the aims and objectives of this project.

**Background/Context**

This section showcases the context and background that are interrelated to the project. It describes about how the user of the application perceives the app. It gives an overall view regarding the technology used for the development phase of the project. It also contains research of the similar applications and contains the comparison with the similar applications.

**Development**

This section discusses about all the possible consideration that were done before the developing phase of the project. It showcases the screenshots of the major code that were illustrated in the development of the project. It also contains the screenshots of survey results showcasing people's opinion on the project. This section also includes step-by-step description of SRS development and a SRS document. It includes UML diagrams such as use case, sequence diagram, class diagram, activity diagram, collaboration diagram, etc. as well as wireframes.

**Testing and Analysis**

This section includes the test cases for the system along with the description and analysis of test results.

**Conclusion**

This section includes the issues which may arise after the implementation of the projects, advantages, limitations of the project and the tasks that are required to do in future.

# 2. Background

This project showcases the development of lawyer booking web application where the clients can easily reach out to the lawyers of the desired practice area.

## 2.1. About the end users

The end users for this application are clients and lawyers. The application begins with lawyers filling up for registration with their details. After the lawyers are verified by the system, they are logged in to their dashboard where they can update their own profile. On the other hand, clients can browse lawyers and view lawyer's profile without signing in. As for booking a lawyer, clients have to fill out their information before booking the lawyer.

## 2.2 Understanding the solution

### 2.2.1. Programming language

PHP is the most suitable programming language for my project because it has a generous number of frameworks and libraries, a vast API for working with databases, HTTP, etcetera. And among the frameworks, laravel seems to be perfect for my project as it is very easy to customize and create our own project structure which meets the demand of our web application. With Laravel's beautiful and elegant syntax, we can write code which is self-explanatory and expressive. I have found that online booking applications are very popular among in business area.

PHP (hypertext pre-processor) is extremely popular programming language in terms of web development which is also chosen by me for my web application development. It is an open-source server-side scripting language. It Almost 80% of all websites were using PHP as of October 2018. A PHP framework provides a basic structure for streamlining the development of web apps. The responsiveness of websites and applications built using PHP frameworks helps businesses fulfil their performance needs as PHP frameworks speeds up the development process.

### 2.2.2. Framework

There are many popular PHP frameworks for web development. Some of them which I tried to consider using on my project are: Laravel, CodeIgniter, CakePHP and Yii. (Njenga, Nov 21, 2018)

**CodeIgniter:**

CodeIgniter is one of the most preferred framework for web development as it is suitable for developing dynamic websites which offers numerous prebuilt modules that help with constructing robust and reusable components. This provides a huge weight on the scales when choosing it for the project.

Reasons to choose:

- It offers solid performance, which makes building lightweight applications run well on modest servers.
- Easy to learn and get started with due to it's simplicity and excellent documentation
- It uses MVC-based architecture, top-notch error handling, inbuilt security tools that helps in creating scalable applications.

**CakePHP:**

CakePHP is one of the easiest frameworks to learn because of its CRUD (create, read, update, and delete) framework which is very good for beginners like me.

Reasons to choose:

- It is simple and easy to install, as only needed a web server and a copy of the framework.
- It makes a good choice for commercial applications due to security features that include SQL injection prevention, input validation, cross-site request forgery (CSRF) protection, and cross-site scripting (XSS) protection.

- It has features like modern framework, fast builds, proper class inheritance, validation, and security. Also, provides great documentation, many support portals, and premium support through Cake Development Corporation.

**Laravel:**

Laravel is one of the most popular PHP framework used across the globe to build web application ranging from small to big projects. Laravel is the choice of professional developers as well as my choice because of its performance, features, and scalability. I chose Laravel as my core framework for my project due to following reasons:

- It can handle complex web applications securely, at a considerably faster pace than other frameworks.
- It simplifies the development process by easing common tasks such as routing, sessions, caching, and authentication.
- It has Object Oriented libraries and other pre-installed ones, which are not found in any other PHP frameworks. One of the pre-installed libraries is the Authentication library. It has many advanced features like checking active users, Bcrypt hashing, password reset, CSRF (Cross-site Request Forgery) protection, and encryption.
- It supports MVC Architecture ensuring clarity between logic and presentation which helps in improving the performance, allows better documentation, and has multiple built-in functionalities**.**

### 2.2.3. Visual Studio Code

To develop this system, Visual Studio Code was used. Visual Studio Code is a free source-code editor made by Microsoft for Windows, Linux and macOS which includes features and support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git. (Visual Studio Code - Code Editing. Redefined, 2020)

**Auto Completion of syntax and highlighter**

Visual Studio Code allows syntax highlighting and autocomplete with IntelliSense, which provides smart completions based on variable types, function definitions, and imported modules.

**Debugging**

Visual Studio Code allows debug code right from the editor and allows launch or attach to the running apps as well as allows debug with break points, call stacks, and an interactive console.

**Git commands built-in**

Visual Studio Code allows working with Git which is really easy to use. It allows review diffs, stage files, and make commits right from the editor. It also allows push and pull from any hosted SCM service.

### 2.2.4. Software Architecture

MVC is short for Model, View, and Controller. MVC is a popular way of organizing your code. The big idea behind MVC is that each section of your code has a purpose, and those purposes are different. Some of your code holds the data of your app, some of your code makes your app look nice, and some of your code controls how your app functions. MVC is a neatly organized way of organizing your code's core functions into their own. MVC is an application design model comprised of three interconnected parts. They include the model (data), the view (user interface), and the controller (processes that handle input). (MVC Definition, 2017)

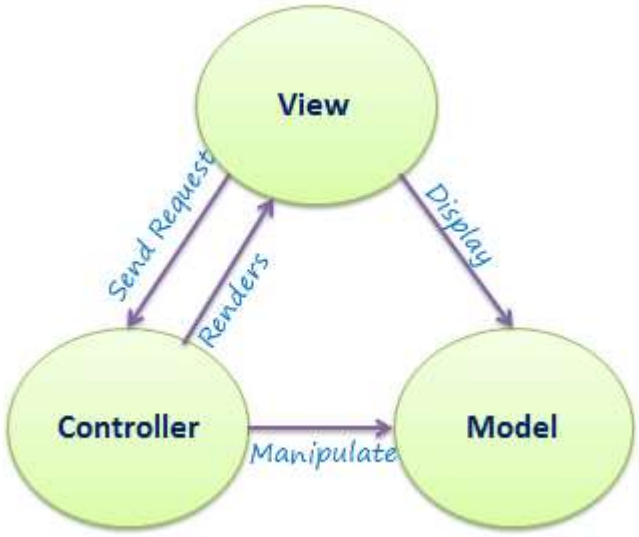


*Figure 1: MVC architecture*

**Models**

Models represent data. A model could be a single object (rather uninteresting), or it could be some structure of objects. This may be a database, file, or a simple object, such as an icon or a character in a video game. This code holds essential components of your app. There should be a one-to-one correspondence between the model and its parts on the one hand, and the represented world as perceived by the owner of the model on the other hand.

**Views**

A view is a visual representation of its model. It would ordinarily highlight certain attributes of the model and suppress others. A view is attached to its model and gets the data necessary for the presentation from the model by asking questions. It may also update the model by sending appropriate messages. All these questions and messages have to be in the terminology of the model, the view will therefore have to know the semantics of the attributes of the model it represents.

**Controller**

Controllers act as an interface between Model and View components to process all the business logic and incoming requests, manipulate data using the Model component and interact with the Views to render the final output.

## 2.3 Similar Projects

### 1. Nepal Lawyer

Nepal lawyer is a web platform that allows lawyers and law-firms to register and verify their profile for free and clients are able to search them by location, area of practice, city, gender, review and more. Clients are able to book lawyers, ask questions, participate in discussion forum, and many more. Nepal Lawyer is the largest online web portal for Lawyers in Nepal. (Nepal Lawyer, 2019)

Following features are included in the above web app:

- User-friendly search function with great selection of filter features.
- Live chat, call, and video conference.
- Client can ask questions to our lawyers and get answers in timely manner.
- Client can book and talk to lawyers and be able to leave review with their experience.

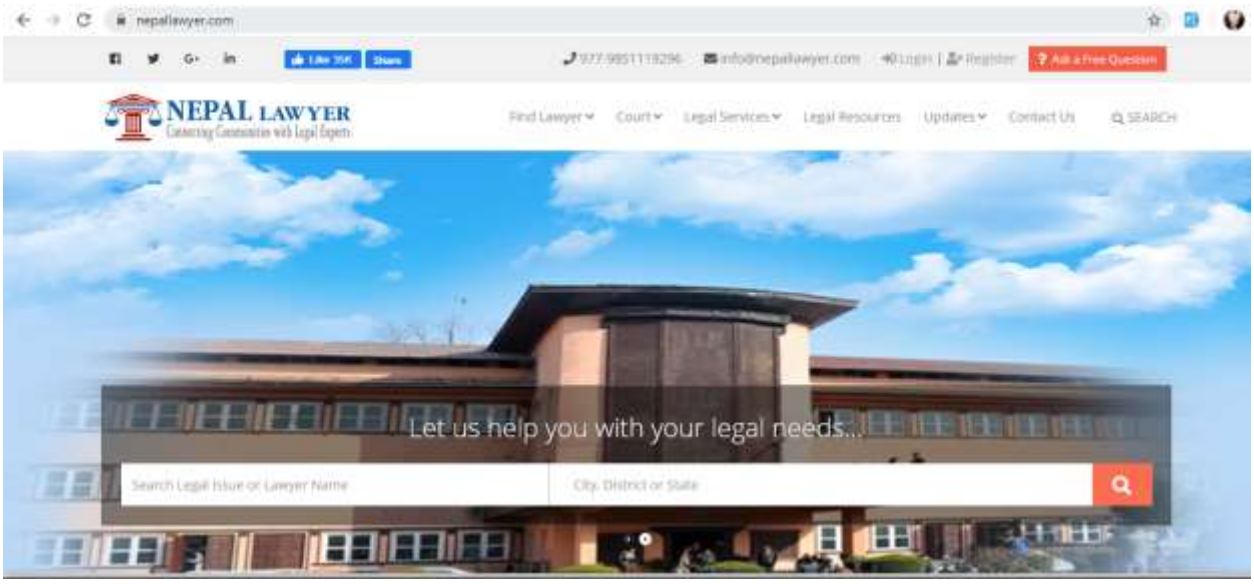


*Figure 2: nepal lawyer web app*

## 2. Rocket lawyer

Rocket Lawyer is a web platform which creates a simple way to meet the legal needs of people's family and business. Whether you want a quick and simple legal document for free, or have a more complex legal situation requiring the advice of an attorney. (RocketLawyer)

Following features are included in the above web app:

- Simple and affordable legal services
- Free will creation for family or incorporate a business free from legal fees.
- Easily make legal documents like agreements, will, contracts, etc.
- Get fast legal advice from an attorney


*Figure 3: rocket lawyer web app*

### 3. Legal Match

Legal match is a web application that helps people find lawyers around their city area. This application requires clients to fill out the required questionnaires and according to their responses, their desired lawyers will be displayed for choosing. Clients are required to post their cases and the cases are reviewed by the interested lawyers and are contacted through emails or phone number. (Legal Match, 1999-2020)

Following features are included in the above web app:

- Clients can post cases for reviews from lawyers.
- Star ratings are given to the lawyers from previous clients.
- Lawyers can be browsed through different categories like: practice area, city, state, etc.


*Figure 4: Legal match web app*

## 2.4 COMPARISONS (Comparing the features and critical evaluation of the solution)

| features | My application | Nepal Lawyer | Rocket Lawyer | Legal Match |
|---|---|---|---|---|
| Search function for lawyers | yes | yes | no | no |
| Booking lawyers | yes | yes | no | no |
| Review section for lawyer's profile page | yes | yes | no | yes |
| Filter search on lawyers | no | no | no | yes |
| Lawyer rating and review | no | yes | no | no |

*Table 1: comparision of the application with similar apps*

From the comparison between my application and similar applications, I got to know about my lacking as well as theirs. The similar applications such as Rocket Lawyer, Legal Match do not have lawyer navigation system which are included in my application and in 'Nepal Lawyer'. includes features such as video conference and star rating which I have not included in my application. Also, Rocket lawyer and Legal Match are helping in different areas such as legal document making such as divorce agreements, will, and many more.

# 3. Development

## 3.1. Considered Methodology

The following are the three methodologies that I had considered for my project:

1. Waterfall

2. RUP

3. Agile

**Waterfall Model:**

Waterfall Model is a method of software development in which the progress flows from the top to the bottom. This is a sequential project management method in which each stage relies on information from the previous stage and has its own project plan. But there is a downside of waterfall and that is its rigidity. It's easy to understand and simple to manage but early delays can throw off the entire project timeline. The following figure below showcases the representation of

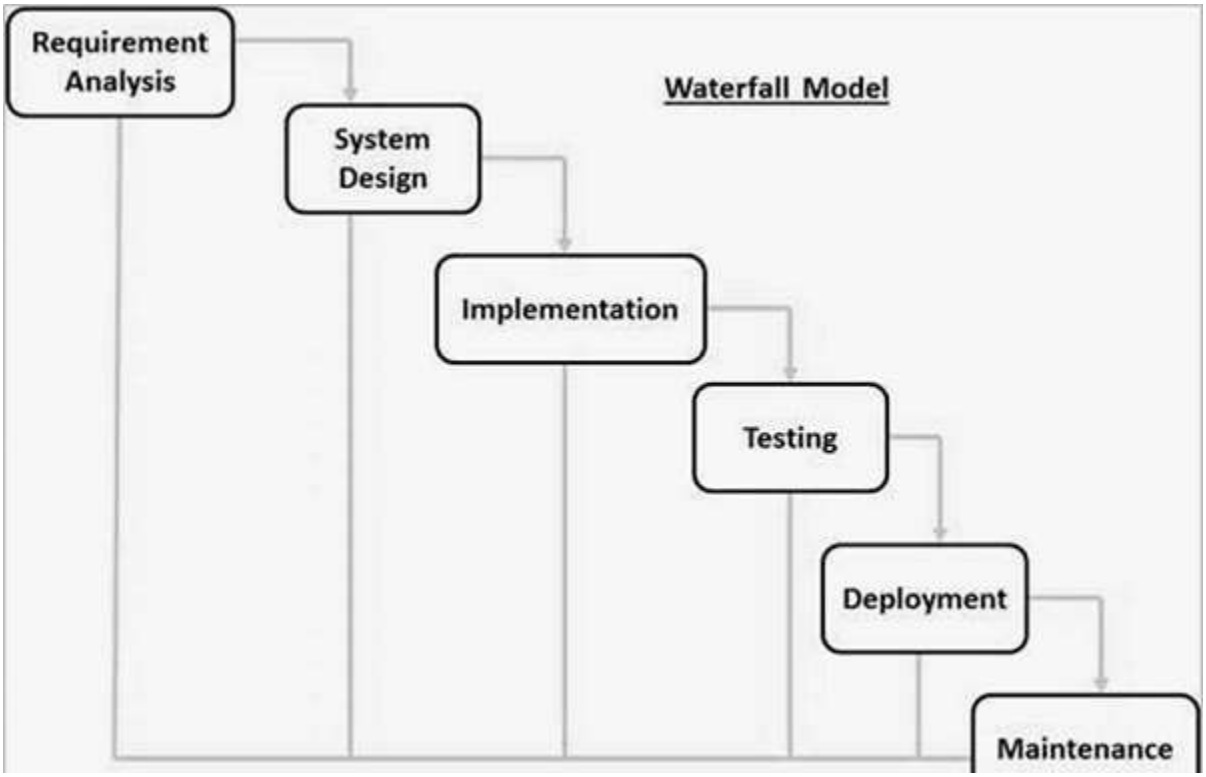


*Figure 5: waterfall model*

various phases of the Waterfall model. It consists of 6 phases for the development process. (The Waterfall Model, 2019)

**Justification for considering waterfall methodology:**

- The use of waterfall model is implemented under the consideration that the requirements are very well known, clear and fixed.
- The process of development follows a strict line of conduct and is continuous in nature which is a plus point as well as beneficial for my project.
- Every phase is completed and moved to next after a review process, which can provide a major boost in completing the project easily if the necessary requirements are justified.

**Reasons for not choosing waterfall:**

- The application requires changes and updates very often according to the needs and due to complexness nature of waterfall, it can be considered as unsuitable for my development process.
- As waterfall model doesn't fit well for complex and object-oriented projects, it can be considered as negative aspect for my project.

**RUP (Rational Unified Process):**

RUP is an agile software development method, in which the life cycle of a project, or the development of software, is divided into four phases including modelling, analysis and design, implementation, testing and deployment**.** (JANSE, 2019)

1. **Inception:** In this phase, the idea and structure of the project is stated. The development team considers whether the project is worth pursuing and the materials required for the completion of the project.
2. **Elaboration:** Evaluation of the project architecture and required resources are considered in this phase. This is where the project begins to take shape. Developers consider possible applications of the software and the costs that are associated with the development.

3. **Construction:** Development and completion of the project is done. The software is designed, written and tested.
4. **Transition:** In the final phase, the software is released to the public. All the final adjustment and the required updates are considered based on the positive feedback of the end-user.

**Justification for considering RUP:**

1. The process of development can be done back and forth.
2. End user have the accessibility of giving constant feedback.
3. The phases of RUP model have iterations, which carries out the purpose of producing a demonstrable part of software.
4. This model focuses on the product of the software itself and its quality.

**Reasons for not choosing RUP:**

1. During the overall development process given emphasis on the integration, it affects the testing and other quality checking phases since the integration comes in the way of several fundamental activities and other integration emphasized.
2. This model heavily relies on skillful and expert team members. As my project is an individual project, following this methodology will not be good for my project.
3. RUP model doesn't provide any clear implementation guidelines, which will be a negative point for my process of development.

**Agile:**

Agile methodology is a conceptual framework for undertaking software engineering projects. This methodology has adaptive approach that responds to changes favorably and has improved quality by finding and fixing defects quickly and identifying mismatches early. Agile produces ongoing release cycles, each featuring small, incremental changes from the previous release. At each

iteration, the product is tested. Work is typically broken into 2-4-week segments. And I have chosen Agile for my project due to following reasons: (Islam, Oct 18, 2013)

4. Since the requirement of my project can change in any of the future update, Agile has the ability to change dynamically to the customer's wants and needs which Waterfall and Iterative doesn't.

5. In Agile, I can focus on high quality development, testing and collaboration by breaking down he project into manageable units

In Agile, by producing frequent builds and conducting testing and reviews during each iteration, quality is improved by finding and fixing defects quickly and identifying expectation mismatches early.

## 3.2. Selected Methodlogy

For this project, Agile methodology is applied. Agile methodology is a conceptual framework for undertaking software engineering projects. This methodology has adaptive approach that responds to changes favorably and has improved quality by finding and fixing defects quickly and identifying mismatches early. I chose Agile methodology because this methodology helps in fast and quick changes. It makes an easy job for web application development so that the outcome is adaptable after its release. Throughout the process customers save time, money, and have the flexibility to make changes anytime during the development process.

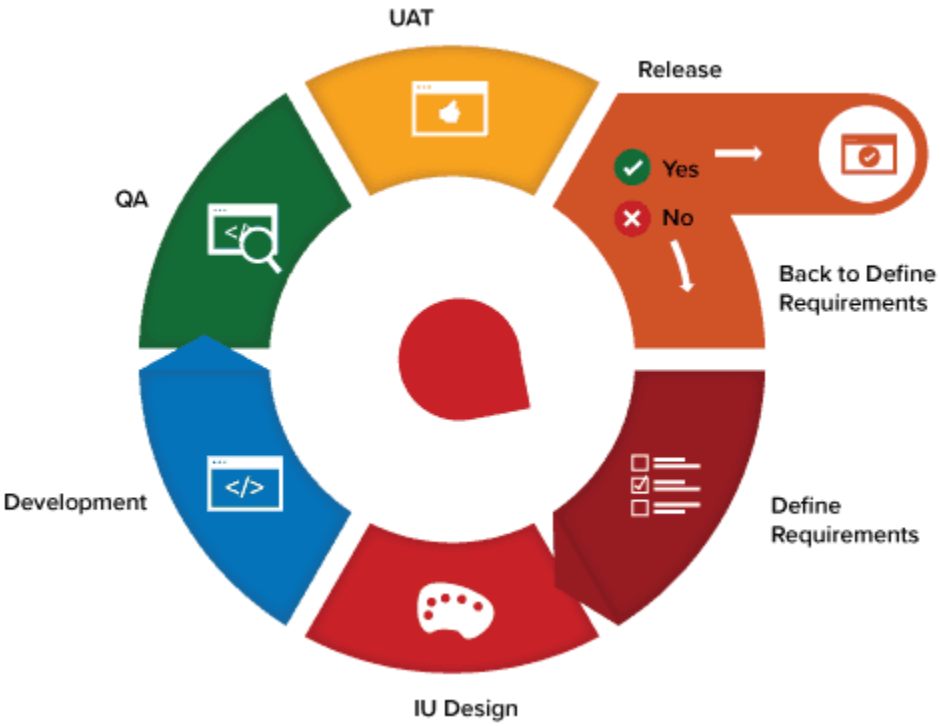


*Figure 4: Agile iterative methodology*

For this project, agile iteration is going to be used. The Agile software development lifecycle is dominated by the iterative process. Each iteration results in the next piece of the software development puzzle - working software and supporting elements, such as documentation, available for use by customers - until the final product is complete. Each iteration is usually two to four

weeks in length and has a fixed completion time. During an iteration, it is important that the customers and business stakeholders provide feedback to ensure that the features meet their needs.

## 3.3. Phases of methodology

The Agile team implements the PDCA (Plan, Design, Check, Adjust) cycle on each iteration separately in the following manner:

**Plan -** Define the requirements for the next iteration based on the product backlog and summarization of the work done.

**Design/Execution -** Design and develop software based on defined requirements.

**Check/Testing -** QA (Quality Assurance) testing, internal and external training, documentation development and review the completed work and ascertain whether all criteria have been met.

**Adjust -** Integrate and deliver the working iteration into production. New problems are identified along with their causes. Before the next cycle begins again, the product backlog is refined for future reference.

The iterations are repeated for optimizations and improvisations and, the lessons learned from previous cycles are applied in the next cycle. The cycle goes on untill a fully functional software is ready as the final product.

### 3.4. Survey Results

A Survey is defined as a research method used for collecting data from a pre-defined group of respondents to gain information and insights on various topics of interest. The main goals of conducting a survey is to gather information. For this project too, I have used online survey for gathering information, opinions and comments about the project and gather valuable user feedback in a bunch for information gathering. (What is a Survey - Definition, Methods, Characteristics and ..., 2020)

#### 3.4.1. Pre-survey results

This survey was done before the application was developed.

Question 1

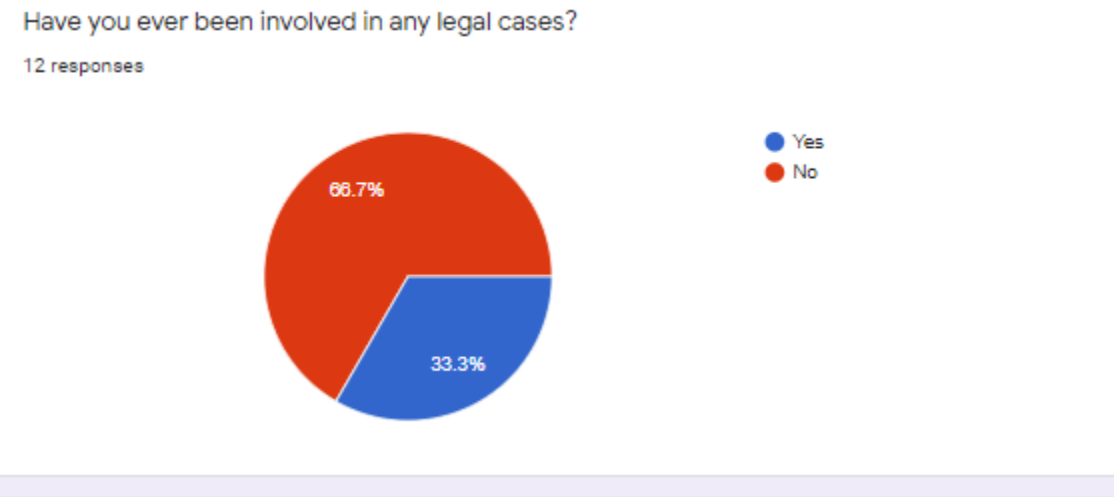


*Figure 6: pre survey result of question 1*

Question 2


*Figure 7: pre survey result of question 2*

## Question 3

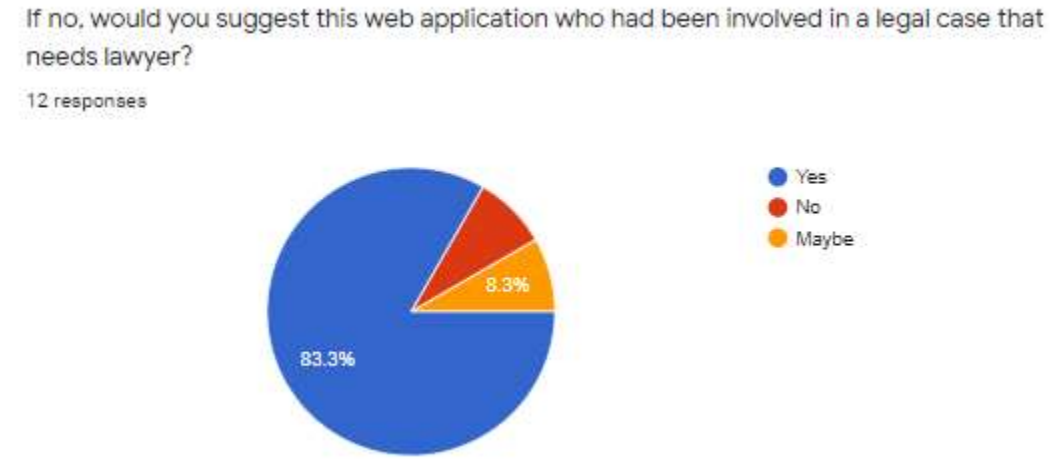


*Figure 8: pre survey result of question 3*

## Question 4

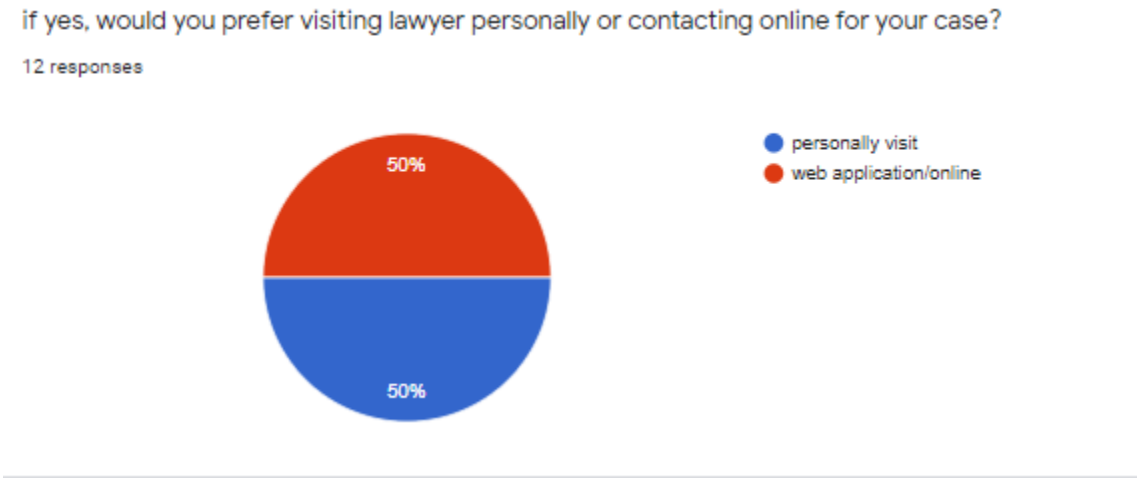


*Figure 9: pre survey result of question 4*

## Question 5


*Figure 10: pre survey result of question 5*

Ratings of the Application

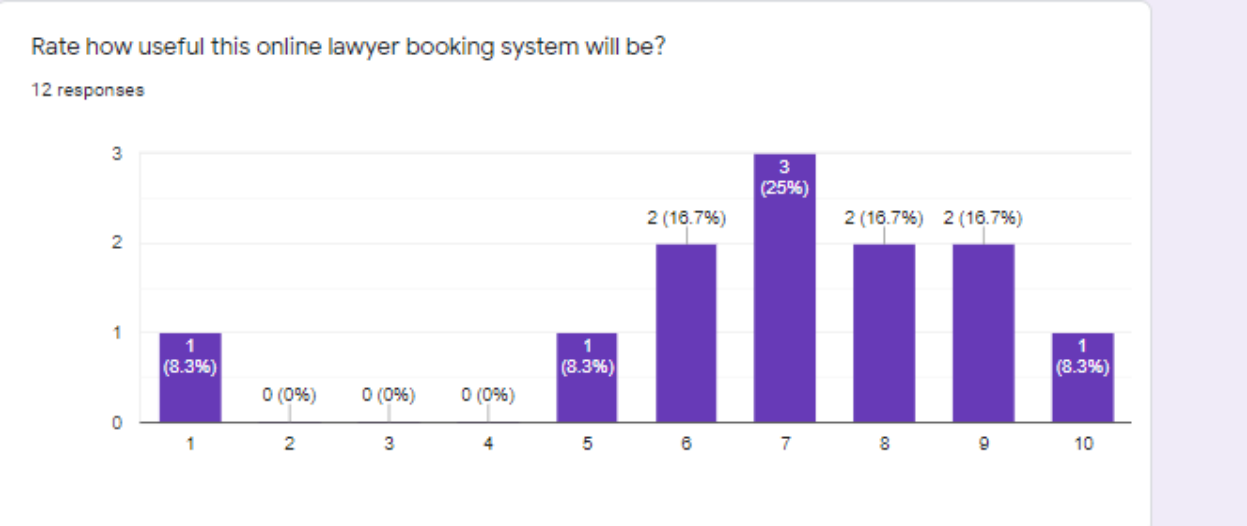


*Figure 11: pre survey result of ratings of the application*

### 3.4.2. Post-survey results

Question 1

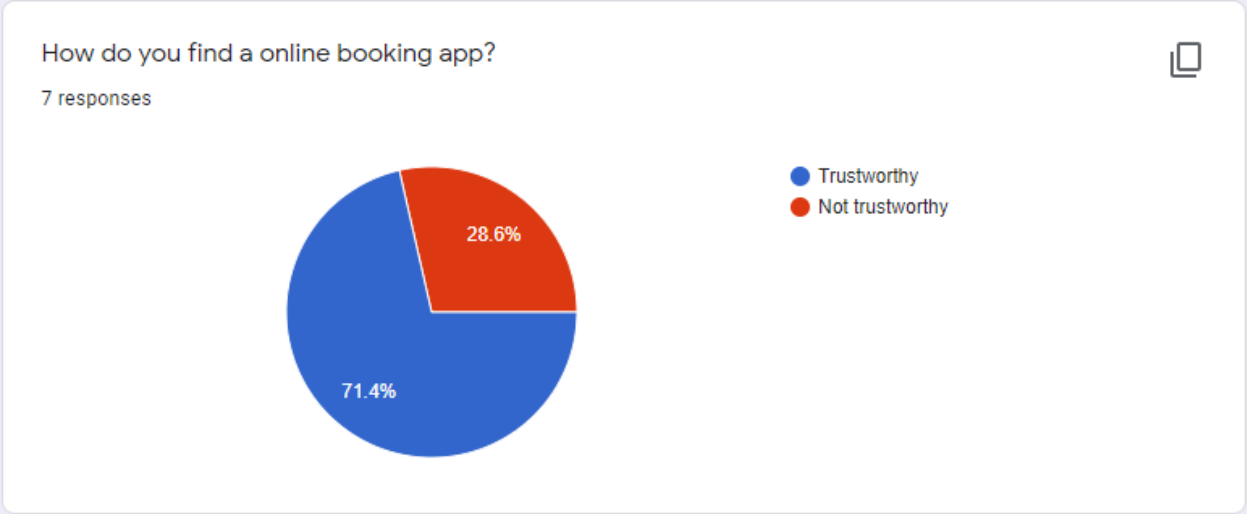


*Figure 12: post survey result of question 1*

## Question 2

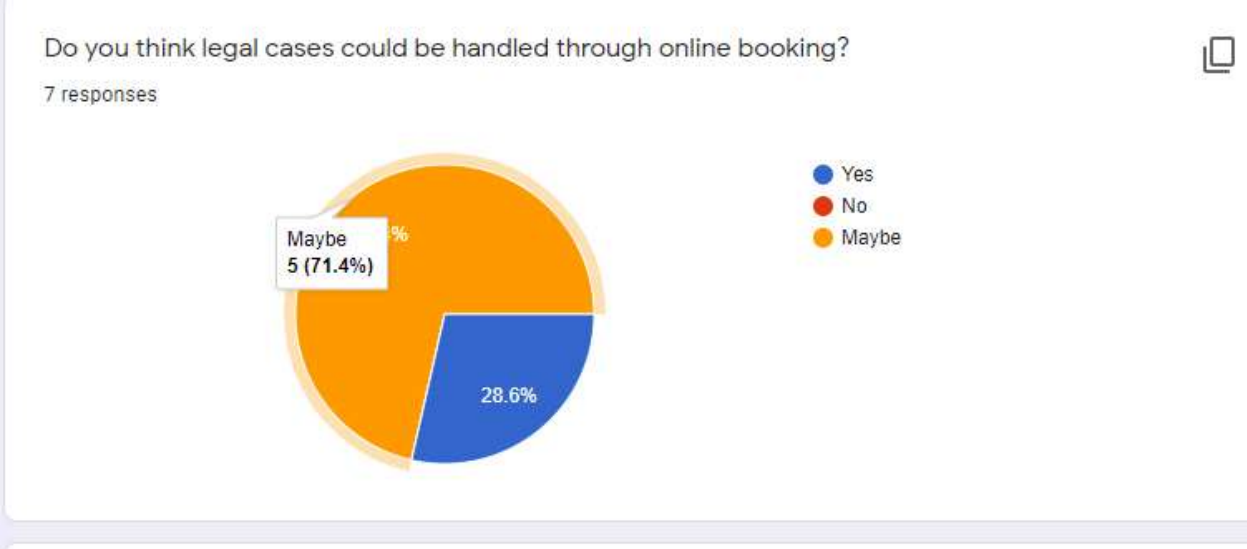


*Figure 13: post survey result of question 2*

## Question 3

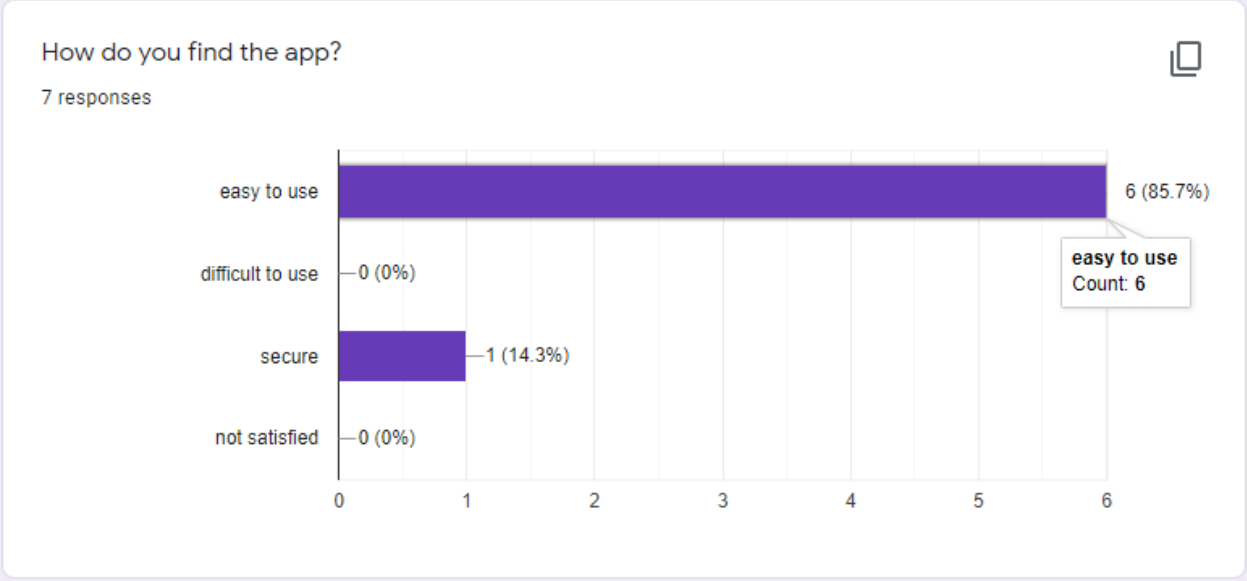


*Figure 14: post survey result for question 3*

## Question 4

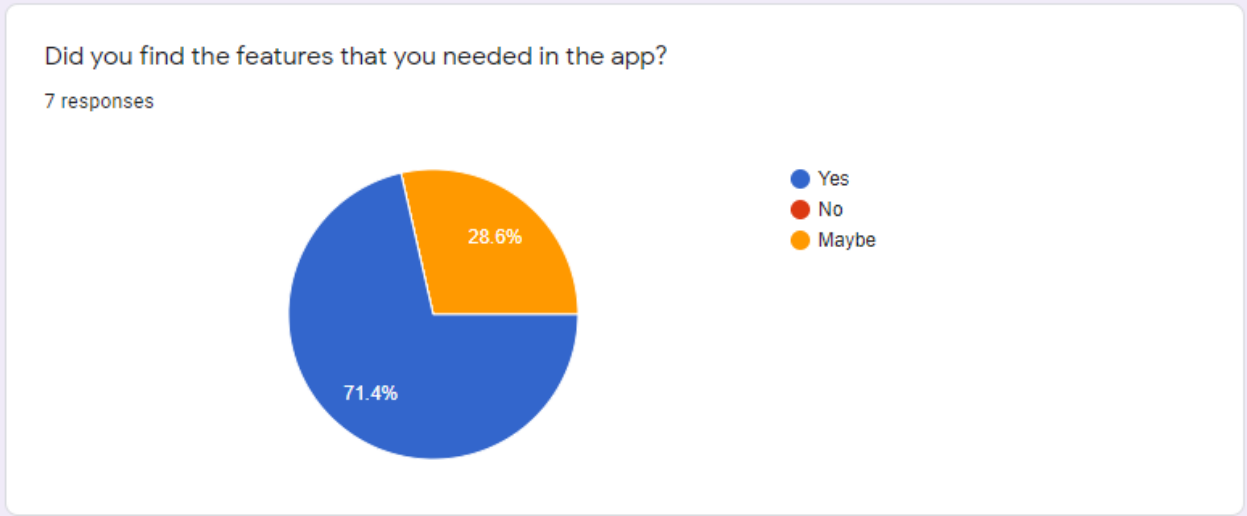


*Figure 15: post survey result for question 4*

## Question 5

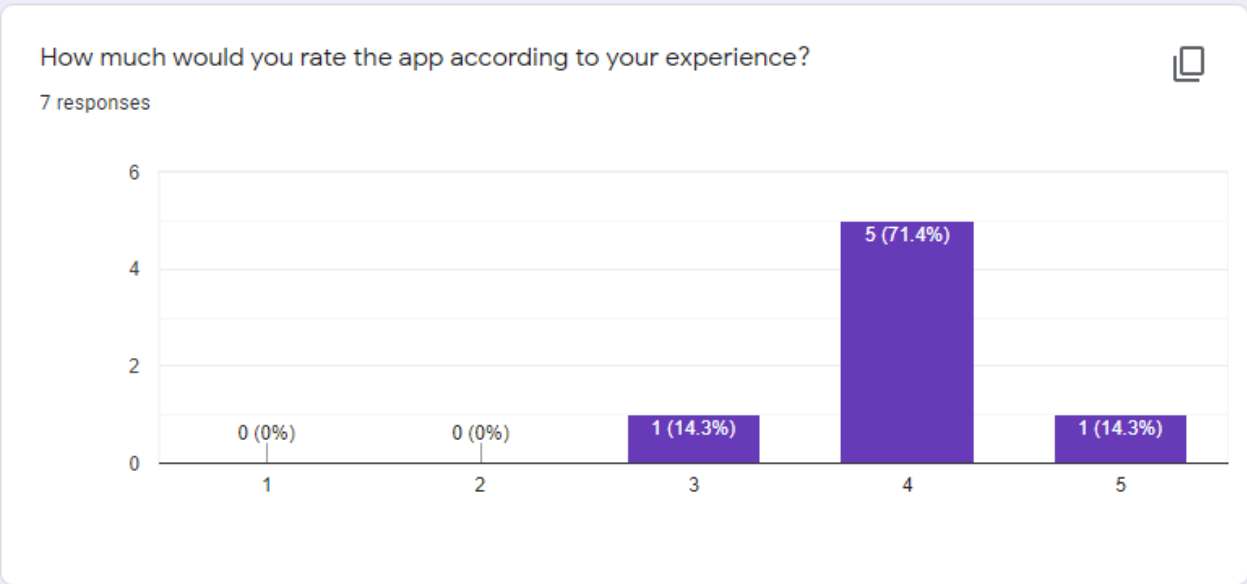


*Figure 16: post survey result for rating the app*

## 3.5. Requirement Analysis

For the development of the app, following tools and techniques will be used.

- **Gantt Project :**

This tool is used as a medium of making Gantt chart for the project.

- **Draw.io**

draw.io is free online diagram software for making flowcharts, process diagrams, org charts, UML, ER and network diagrams. (draw.io, n.d.)

- **Visual Studio Code:**

Visual Studio Code features a lightning fast source code editor, perfect for day-to-day use. With support for hundreds of languages, VS Code helps you be instantly productive with syntax highlighting, bracket-matching, auto-indentation, box-selection, snippets, and more.

## 3.6. Design

### 3.6.1. Use Case:

A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. The use case is made up of a set of possible sequences of interactions between systems and users in a particular environment and related to a particular goal. The use case should contain all system activities that have significance to the users. Use case diagrams consists of actors, use cases and their relationships. It is used to model the system or subsystem of an application. A single use case diagram captures a particular functionality of a system. Therefore, to model the entire system, a number of use case diagrams are used.

A use case diagram contains four components:

- The boundary, which defines the system of interest in relation to the world around it known as System Boundary.
- The actors, usually individuals involved with the system defined according to their roles.
- The use cases, which are the specific roles played by the actors within and around the system.
- The relationships between and among the actors and the use cases.

**Includes and Extends relationships**

Include relationship show that the behavior of the included use case is part of the including (base) use case. The main reason for this is to reuse the common actions across multiple use cases. The base use case is incomplete without the included use case. The included use case is mandatory and not optional.

Extend relationship extends the base use case and adds more functionality to the system. The extending use case is dependent on the extended (base) use case. The extending use case is usually optional and can be triggered conditionally. One Use Case may extend the behaviour of another - typically when exceptional circumstances are encountered.

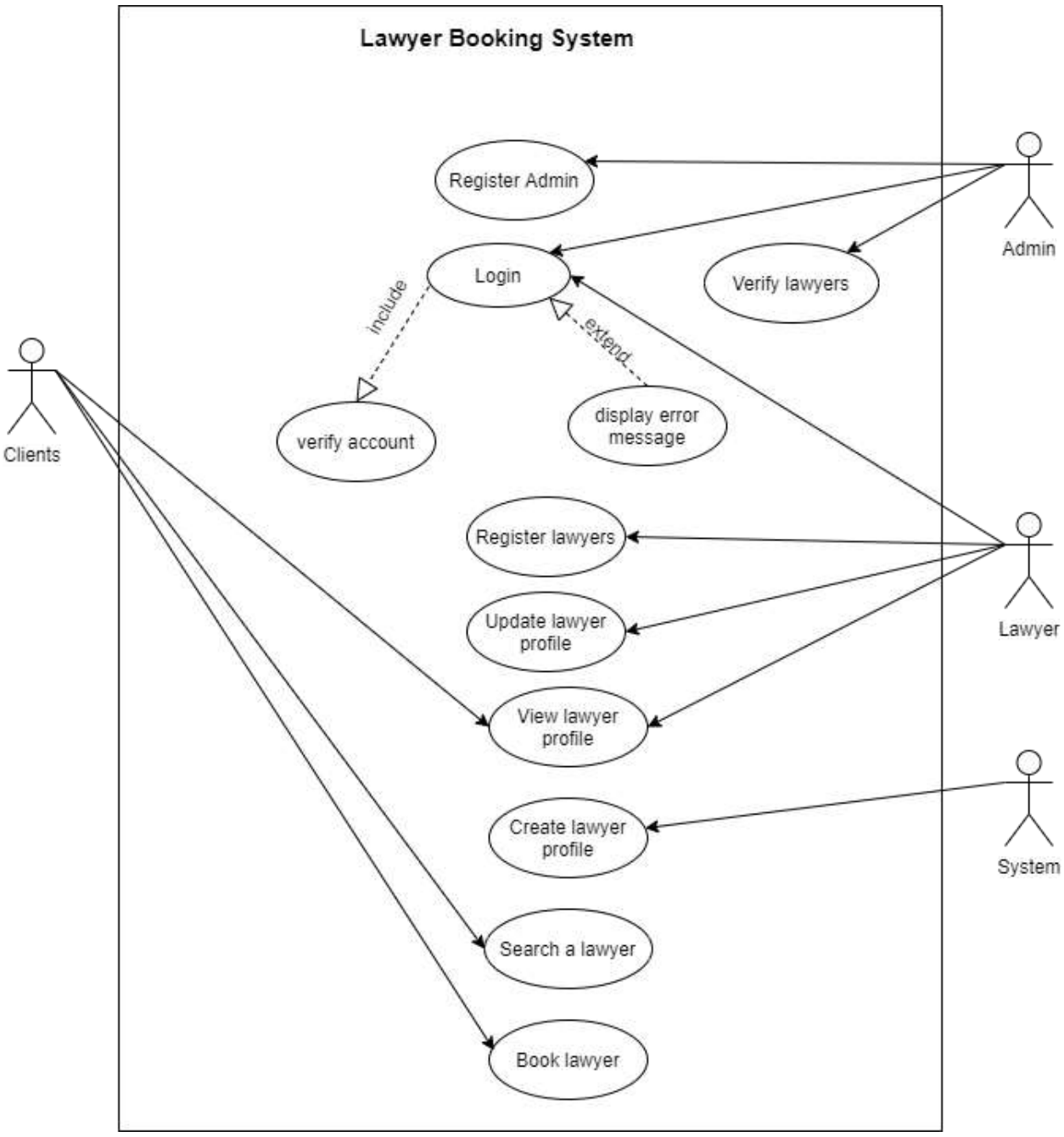


*Figure 17: Use Case Diagram*

### 3.6.2. Extended Use Case:

**Login**

**Actors:** Admin and Lawyer

**Description:** An Admin or a lawyer is logged in only when they are registered in the system. After the Admin/Lawyer is logged in, the account is verified and if the account does not match, an error message is sent to the account holder.

**Course of Events:**

| Actor Action | System Response |
|---|---|
| 1. Click on login button. | |
| | 2. Login form is displayed. |
| 3. Fill up the login form with login details. | |
| | 4. Account verification is done. |
| | 5. An error message is displayed informing client about invalid login details if the login is failed. |
| 6. The user receives the error message. | |
| | 7. A success message is displayed if the login is successful. |
| 8. The users are redirected to their respective pages. | |

**Register Admin**

**Actors:** Admin

**Description:** The admin registers by filling up the registration details of the registration form.

**Course of Events:**

| Actor Action | System Response |
|---|---|
| 1. Clicks the registration tab. | |
| | 2. Registration form is displayed. |
| 3. Fills up the registration form. | |
| | 4. Redirects to the main page. |
| 5. The user is redirected to the main page. | |

**Register Lawyer**

**Actors:** Lawyer

**Description:** The lawyer registers by filling up the registration details of the registration form.

**Course of Events:**

| Actor Action | System Response |
|---|---|
| 1. Clicks the 'for_lawyers' tab on navbar. | |
| | 2. Registration form is displayed. |
| 3. Fills up the registration form. | |
| | 4. Redirects to the form with error message if the registration details are not valid. |
| | 5. Redirects to the form with success message if the registration details are valid. |

**Verify Lawyers**

**Actors:** Admin

**Description:** After the lawyers registers themselves, the admin checks the list of registered lawyers in the dashboard and verifies the information of the lawyers.

**Course of Events:**

| Actor Action | System Response |
|---|---|
| 1. Click the lawyers tab on the sidebar. | |
| | 2. Display the list of lawyers with their info. |
| 3. If the information is valid, click the verified button. | |
| | 4. Displays verified on the 'verification' column. |

**Create Lawyer Profile**

**Actors:** System

**Description:** A lawyer's profile is created by the system automatically after the lawyer registers themselves.

**View Lawyer Profile**

**Actors:** Client/Lawyer

**Description:** The client selects any one of the practice area link which displays the lawyer's profiles related to the field. Then the client picks any one of the lawyer profile that he is interested in and the profile is viewed.

**Course of Events:**

| Actor Action | System Response |
|---|---|
| 1. Click the link of any one practice area. | |
| | 2. Display the list of lawyers related to the selected field. |
| 3. Select any one of the interested lawyer profile. | |
| | 4. Redirects to the selected lawyer profile page. |

**Update Lawyer Profile**

**Actors:** Lawyer

**Description:** A lawyer updates their profile simply by clicking the 'update profile' tab and editing the desired information for their profile.

**Course of Events:**

| Actor Action | System Response |
|---|---|
| 1. Click the 'update profile' tab on the sidebar. | |
| | 2. Display the form for lawyer profile. |
| 3. Edit the information needed. | |
| | 4. Redirects to their respective profile page. |

**Search lawyers**

**Actors:** Client

**Description:** The client inputs any of the lawyer's name in the search bar and is redirected to the searched lawyer's profile.

**Course of Events:**

| Actor Action | System Response |
|---|---|
| 1. Input any lawyer's name and click the search button on the search bar. | |
| | 2. Displays the searched lawyer's profile page. |
| | 3. Displays error message if the searched term does not match lawyer's name. |
| 4. Client is redirected to the search page. | |

**Book a Lawyer**

**Actors:** Client

**Description:** The client books their desired lawyer after checking availability status of the lawyer. If the lawyer is available, the client fills out necessary information for booking.

**Course of Events:**

| Actor Action | System Response |
|---|---|
| 1. Click 'Book' button. | |
| | 2. Displays the form for booking lawyer. |
| 3. Fill out the form with necessary information. | |
| 4. Click 'submit' button. | |
| | 5. Redirects to the main page with success message if the booking is success. |

### 3.6.3. Collaboration Diagram:

1) Register

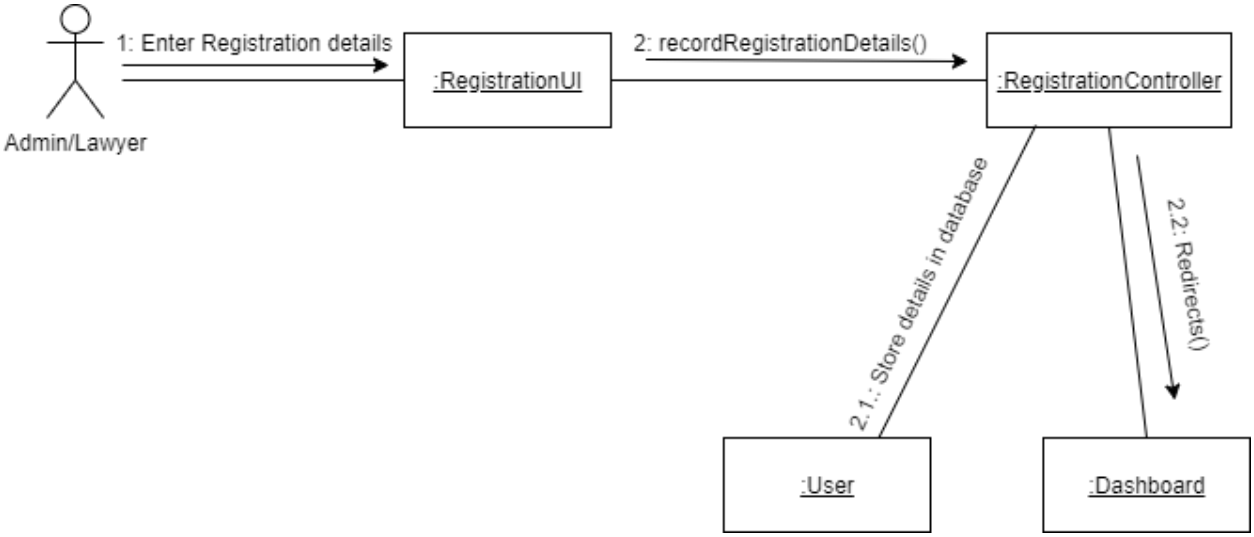


*Figure 18: Register Collaboration Diagram*

2) Login

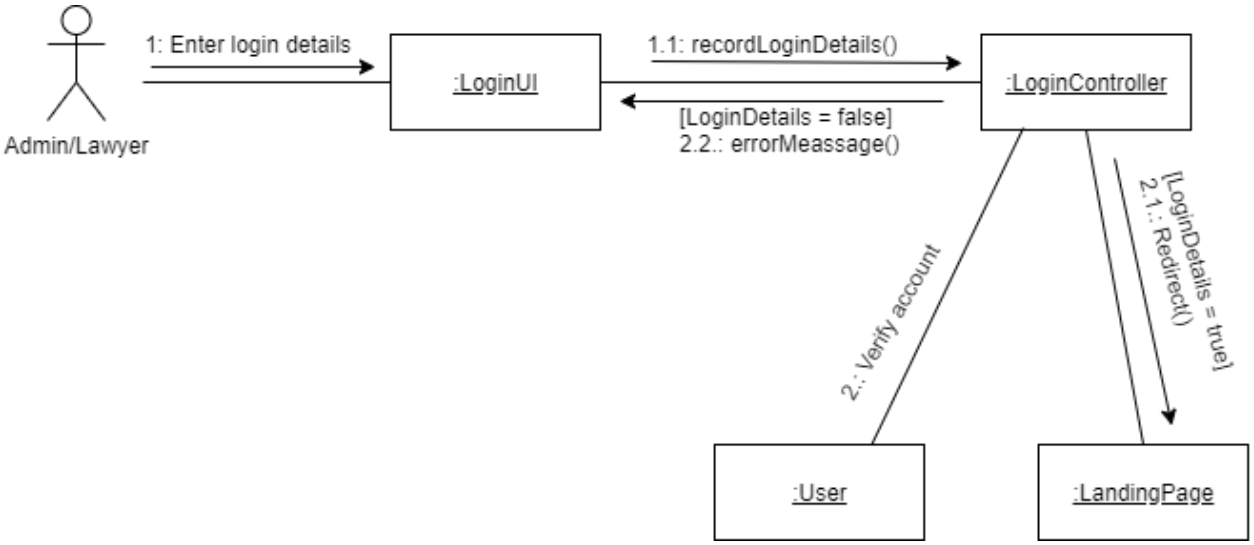


*Figure 19: Login Collaboration Diagram*

3) Create lawyer Profile

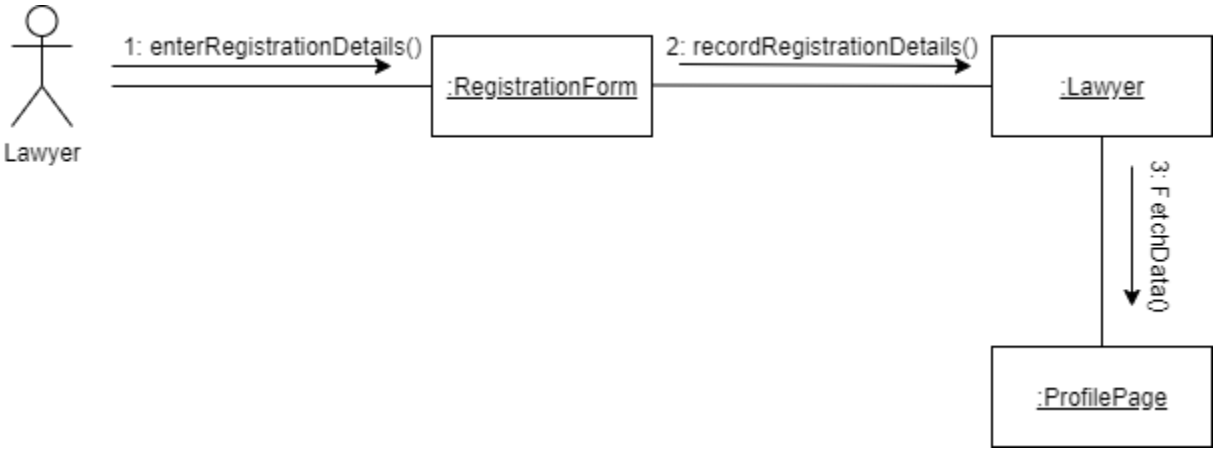


*Figure 20: Create lawyer profile Collaboration Diagram*

4) View lawyer profile

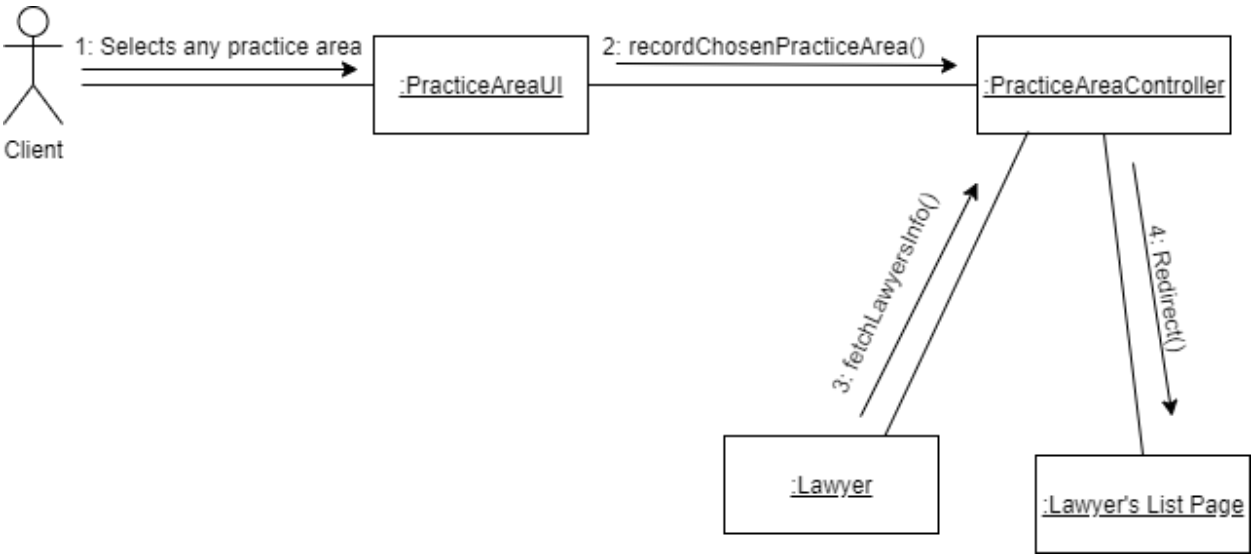


*Figure 21: View lawyer profile Collaboration diagram*

5) Update lawyer profile

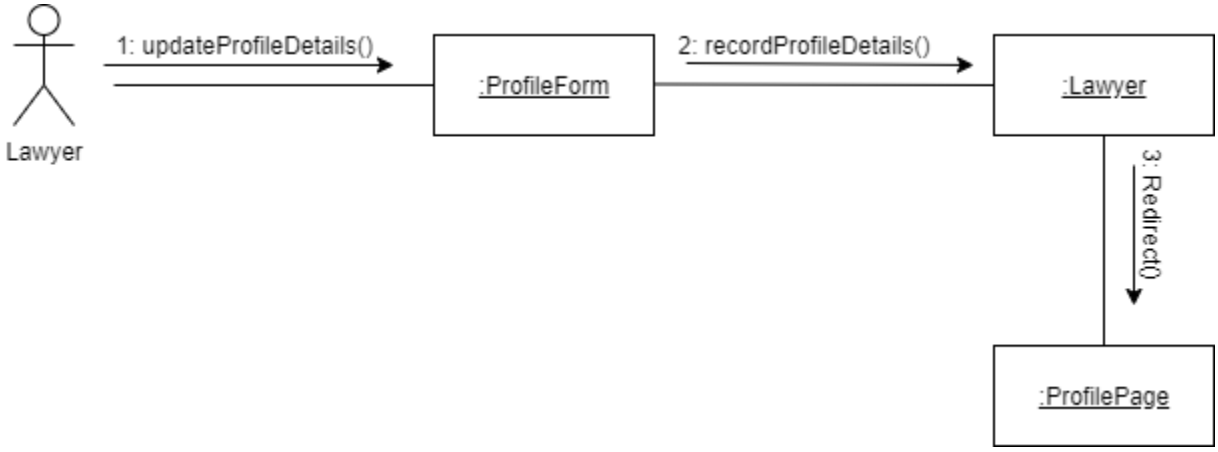


*Figure 22: Update Profile Collaboration Diagram*

6) Search Lawyer

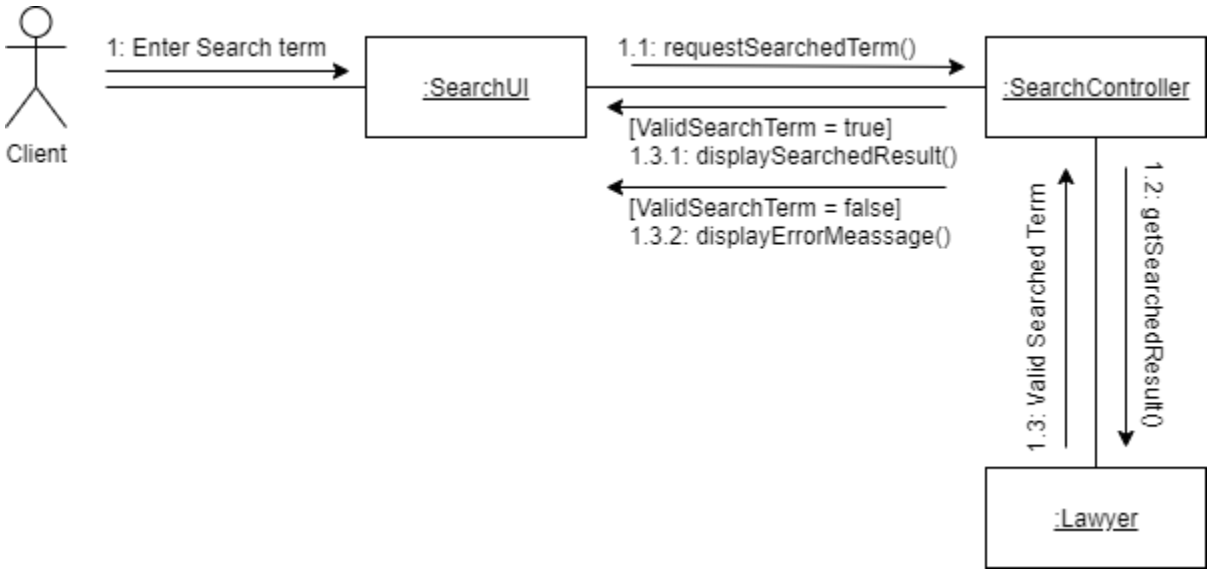


*Figure 23: Search lawyer Collaboration Diagram*

7) Book a lawyer

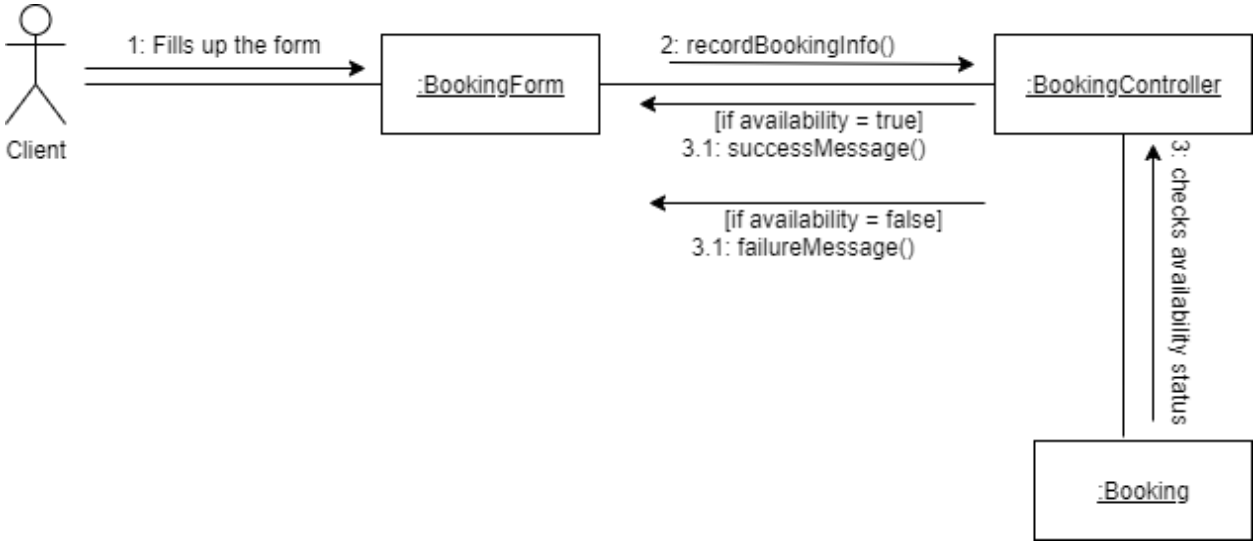


*Figure 24: Booking Collaboration Diagram*

### 3.6.4. Activity Diagram:

1) Registration

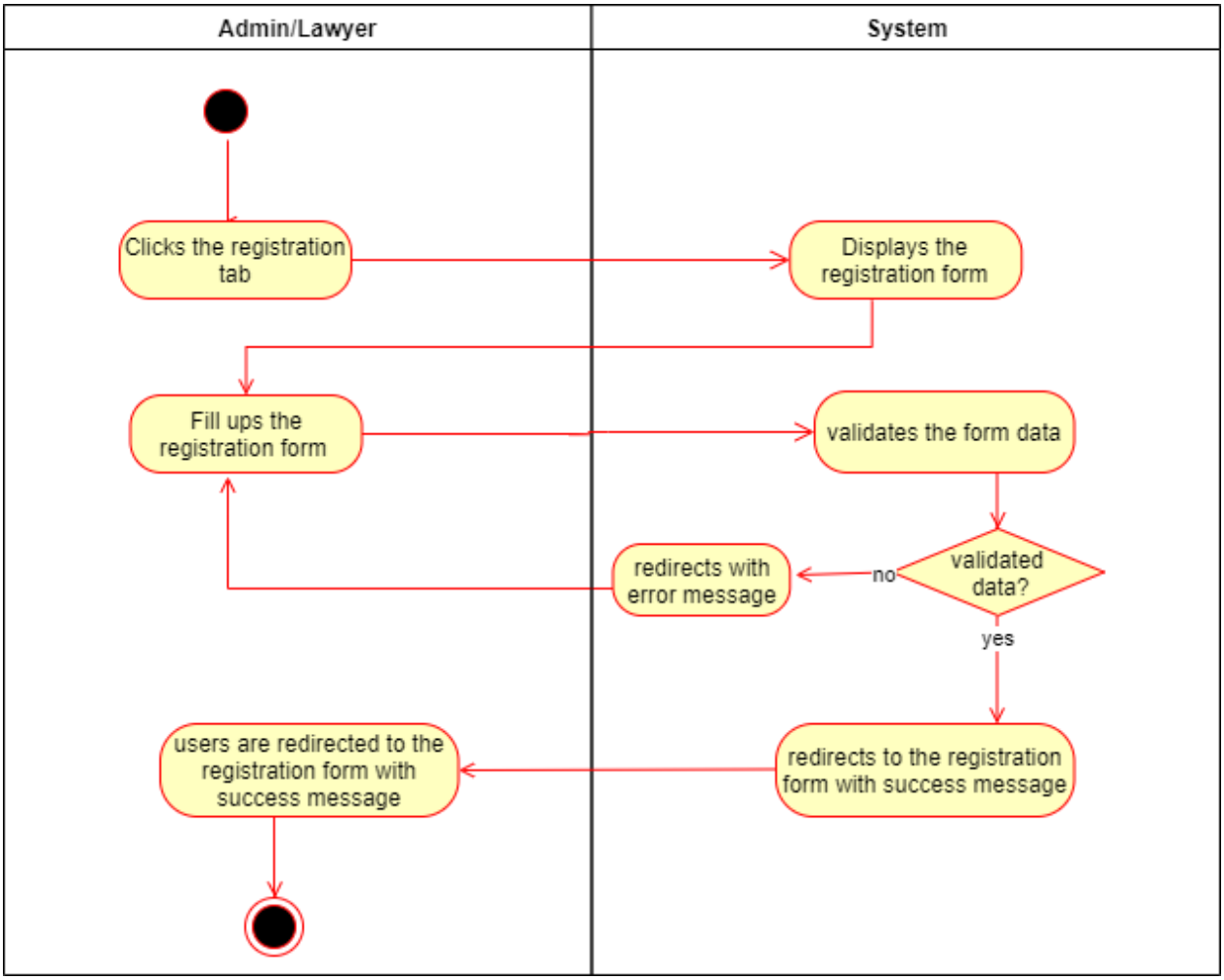


*Figure 25: Registration Activity Diagram*

2) Login

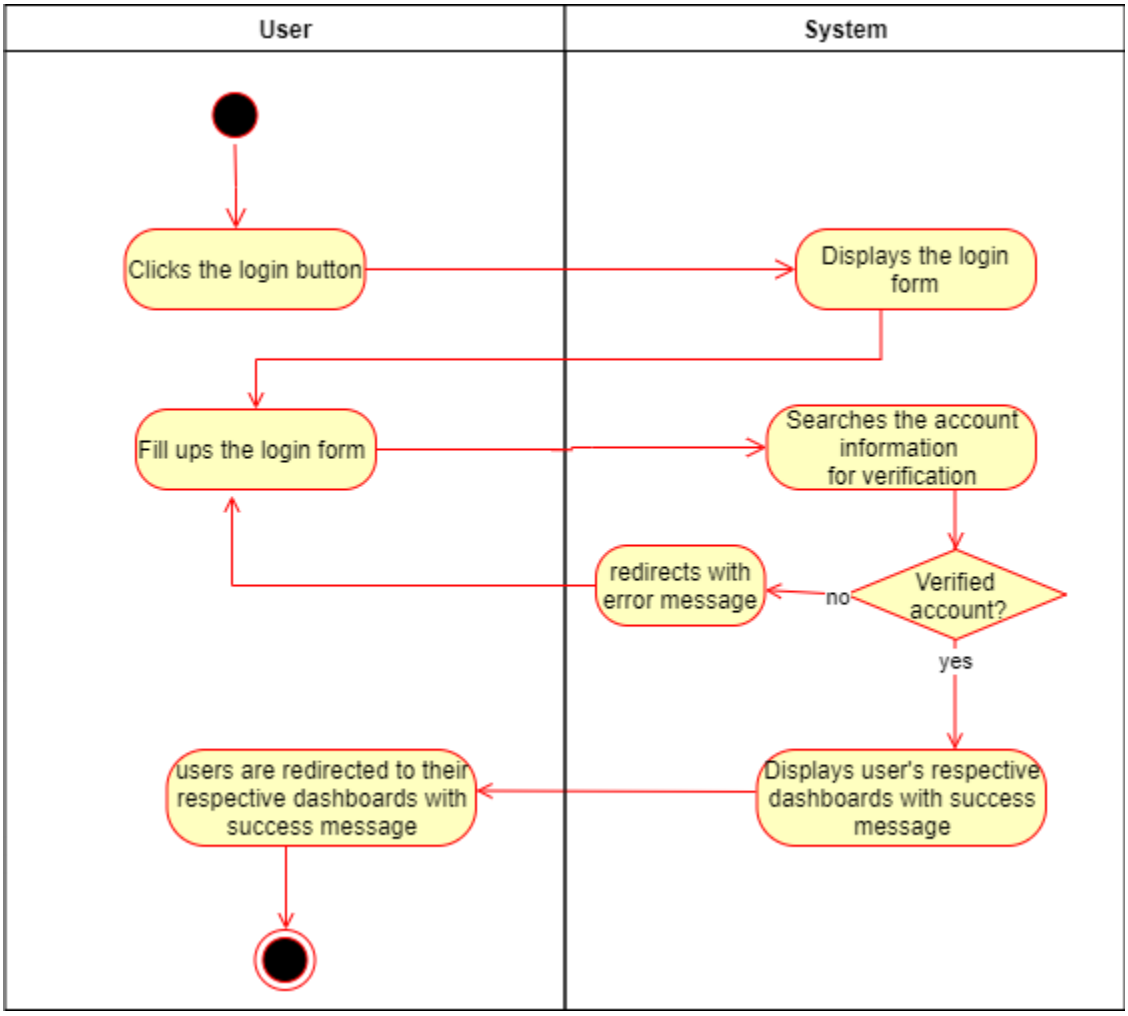


*Figure 26: Login Activity Diagram*

3) Create Lawyer Profile

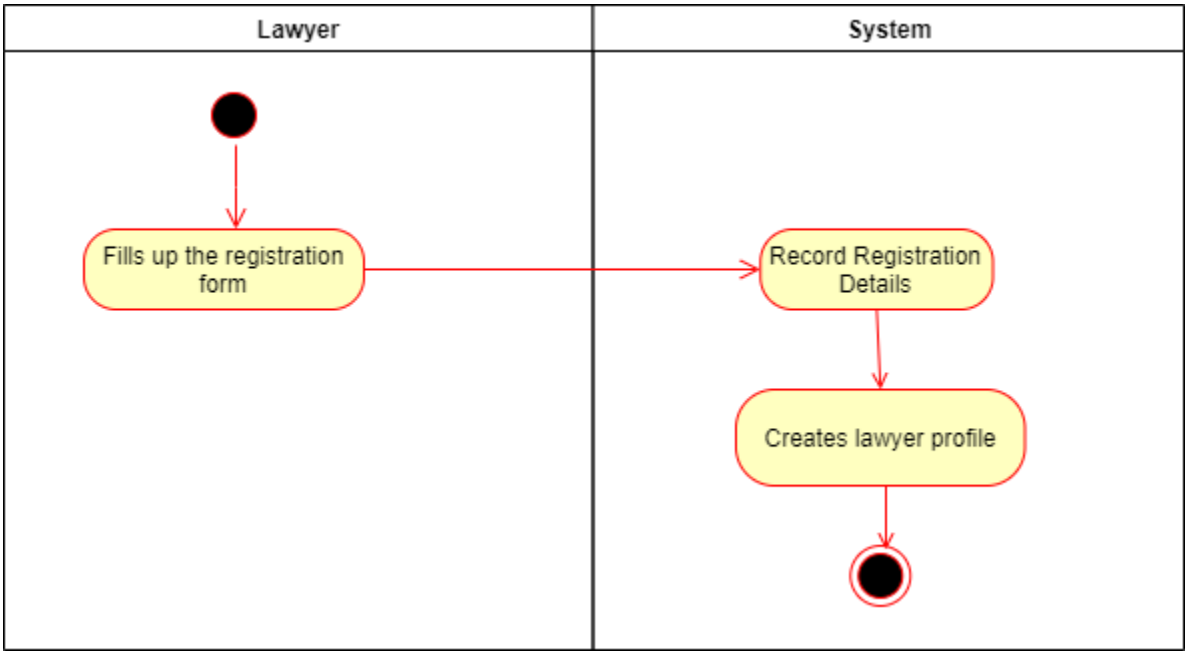


*Figure 27: Create Lawyer profile activity diagram*

4) View Lawyer Profile

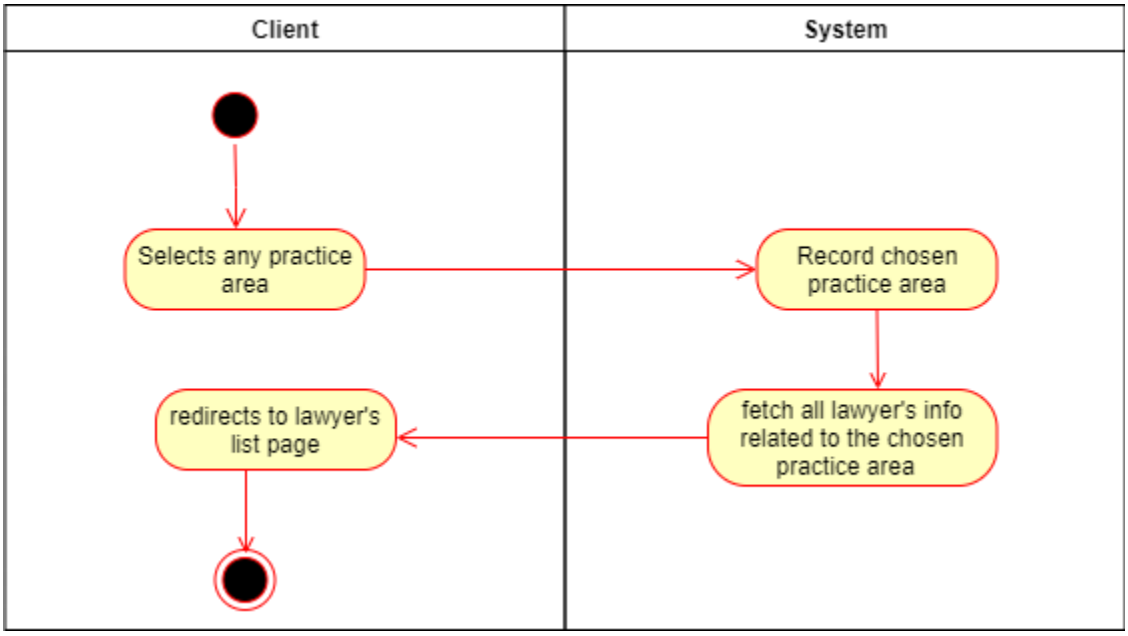


*Figure 28: View lawyer profile activity diagram*

5) Update Lawyer Profile

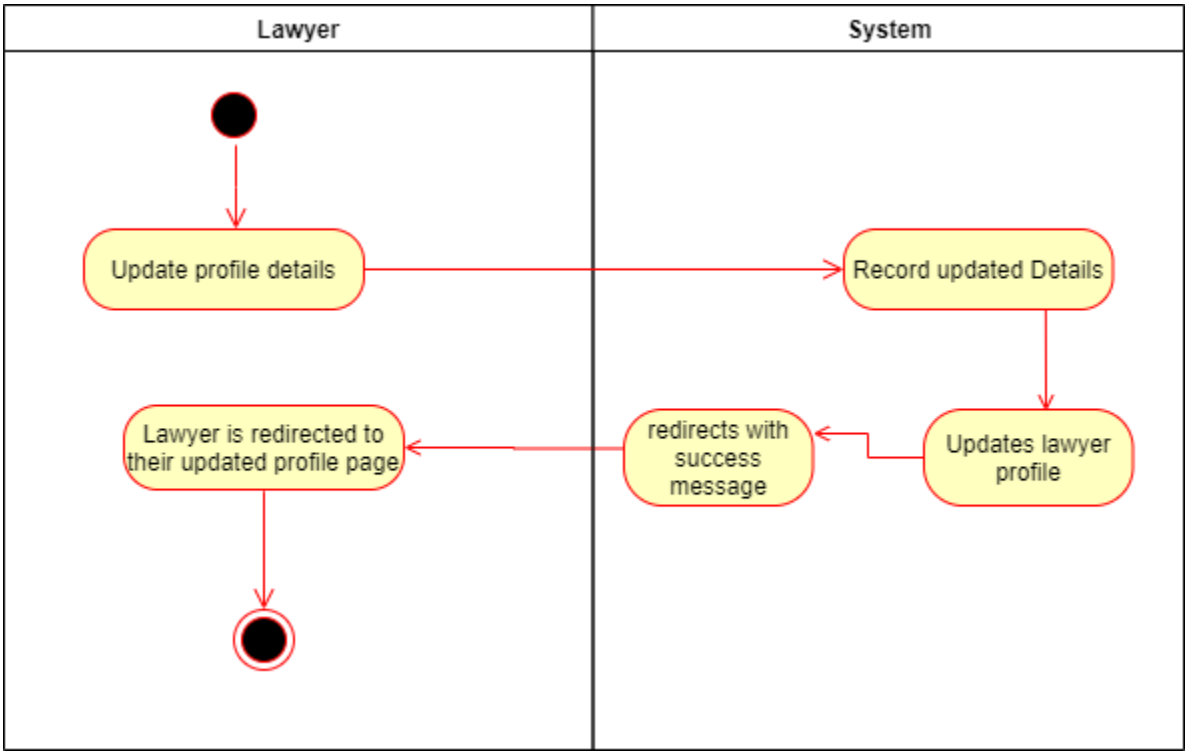


*Figure 29: Update lawyer profile activity diagram*

6) Search Lawyer

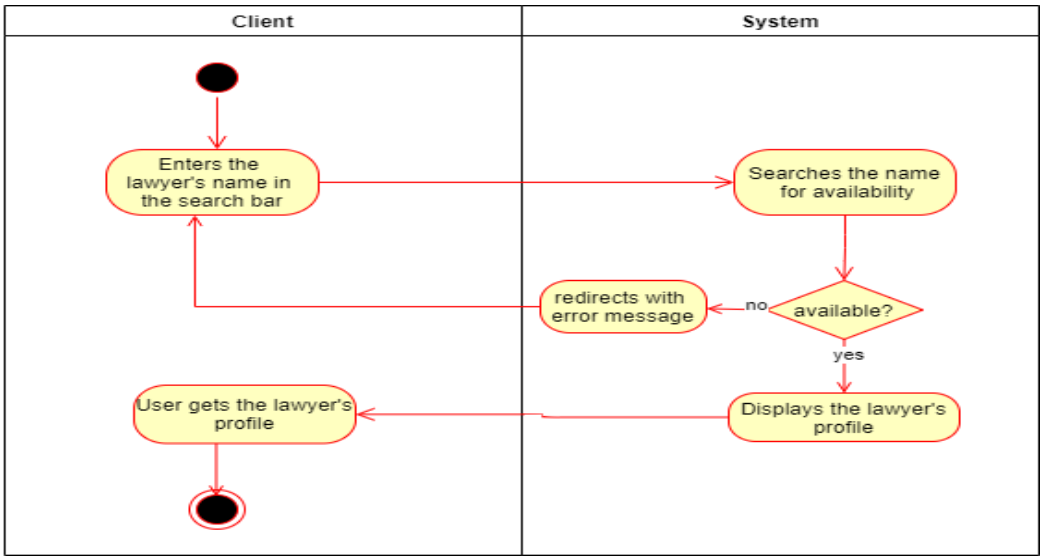


*Figure 30: Search lawyer activity diagram*

7) Book a lawyer

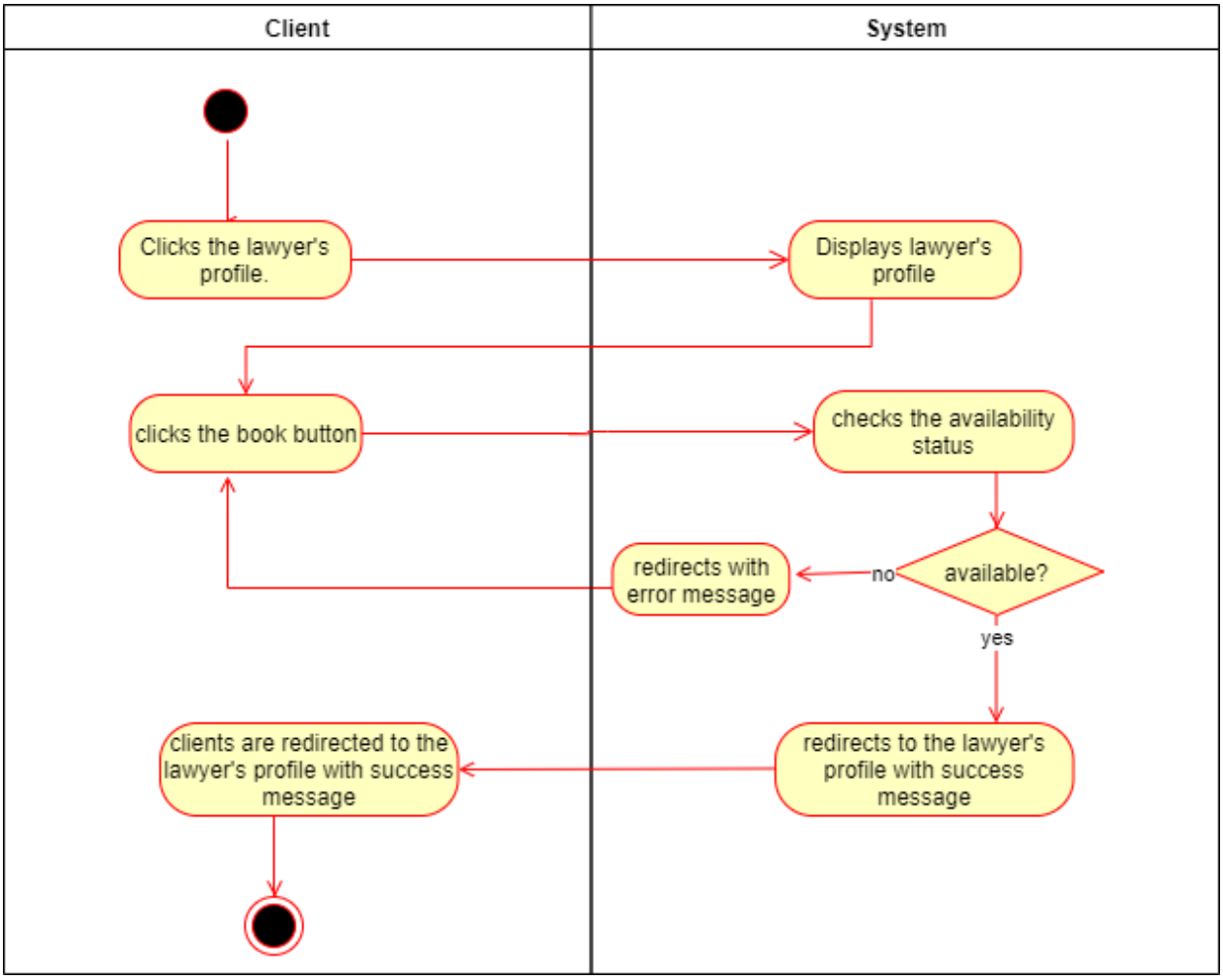


*Figure 31: Activity diagram of booking*

### 3.6.5. Sequence Diagram:

1) Lawyer

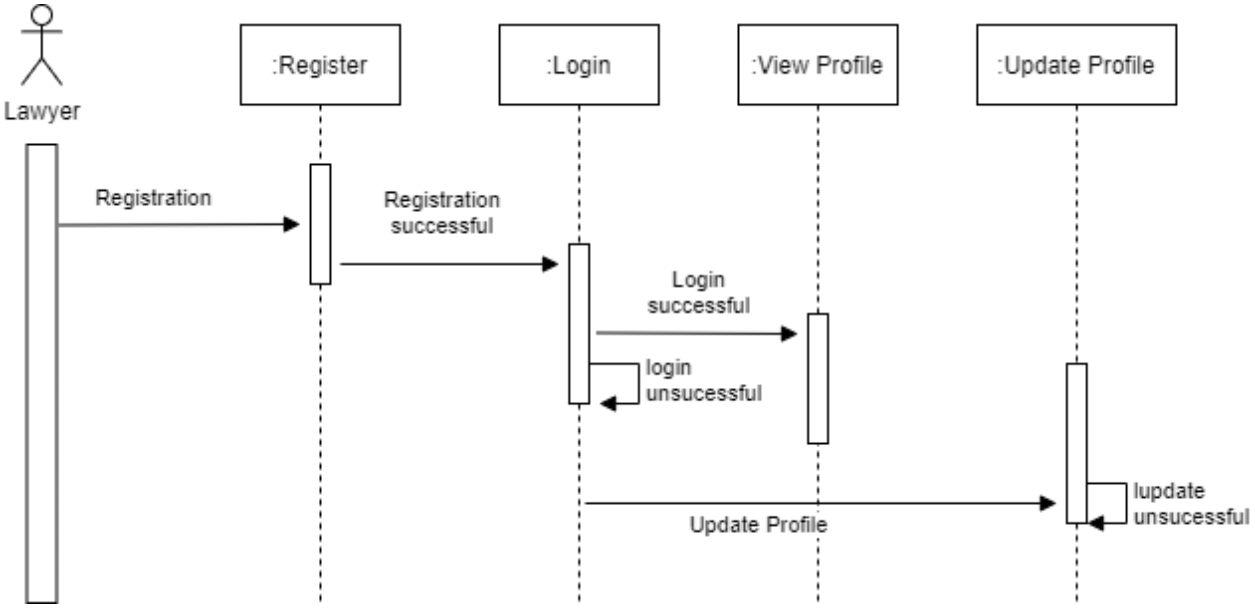


*Figure 32: Lawyer sequence diagram*

2) Client

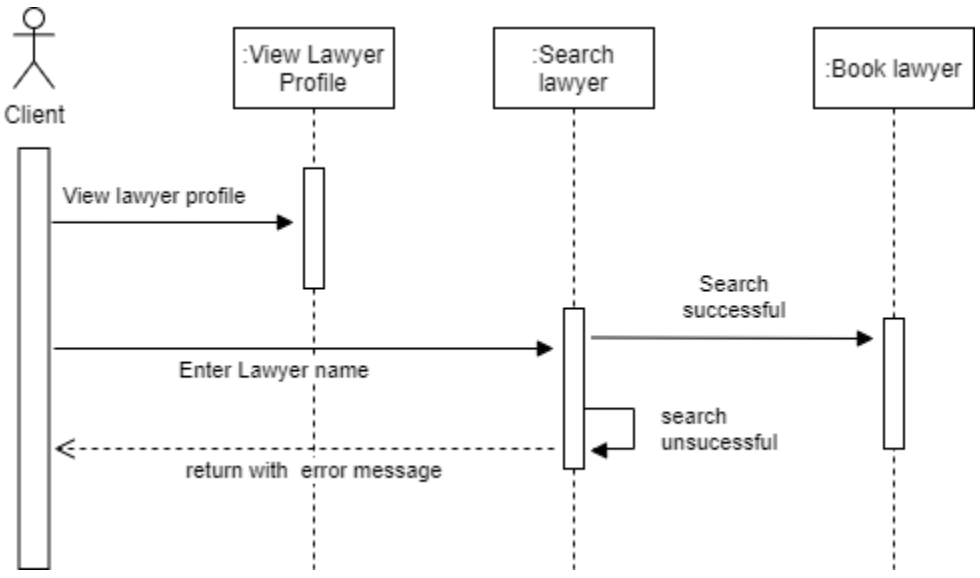


*Figure 33: Client Sequence Diagram*

3) Admin

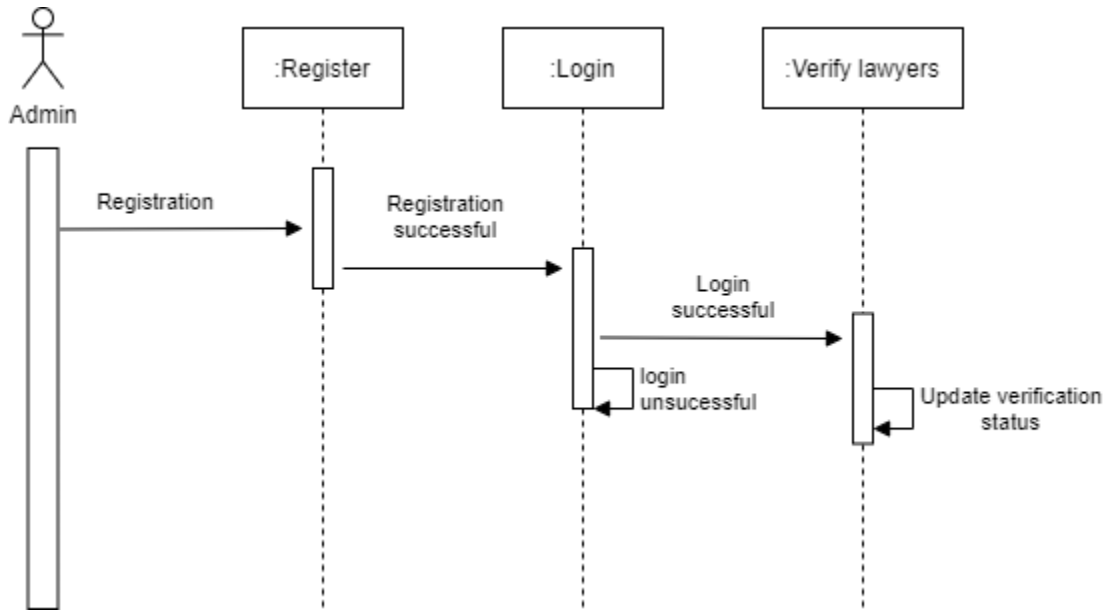


*Figure 34: Admin Sequence Diagram*

### 3.6.6. ERD:

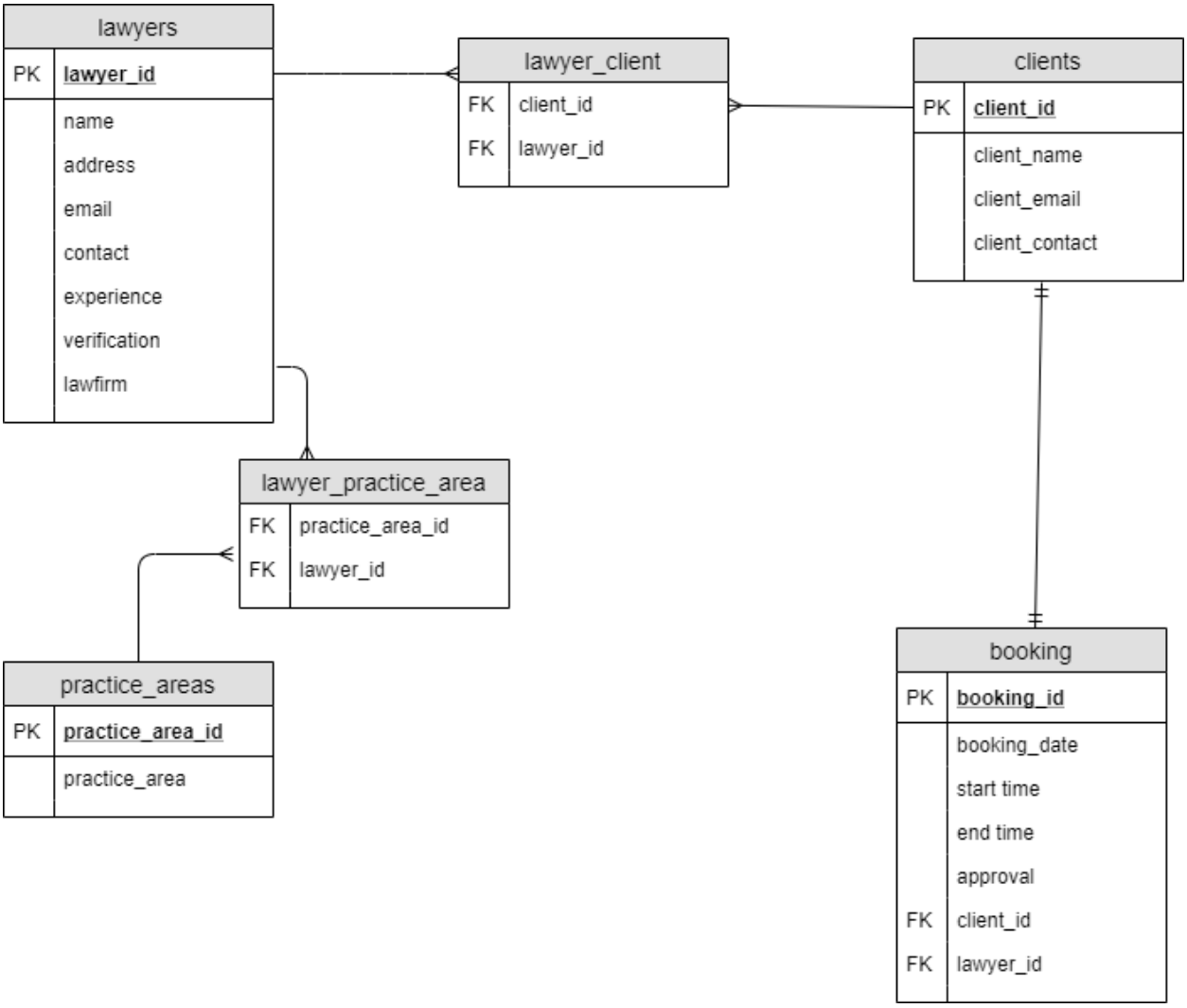


*Figure 35: Final ERD*

## 3.7. Implementation

### 3.7.1. Screenshot of major source code and it's description

1) Landing Page

The following code creates the landing page which is seen at the very first moment of the web app containing navigation bar, search bar, etc.

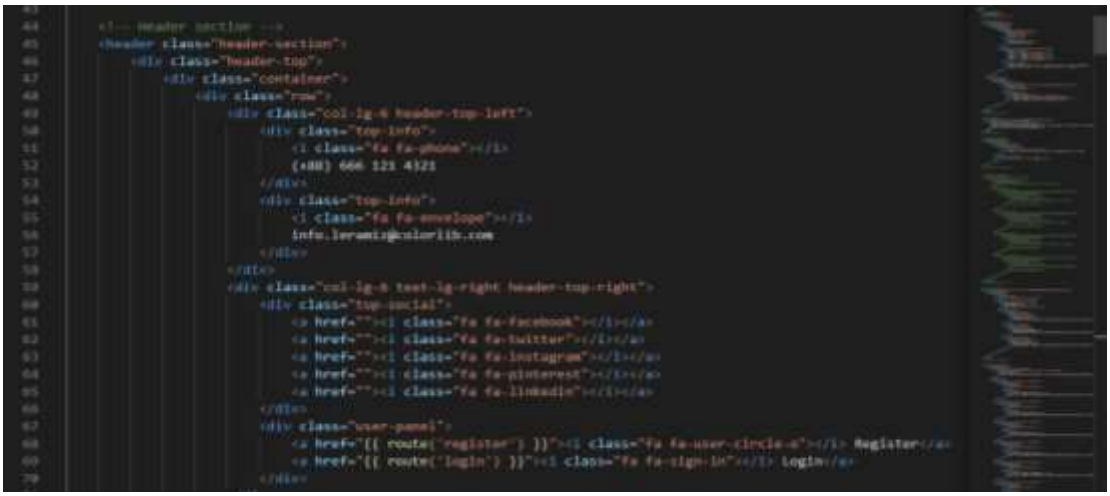

*Figure 36: landing page source code*

2) Login Authentication

The following code manages the user login authentication.

```
42
43      /**
44       * Create a new controller instance.
45       *
46       * @return void
47       */
48      protected function authenticated(Request $request, $user)
49      {
50          if($user->is_admin){
51              return redirect('/admin');
52          }elseif($user->is_lawyer){
53              return redirect('/lawyer');
54          }       You, 3 days ago • lawyers list
55      }
56
```

*Figure 37: filter search function*

3) Lawyer Registration

The following code is a part of lawyer registration form.


*Figure 38: Lawyer Registration source code*

4) Update lawyer profile

The following code is for the update of lawyer profile. This code displays the original data and allows to update new data.


*Figure 39: Update lawyer profile source code*

5) Verification of lawyers

The following code updates the verification status of the chosen lawyer in database. There are two functions, one for verify button and another is for unverify button.

```php
//this function is for updating the verification status as 'verified' by clicking verify button
public function verified(Request $request)
{
    $lawyer=Lawyer::where('lawyer_id', $request->lawyer_id)->get()->first();
    if($lawyer == NULL){
        return redirect()->back()->with('error', 'Cannot update verification');
    }

    $verifiedUpdate = $lawyer->update([
        'verification' => true,
    ]);

    if(!$verifiedUpdate){
        return redirect()->back()->with('error', 'Cannot update verification');
    }
    // Mail::to($appointment->patient->email)->send(new Mailtrap($appointment));

    return redirect()->back()->with('success', $lawyer->name.' has been verified');
}
```

*Figure 40: verification of lawyers*

6) Search Lawyers

The following code searches for the lawyer name in the lawyer table and confirms the search.

```php
class searchController extends Controller
{
    //functions for search functionality
    public function search(Request $request)
    {
        // $query = $request->query('query');
            $lawyers = Lawyer::where('name', $request->search)
                // ->orWhere('description', 'like', '%' . $query . '%')
                ->get();
            if($lawyers){
                return view('pages.client.searchedLawyer', compact('lawyers'));
            }
            else{
                return view('pages.client.searchedLawyer')->with('error', 'Sorry there is no one named'. $reques
            }

    }
```

*Figure 41: Search lawyers code*

7) Book a lawyer

The following code shows the backend process after book button is clicked.

```
//if the booking is successful, the client information is saved in clients table and client_id is saved
if ($client) {
    $clientBook = User::create([
        'user_id' => $client->client_id,
        'name' => $request->name,
        'email' => $request->email,
        'password' => Hash::make($request->name),
        'is_client' => 1
    ]);

    $book = Booking::create([
        'booking_id' => uniqid(),
        'booking_date' => $request->booking_date,
        'booking_time' => $request->booking_time,
        'client_id' => $request->$client->client_id,
        // 'lawyer_id' => $request->lawyer_id,      You, 3 hours ago • Uncommitted changes
    ]);

    return redirect()->route('lawyer.profile')->with('success','Your booking has been completed. Please
} else {
    return redirect()->route('lawyer.profile')->with('error', 'There was an error during booking.');
```

*Figure 42: book lawyer code*

### 3.7.2. Screenshot of GUI and it's description

1) Landing Page

The landing page contains a navigation bar at the top of the page with login, register and other pages. This page also contains search bar in the middle.

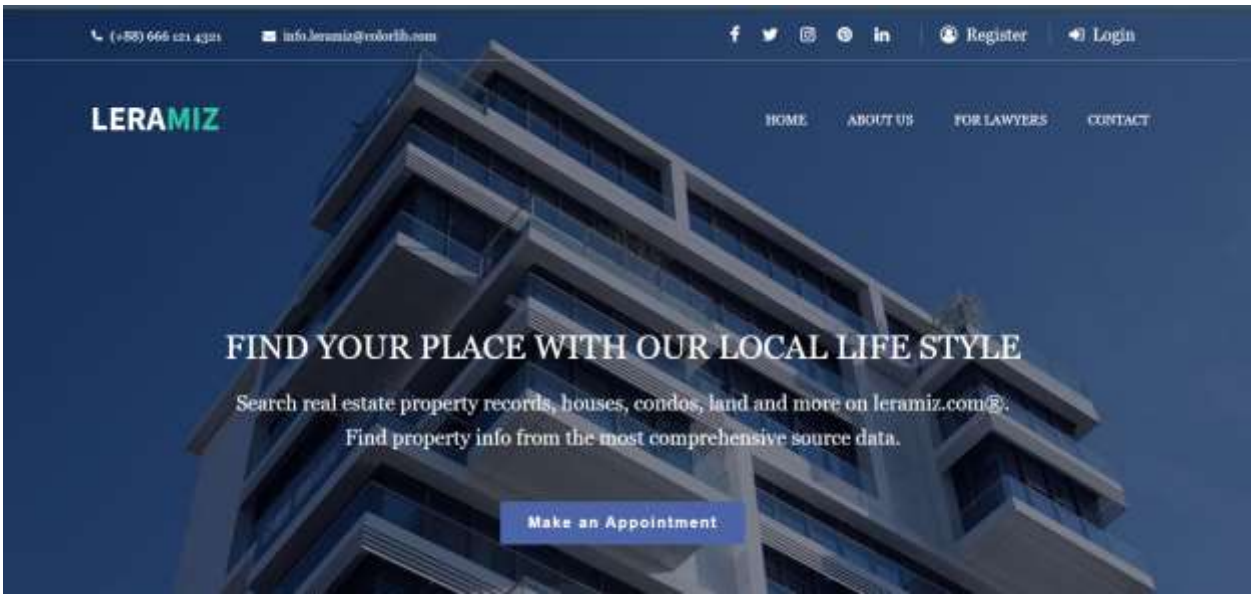


*Figure 43: Landing Page GUI*

2) Lawyer Registration form

This form is redirected when ‘for lawyers’ tab is clicked.


*Figure 44: lawyer GUI  registration form*

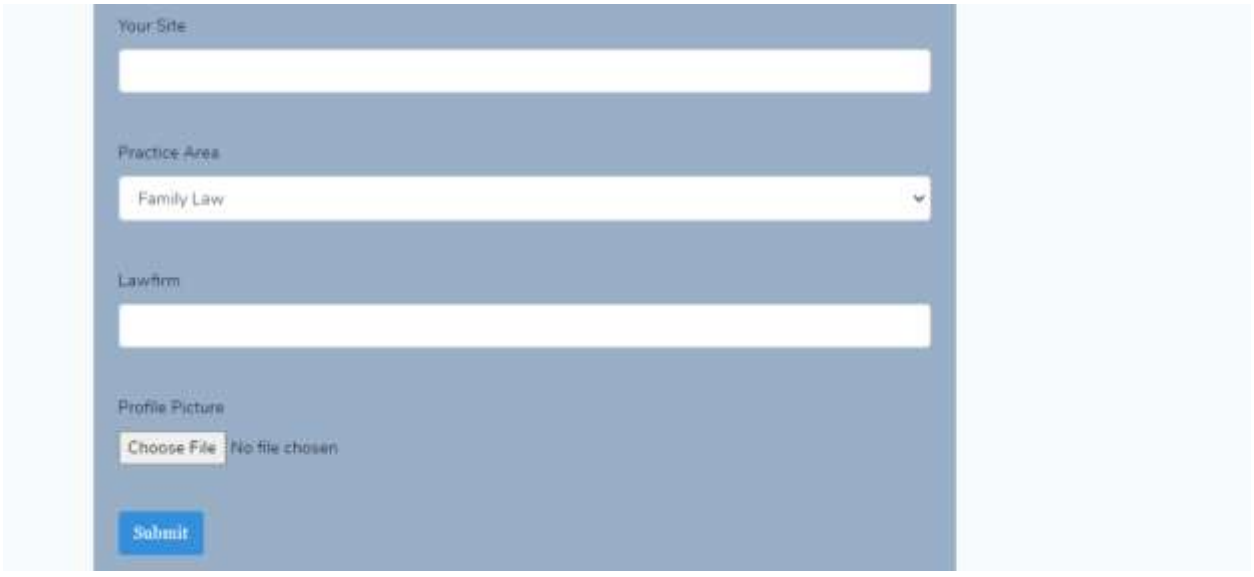


*Figure 45: lawyer GUI registration form*

3) Login Form

This login form is both for admin as well as lawyers.


*Figure 46: login GUI*

4) Admin Dashboard

This page is displayed after the admin is logged in.

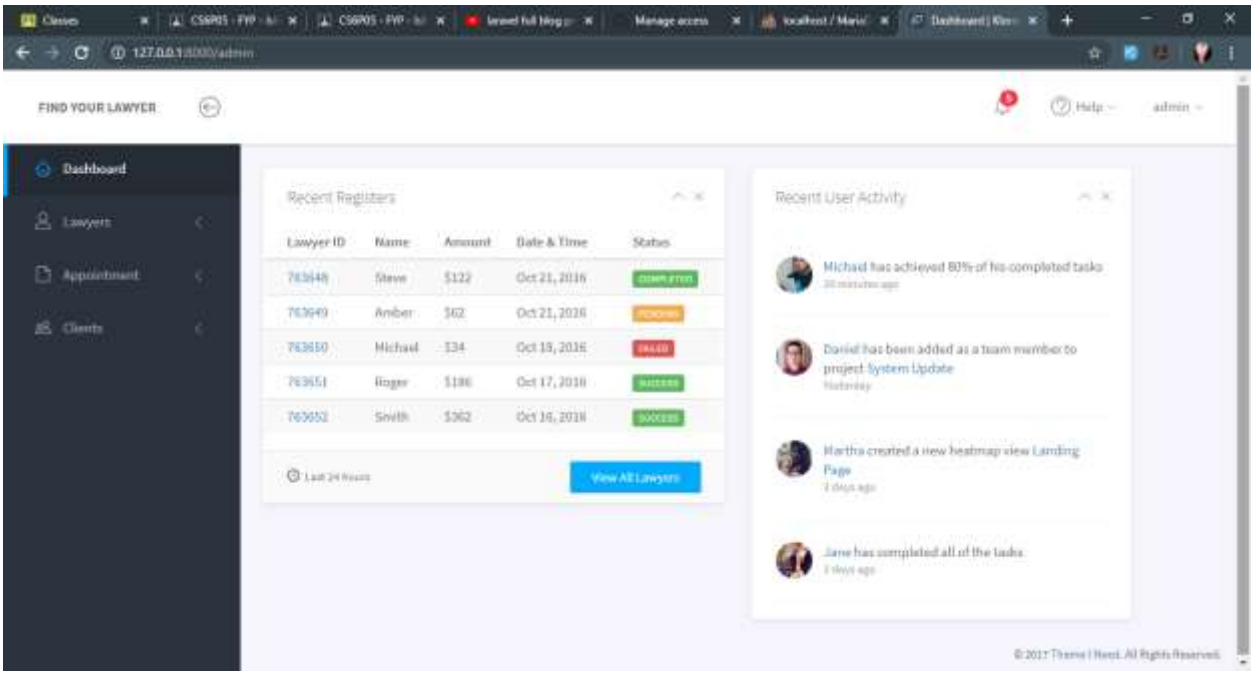


*Figure 47: Admin Dashboard*

5) Lawyer Verification

This page is displayed when the ‘lawyers lists’ tab is clicked on the sidebar. As in the given figure, all the registered lawyers are displayed on the page with the verification status ‘unverified’.


*Figure 48: lawyer verification GUI*

6) Lawyer Profile

This page is displayed when the ‘view profile’ tab is clicked on the lawyer’s dashboard.

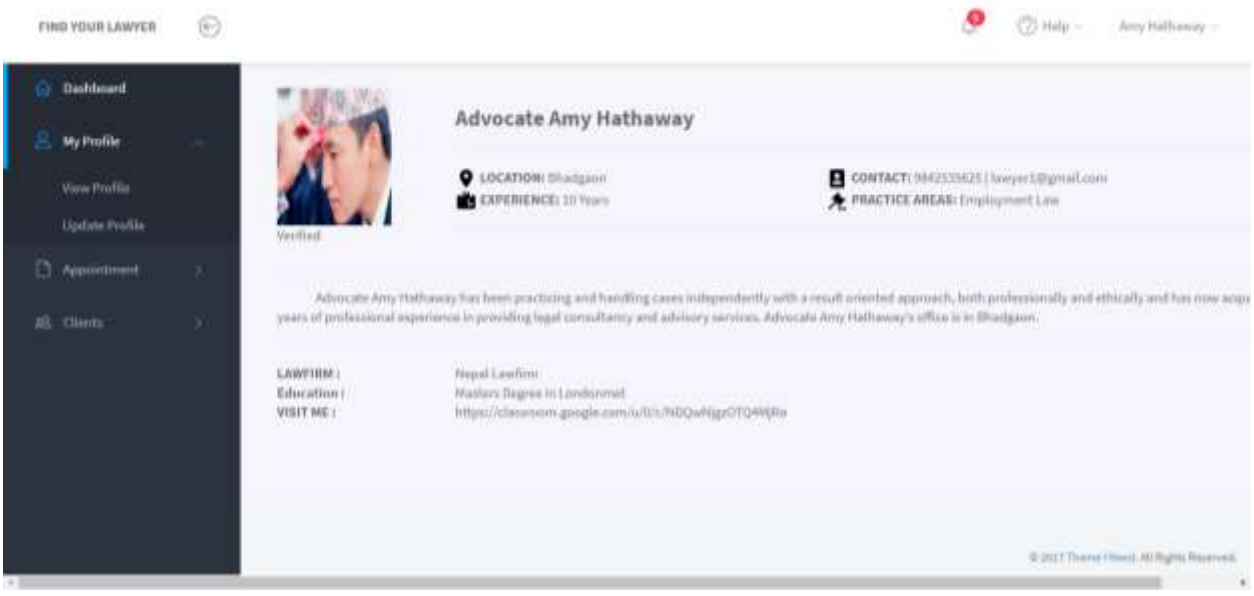


*Figure 49: lawyer profile GUI*

7) Update Lawyer Profile

This page is displayed when the lawyer clicks the ‘update profile’ tab. This page shows the original profile description of the lawyer which can be updated in the following form.


*Figure 50: update lawyer profile GUI*

8) Search Bar

This search bar is displayed on the landing page of the web app right in the middle of the page. This search bar accepts the names of the lawyers and searches for the given lawyer profile.

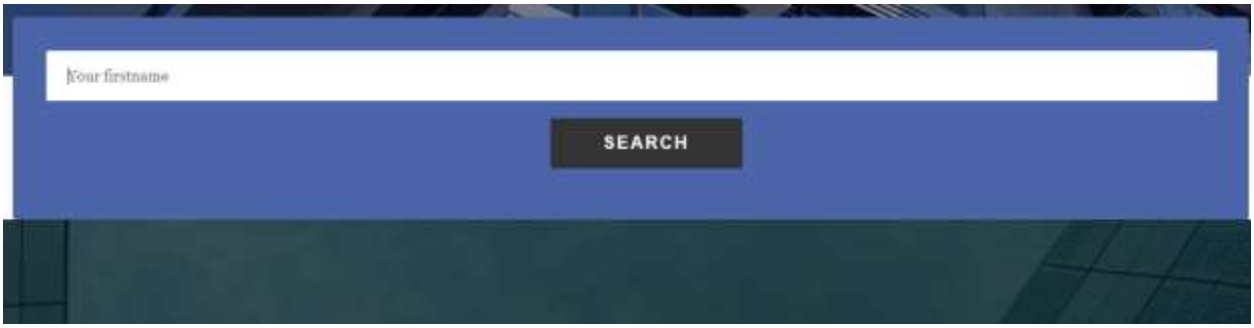


*Figure 51: Search bar GUI*

# 4. Testing and Analysis

## 4.1 Test Plan

Test planning, the most important activity to ensure that there is initially a list of tasks and milestones in a baseline plan to track the progress of the project. It also defines the size of the test effort. It is the main document often called as master test plan or a project test plan and usually developed during the early phase of the project.

## 4.2 Unit Testing

Unit Testing is a type of software testing where individual units or components of a software are tested. The purpose is to validate that each unit of the software code performs as expected. Unit Testing is done during the development (coding phase) of an application by the developers. Unit Tests isolate a section of code and verify its correctness. (Types of Software Testing - GeeksforGeeks, 2020)

## 4.3 System Testing

System Testing is a black box testing technique performed to evaluate the complete system the system's compliance against specified requirements. In System testing, the functionalities of the system are tested from an end-to-end perspective. System Testing is usually carried out by a team that is independent of the development team in order to measure the quality of the system unbiased. It includes both functional and Non-Functional testing.

## 4.4 Critical Analysis

This project was directed towards online booking. Before starting this project, there was planning and research undertaken. I thought to make lawyer booking system with as many as possible additional features but the system could not be that perfect. It is still lacking a lot. Many features are still lacking which I had marked in my list but could not provide more features for the system. The application is developed properly but still needs to be undertaken.

This booking system is a web based application where people can chose lawyers according to their criterias and contact them. This application allows lawyers to register themselves and are provided their profile after they are registered in the system. Also, if the lawyers wanted to update their profile descriptions, then they can also do so. Their profile will be updated. Also, the search feature in my application would have been better if I could apply filter function in search. But the search feature in the application accepts only the lawyer names. The search function of my system is only based on lawyer's name. Also, the booking system of the application, for my application, I have not included schedules of lawyers. I have simply included the requirement of clients giving their information and appointment time while they are booking a certain lawyer. Then the lawyer receives the booking invitation from the user. If they are accepted by the lawyer for the meeting then, the client is notified for the meeting.

The whole system was okay for the online booking system but not so fruitful. The application could not meet the desired requirements of my planning. Also due to other modules deadline, this project could not have a full attention and the time and work this project needed was not given. But in future, this application will be error free and will work efficiently. Users will not have much problem while running application.

# 5. Conclusion

## 5.1. Legal, Social and Ethical Issues

While developing the any application in real-time world, there may occur some some legal, social and ethical issues. One should always know the terms and policies. Some issues that this web application could be facing are discussed below.

### 5.1.1. Legal Issues

This section discusses the legal issues involved with the development of a web application or website in real world. One of the legal issues while developing web application is copyright. A party is guilty of copyright infringement if they violate one of the five exclusive rights given to copyright owners under the Copyright Act. And in our case there are pictures which must be of our own so that to protect us from copyright issue. Also, logos must be of our own. The selection and protection of a domain name may be the most important detail in the creation of a web site. (A, 1996-2018 )

### 5.1.2. Social Issues

This section discusses about the social issues that occurs while developing a web application. One of the social issue is Online bullying. Some people may have personal grudge against some lawyers and use the opportunity to tarnish their reputation by simply spreading false rumor. Online bullying is a growing problem among youth. Our ‘always online’ society makes it difficult to avoid online bullying.

### 5.1.3. Ethical Issues

Ethics are righteous principles that guide human beings to act one in right ways. When it comes to practice in daily life, every day Attorneys make ethical decisions when deciding how to represent a client and how to defend him. While working for large firms attorneys must act ethically in their business practices. While in business practice sometimes laws firms have to select a non-lawyer to be their chief executive officer. This decision can create an ethical issues because people who

are not lawyers can't offer a legal advice. Other employee related to this field such as paralegals and secretaries are also not allowed to give legal advice, legal firms must carefully choose and train staff and make sure that they don't violate ethical rule. When it comes to implementing a project, ethical issues may arise when third parties post information about lawyers on social networking sites. Third parties can access information from this application and can post their credentials information without their permissions. The opposition can also missuses that information that would lead to an unfair circumstances. Law firms are large entities that may constitute thousands of clients. Many of the opposing interest can use conflict checking to make sure that they do not contract with a client. For lawyers each state bar establishes its own rules of professional responsibility. And the law firms must ensure that their associated partner, clients and association must follows the rules. For attorney these rules are more important than other duty like making money for her firm or to advocate for her client.

If any of the lawyer, client breaks one of these rules and found to commits malpractice, the individual attorney and the firms could be sued. And the lawyers who breaks rules of professional conduct can be sanctioned. (Thompson, 2020)

## 5.2. Advantages

This application is web based application dealing with online booking of lawyers. Today's world knows nothing about without the word online. And every little thing to large scale things are happening web based from a small delivery to hotel booking and many more. People are lazy to travel places and that's why online applications exists. Some of the advantages of my application are:

- People can save their time and time is valuable than money.
- People can get to know the lawyer's fields before blindly visiting them.
- Easy contact with the lawyers in a single call or via emails.
- People can filter out the lawyers according to their requirements.
- Lawyers can gain instant publicity through the application as many people will be viewing their profiles.

## 5.3. Limitations

There are always limitations whenever some applications are developed. Some of the limitations on my project are:

- This application can only search lawyers based on lawyer's name and does not contain filter search function.
- This application automatically prepares lawyer's profile and it may not satisfy lawyers.
- This application lacks lawyer's schedules and can be booked only when the lawyer accepts the invitation. This may make clients lose their patience.

## 5.4. Future Work

As the application still lacks some features, more features will be added to the application in coming future to enhance the good performance of the application such as filter search and lawyer schedue. The feedback from survey will be taken seriously and improvements will be done. Both the interface of the application and coding will be done properly. The system will be upgraded with some extra features that will make system run efficiently will be added.

# References

(1999-2020). Retrieved from Legal Match: https://www.legalmatch.com/

(2019). Retrieved from Nepal Lawyer: https://www.nepallawyer.com/

(2019). Retrieved from RocketLawyer: https://www.rocketlawyer.com/

A, D. (1996-2018 ). Retrieved from bitlaw.com: https://www.bitlaw.com/internet/webpage.html

*draw.io*. (n.d.). Retrieved from draw.io: https://www.draw.io

Islam, K. A. (Oct 18, 2013). In *Agile Methodology for Developing & Measuring Learning: Training Development* (p. 98). AuthorHouse.

JANSE, B. (2019). What is a Rational Unified Process (RUP)?

Johnston, S. (2017, Dec 15). *Benefits, Purpose and Uses of Online Booking Systems.* Retrieved from bookinglive: https://www.bookinglive.com/blog/why-use-an-online-booking-system

Khan, N. N. (2018, july 23). History and evolution of technology.

*Legal Issue Law and Legal Definition | USLegal, Inc.* (1997-2019). Retrieved from uslegal.com: https://definitions.uslegal.com/l/legal-issue/

*Modern Technology*. (2018, Jul 13). Retrieved from www.bartleby.com: https://www.bartleby.com/essay/Modern-Technology-F38JZCFAQG8A5

*MVC Definition.* (2017, March 7). Retrieved from techterms: https://techterms.com/definition/mvc

Njenga, A. (Nov 21, 2018). 10 Popular PHP frameworks in 2020. *Raygun*.

Rouse, M. (2019, august). *What is Web Application (Web Apps) and its Benefits*. Retrieved from techtarget.com: https://searchsoftwarequality.techtarget.com/definition/Web-application-Web-app

*THE USE CASE MODEL.* (2004). Retrieved from Sparx Systems UML Tutorials: https://www.sparxsystems.com/downloads/whitepapers/The_Use_Case_Model.pdf

*The Waterfall Model.* (2019). Retrieved from free management books: http://www.free-management-ebooks.com/news/waterfall-model/

Thompson, V. (2020). *Ethical Dilemmas in Law Firms*. Retrieved from smallbusiness.chron.com: https://smallbusiness.chron.com/ethical-dilemmas-law-firms-61000.html

Traveler, S. (2019, september 19). THE HISTORY OF BOOKING SYSTEMS.

*Types of Software Testing - GeeksforGeeks*. (2020). Retrieved from geeksforgeeks: https://www.geeksforgeeks.org/types-software-testing/

*Visual Studio Code - Code Editing. Redefined*. (2020). Retrieved from Visual Studio Code: https://code.visualstudio.com/

*Visula* . (n.d.). Retrieved from visual studio code: https://code.visualstudio.com/

*What is a Survey - Definition, Methods, Characteristics and ...* (2020). Retrieved from QuestionPro: https://www.questionpro.com/blog/surveys/

# Appendix

## Testing

### 1) Unit Testing

#### 1) Invalid Email(Admin)

| Test Case: email address must include @ | |
|---|---|
| Purpose: To verify email address. | |
| Expected | Error message for email |
| Outcome | Error message for email |
| Result | Sucessful |

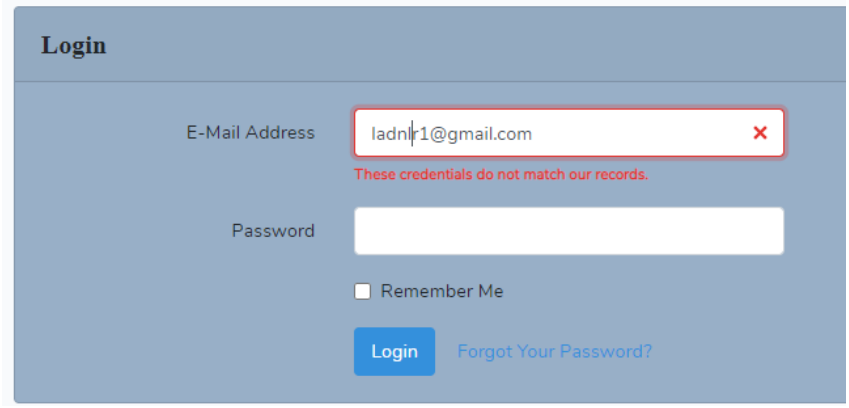


*Figure 52: email validation*

## 2) Contact No Validation (Lawyer Registration Form)

| Test Case: contact must contain 10 digits. | |
|---|---|
| Purpose: To verify contact no. | |
| Expected | Error message for contact no. |
| Outcome | Error message for contact no. |
| Result | Successful |


*Figure 53: Number valiadtion*

## 3) Password Confirmation (Admin Registration)

| Test Case: Password must be same for password confirmation field. | |
|---|---|
| Purpose: To verify password confirmation | |
| Expected | Error message for password confirmation |
| Outcome | Error message for password confirmation |
| Result | Successful |


*Figure 54: password confirmation error*

## 4) Field Requirement (Lawyer registration)

| Test Case: All the fields must be filled. | |
|---|---|
| Purpose: To insure all data are inserted. | |
| Expected | Error message for filed insertion. |
| Outcome | Error message for field insertion. |
| Result | Successful |


*Figure 55: Field insertion test case*

## 2) System Testing

### 1) Login Admin/lawyer

| Test Case: Admin/lawyer should be redirected to their dashboard after logged in. | |
|---|---|
| Purpose: To verify whether the login function works or not. | |
| Expected | Display dashboard |
| Outcome | Display dashboard |
| Result | Sucessful |

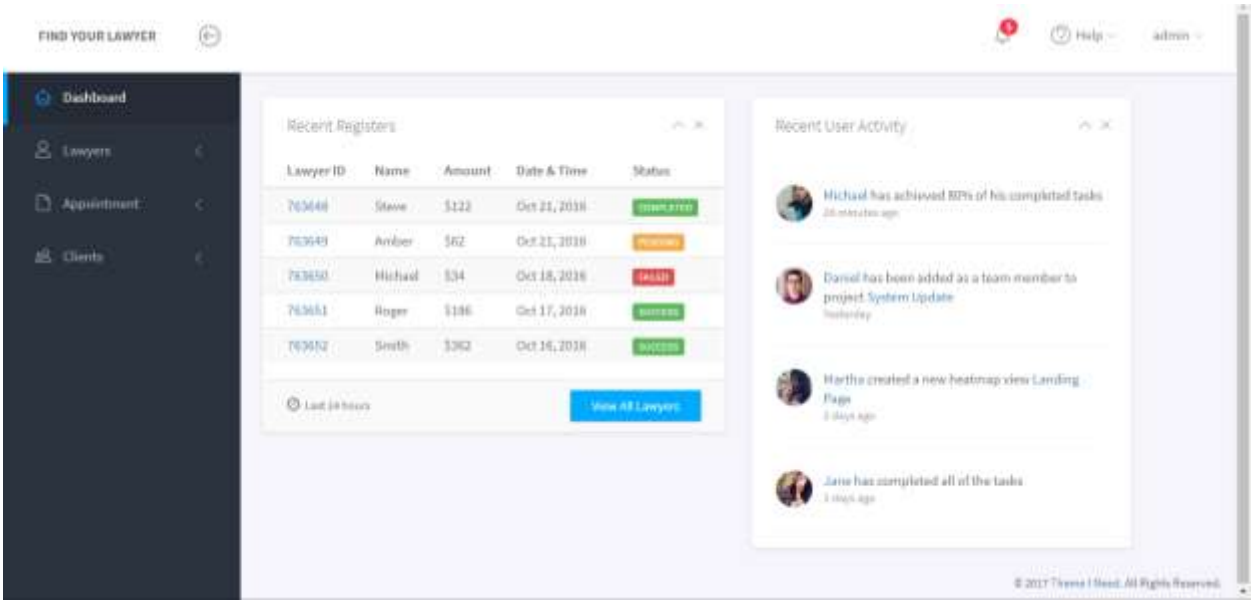


*Figure 56: admin dashboard*

## 2) Display searched Lawyer Profile

| Test Case: Client must be redirected to the lawyer's profile after lawyer's name is searched. | |
|---|---|
| Purpose: To verify whether the search functionality is working or not. | |
| Expected | Display lawyer's profile |
| Outcome | Display lawyer's profile |
| Result | Sucessful |

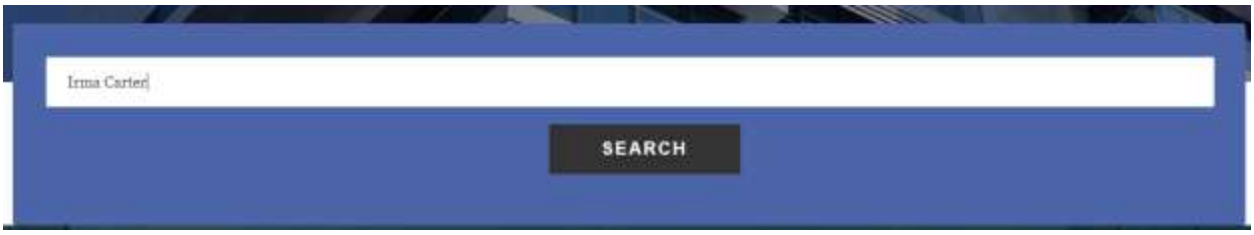


*Figure 57: search lawyer*

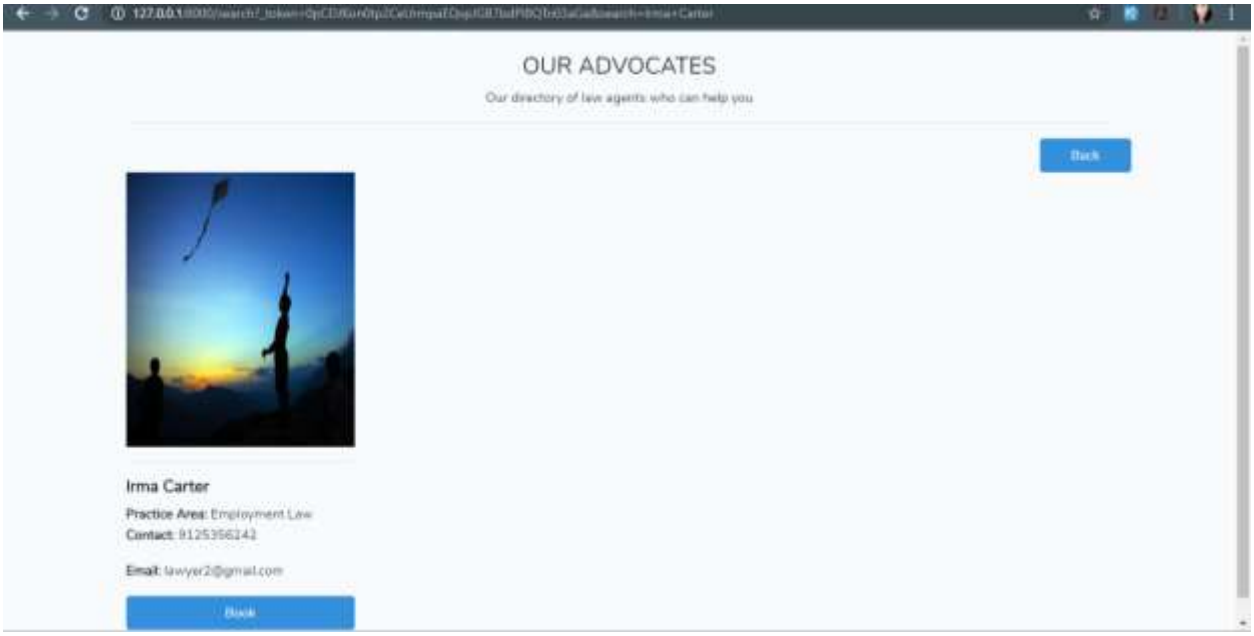


*Figure 58:searched lawyer profile*

### 3) Update Lawyer Profile

| Test Case: Lawyer must be able to update their profile. | |
|---|---|
| Purpose: To verify whether the update function is working or not. | |
| Expected | Display updated lawyer's profile |
| Outcome | Display updated lawyer's profile |
| Result | Sucessful |

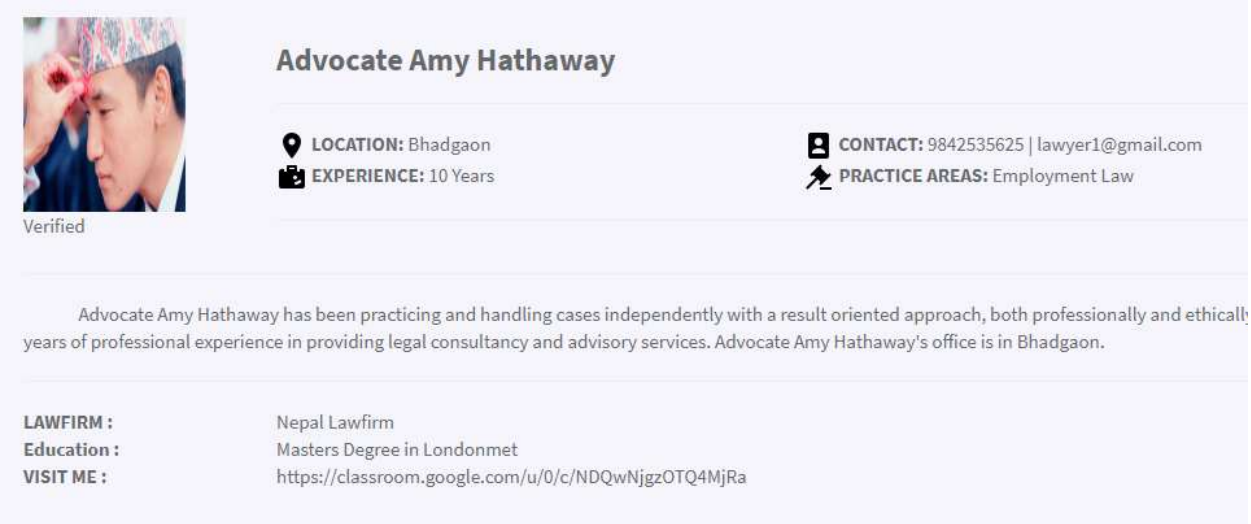


*Figure 59: before lawyer update*

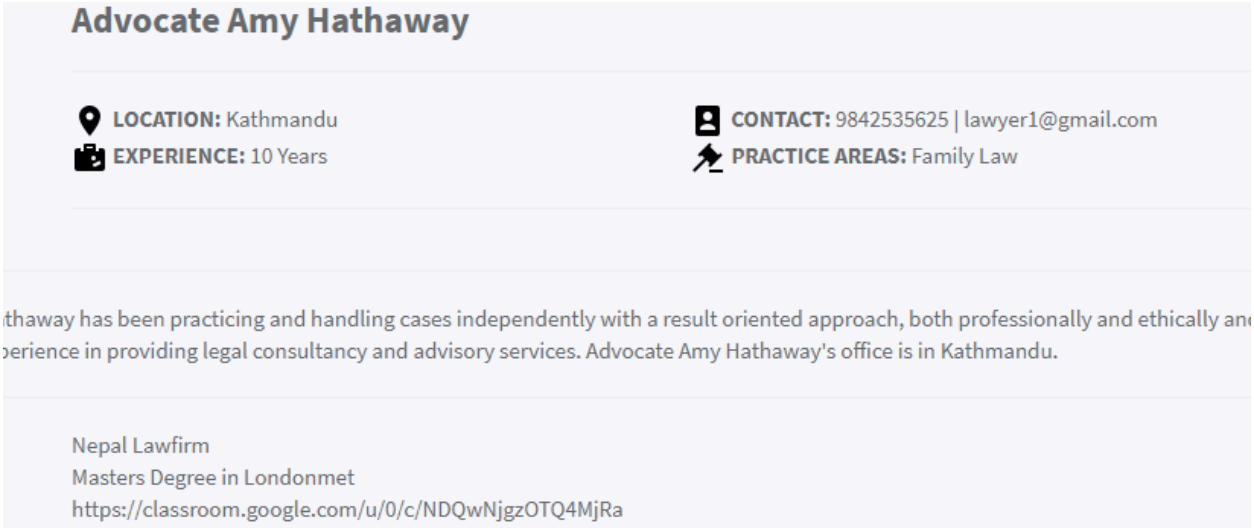


*Figure 60: after lawyer update*

## 4) Booking form

| Test Case: Client must be redirected to booking form when the book button is clicked. | |
|---|---|
| Purpose: To verify whether the book function is working or not. | |
| Expected | Display booking form |
| Outcome | Display booking form |
| Result | Sucessful |

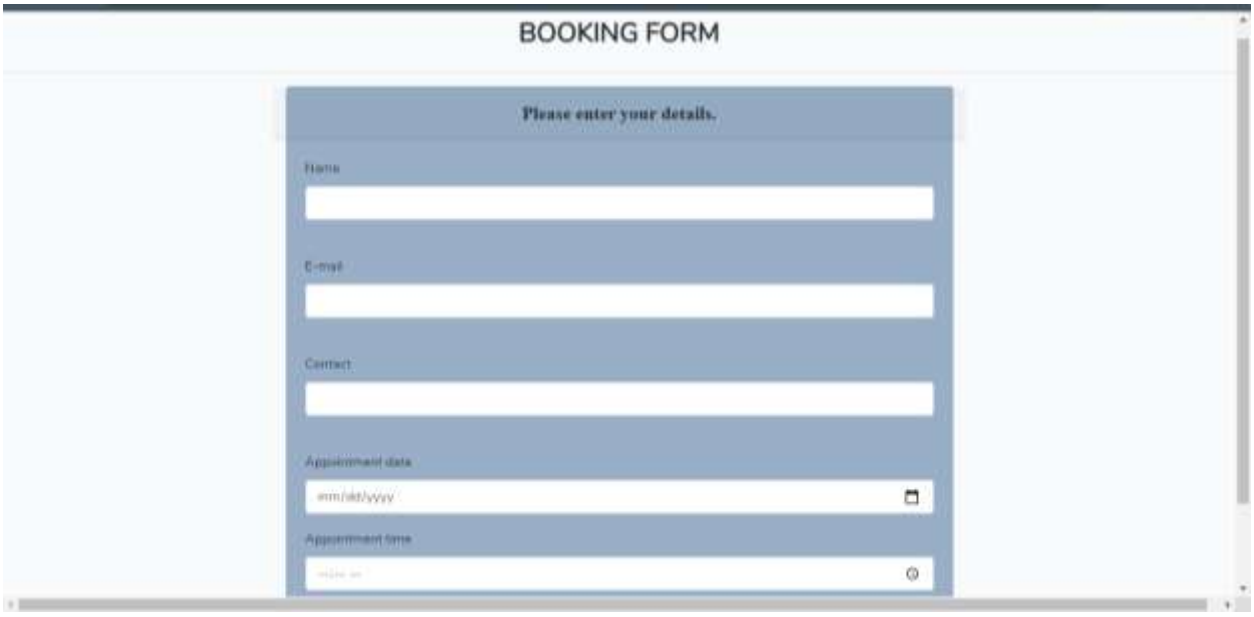


*Figure 61:booking form*

## 5) View Lawyer Profile

| Test Case: Lawyers must be able to view their profile after they are logged in. | |
|---|---|
| Purpose: To verify whether the view profile is working or not. | |
| Expected | Display lawyer's profile |
| Outcome | Display lawyer's profile |
| Result | Sucessful |

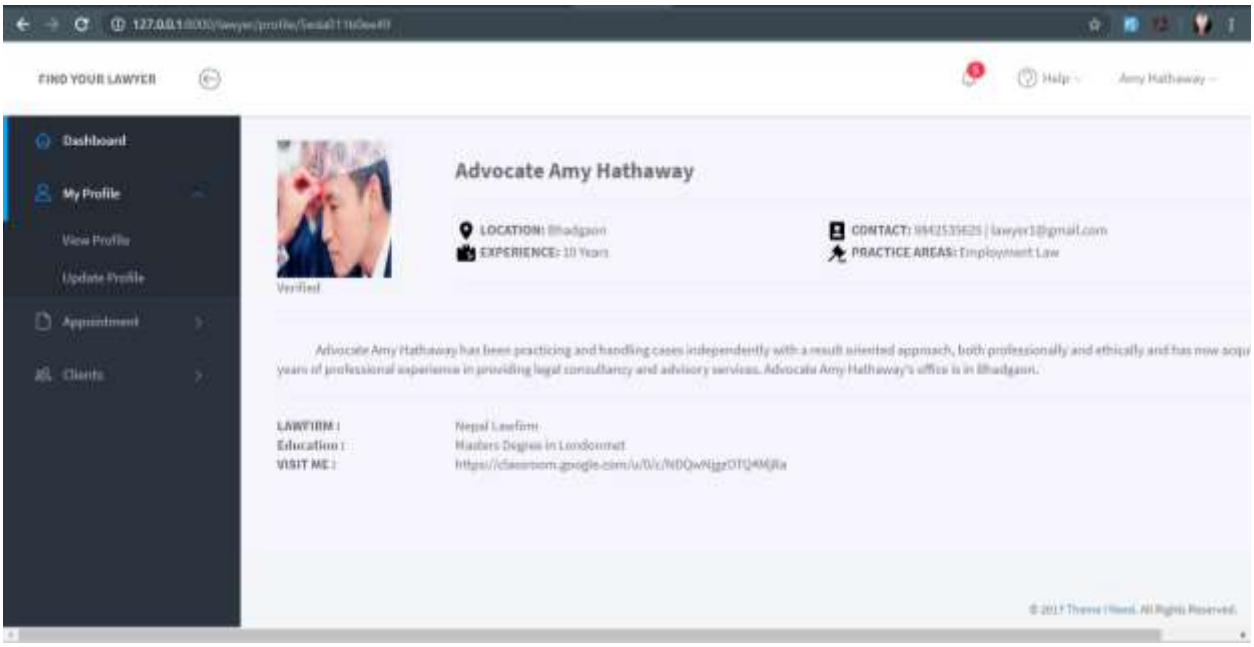


*Figure 62: lawyer's profile*

6) Verification of lawyer

| Test Case: The status for verification of a lawyer must be changed after clicking verify button by the admin. | |
|---|---|
| Purpose: To verify whether the verification function is working or not. | |
| Expected | Change Lawyer's verification status |
| Outcome | Lawyer's verification status is changed. |
| Result | Sucessful |

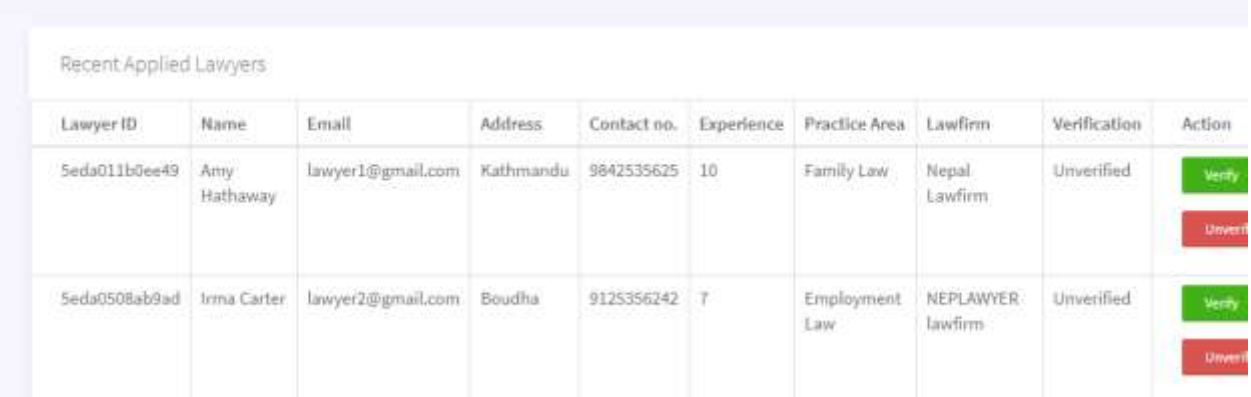


*Figure 63: before change of verification status*


*Figure 64: after change of verification status*

## Wireframes

1) Landing Page

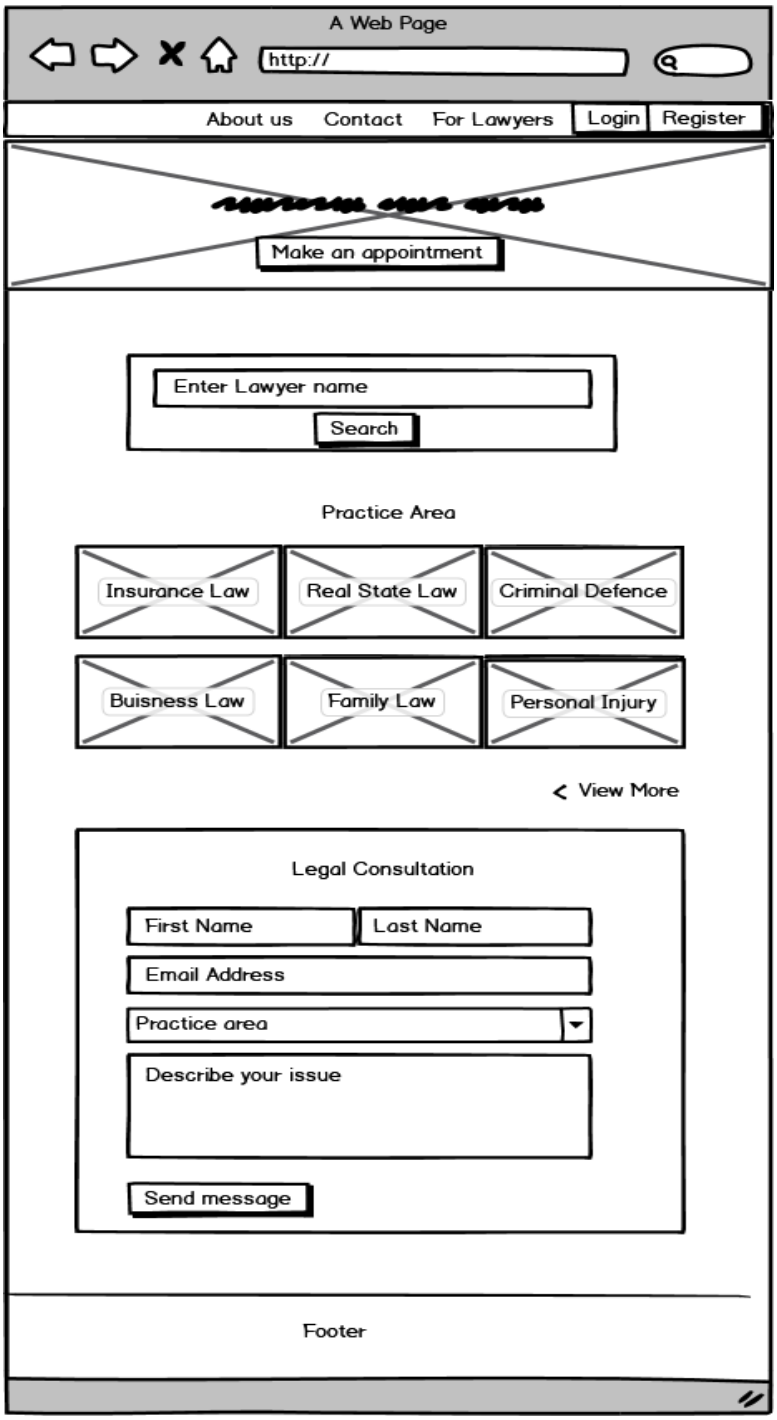


*Figure 65: landing page wireframe*

2) Admin Dashboard

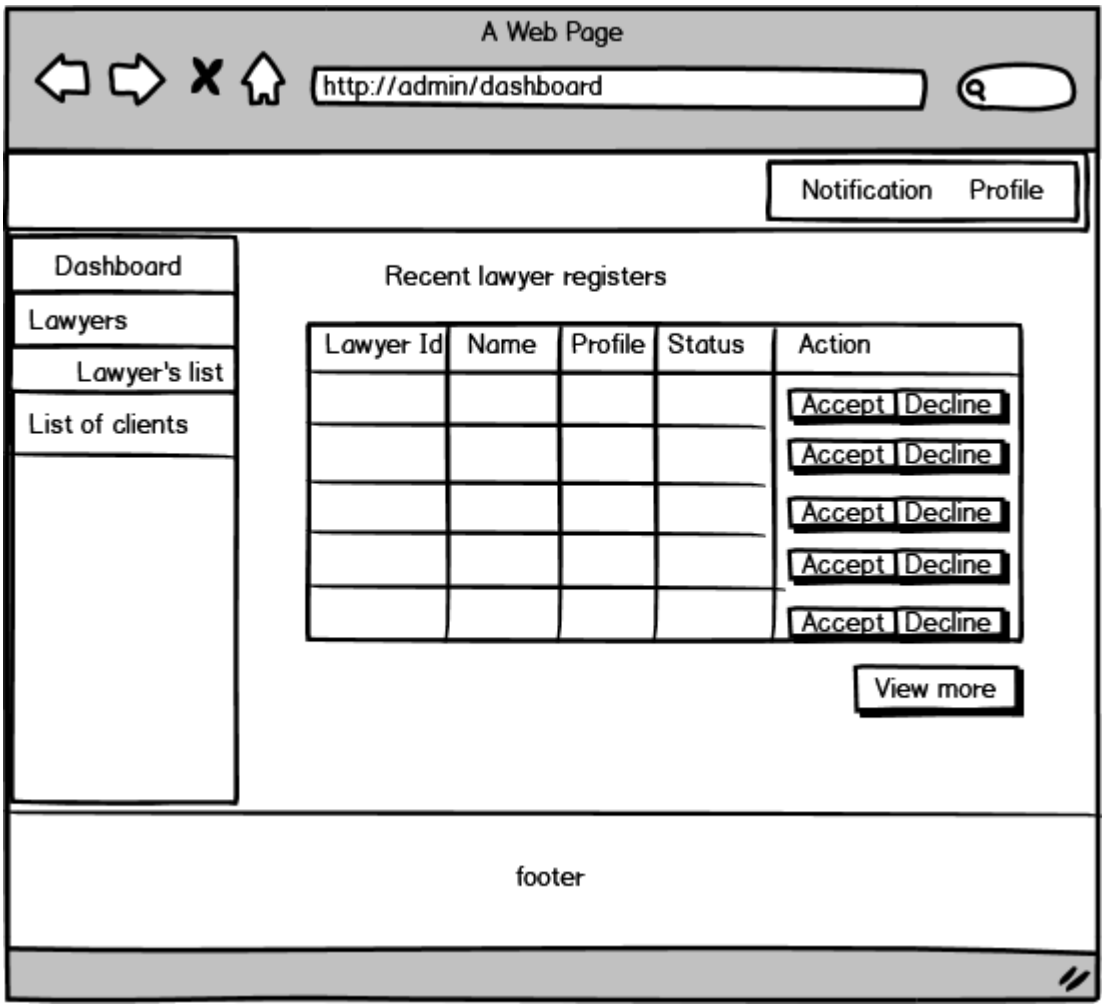


*Figure 66: admin dashboard wireframe*

3) Lawyer Dashboard

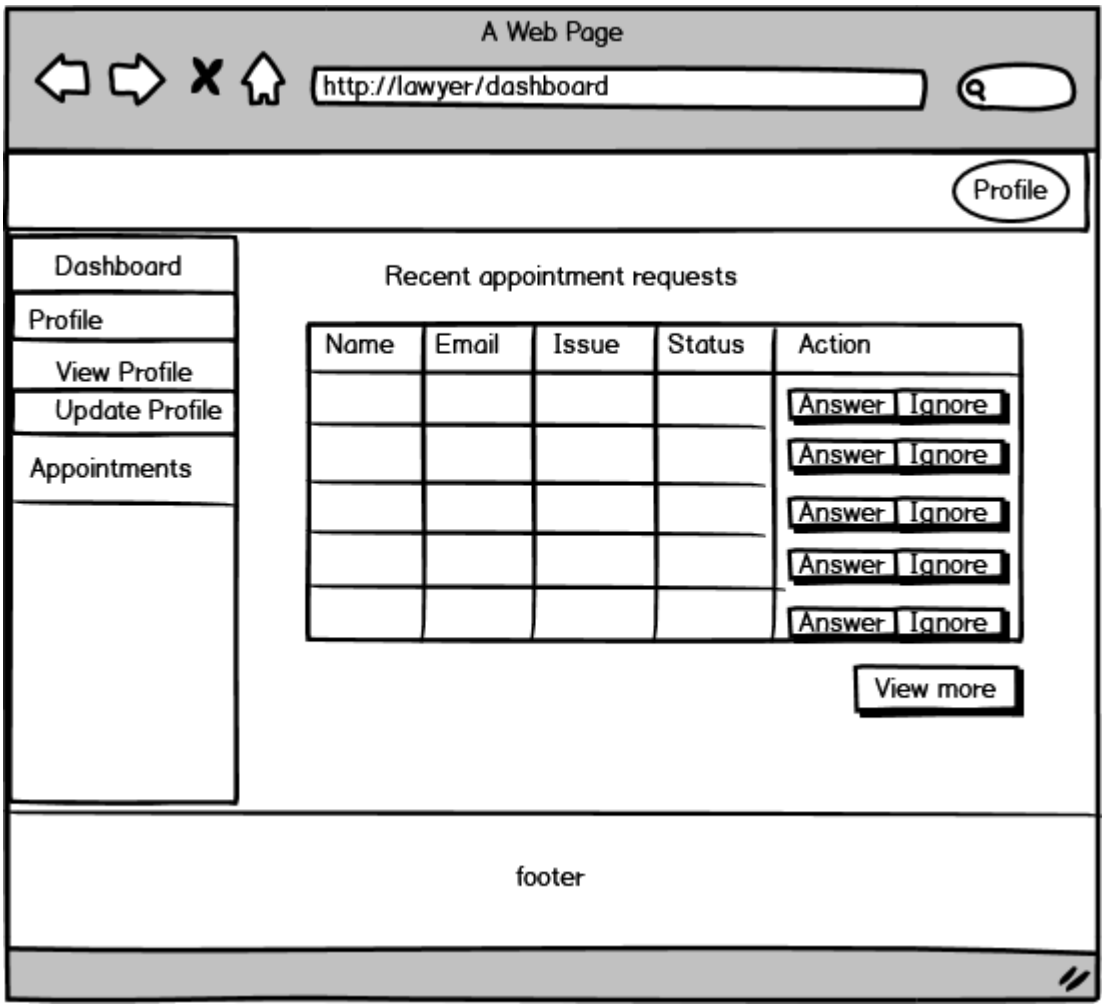


*Figure 67: Lawyer Dashboard*

4) Lawyer View Profile Page

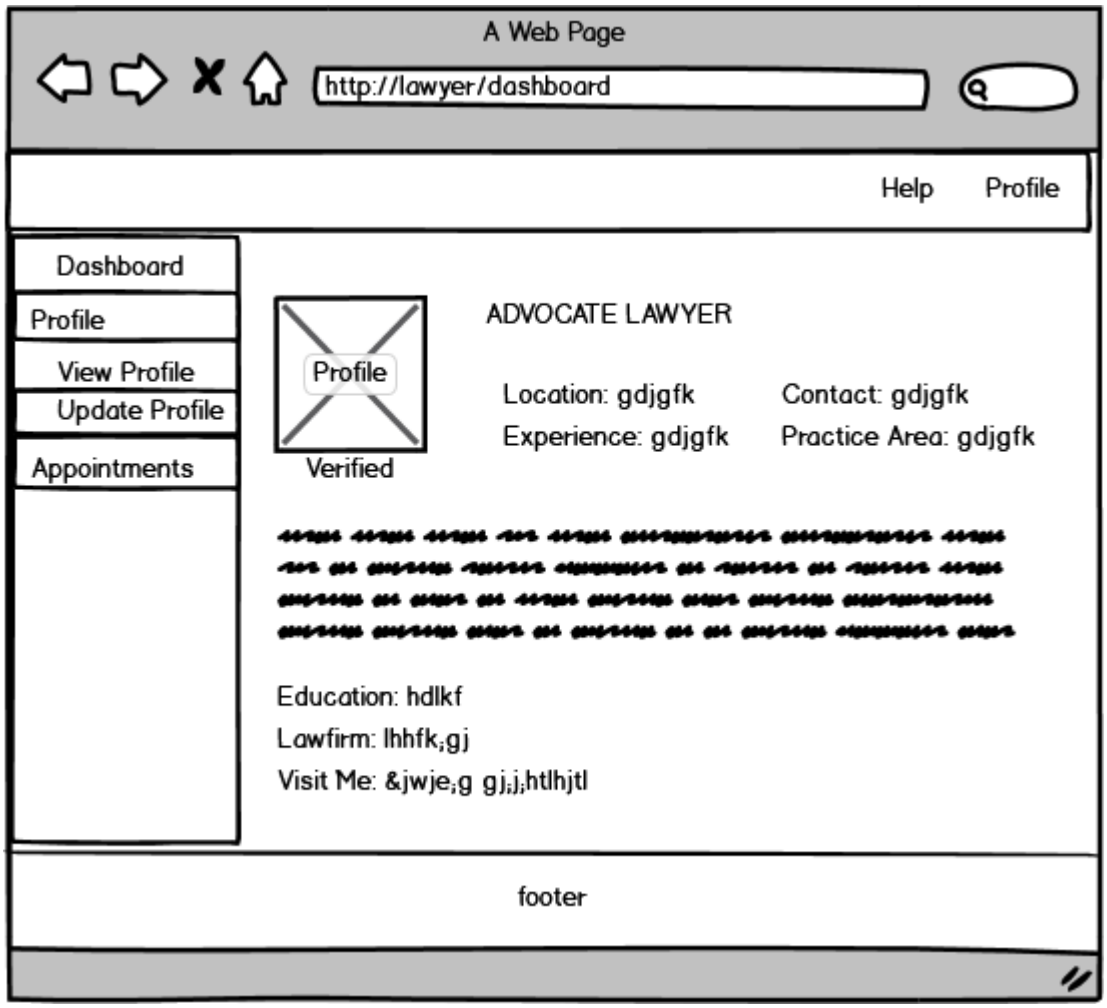


*Figure 68: Lawyer view profile page*

5) Lawyer update page

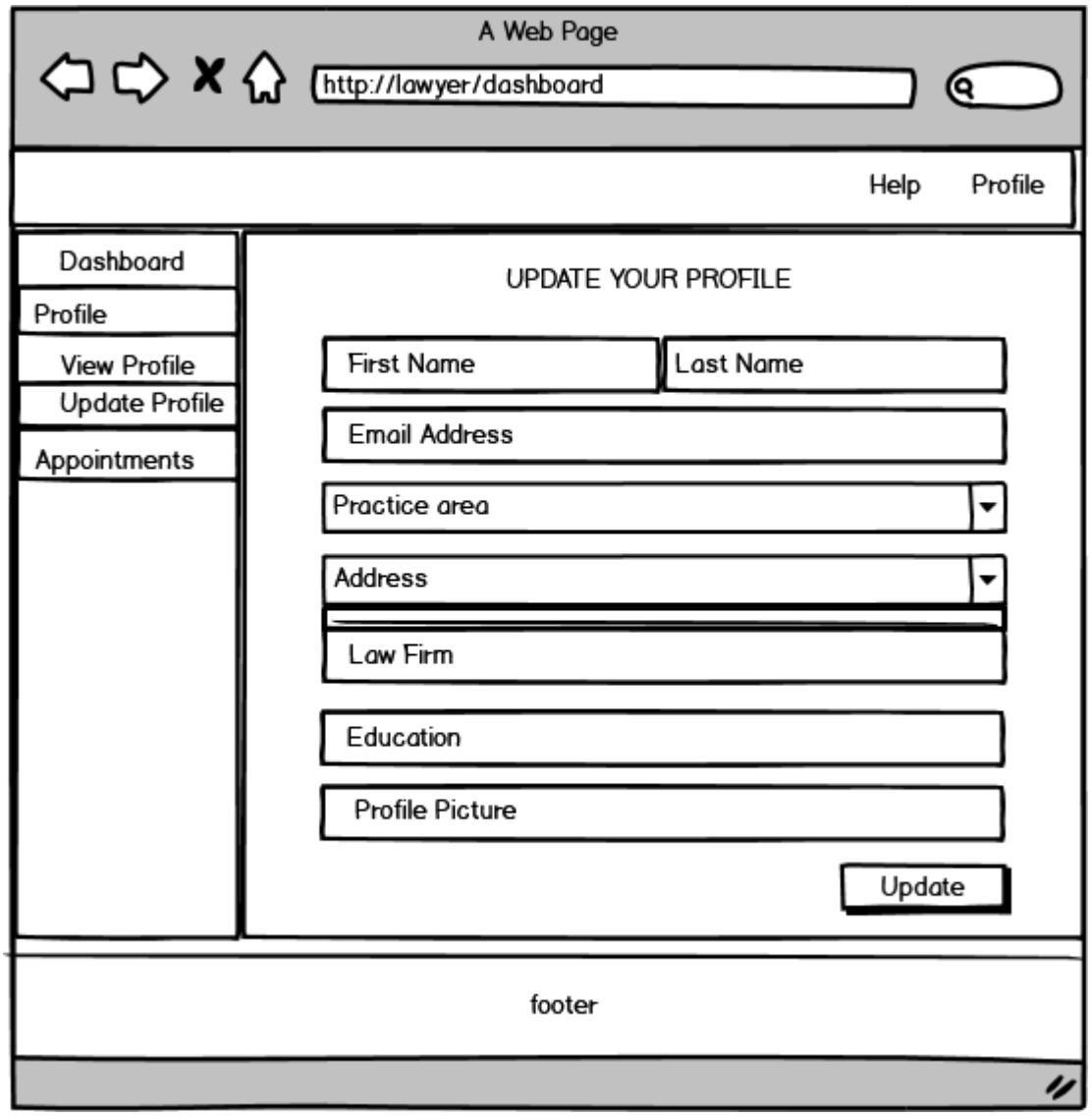


*Figure 69: lawyer update profile page*

6) Contact Page


*Figure 70: contact page wireframe*

7) About Us Page

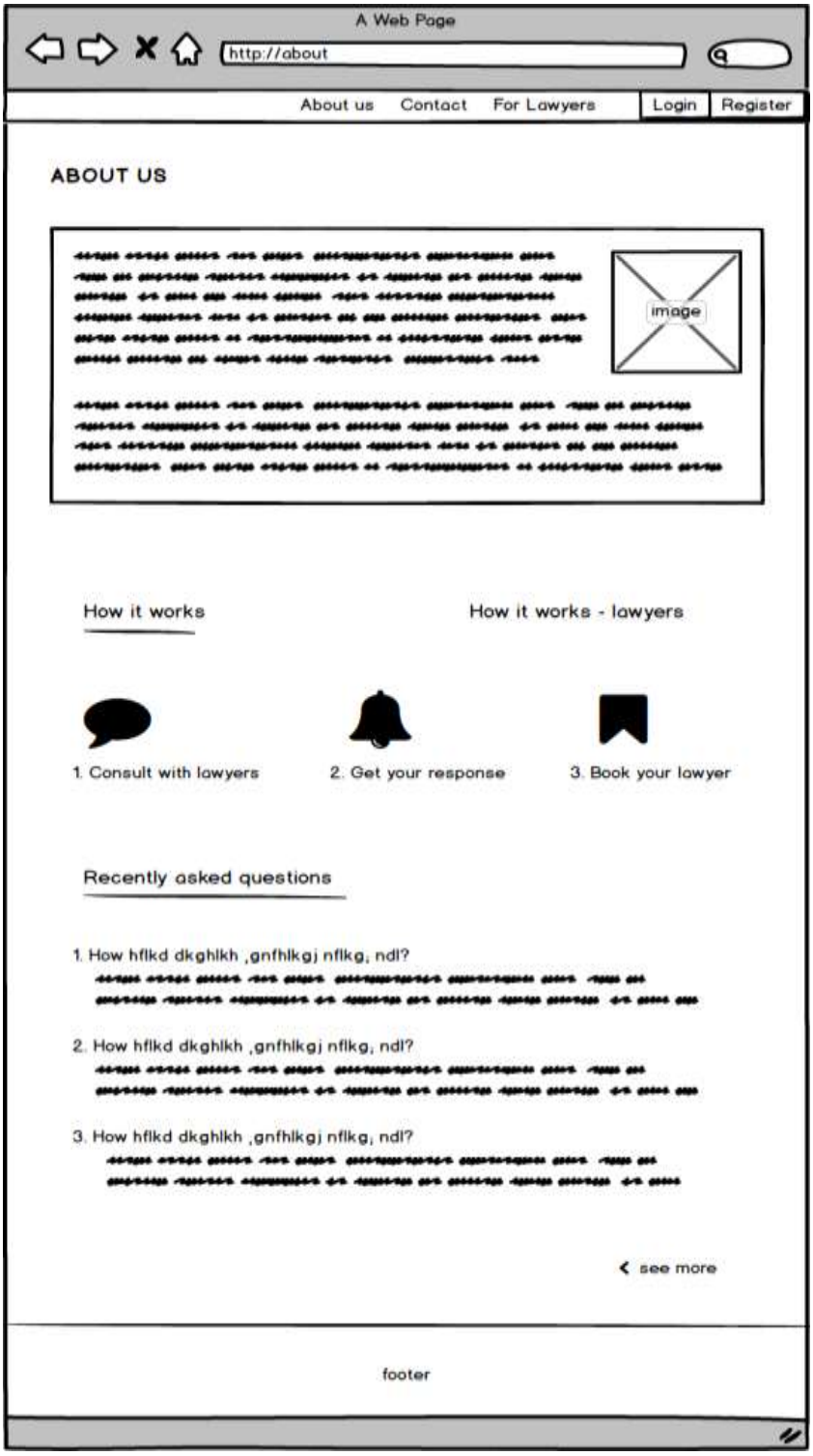


*Figure 71: about us page for clients wireframe*

8) About Us Page

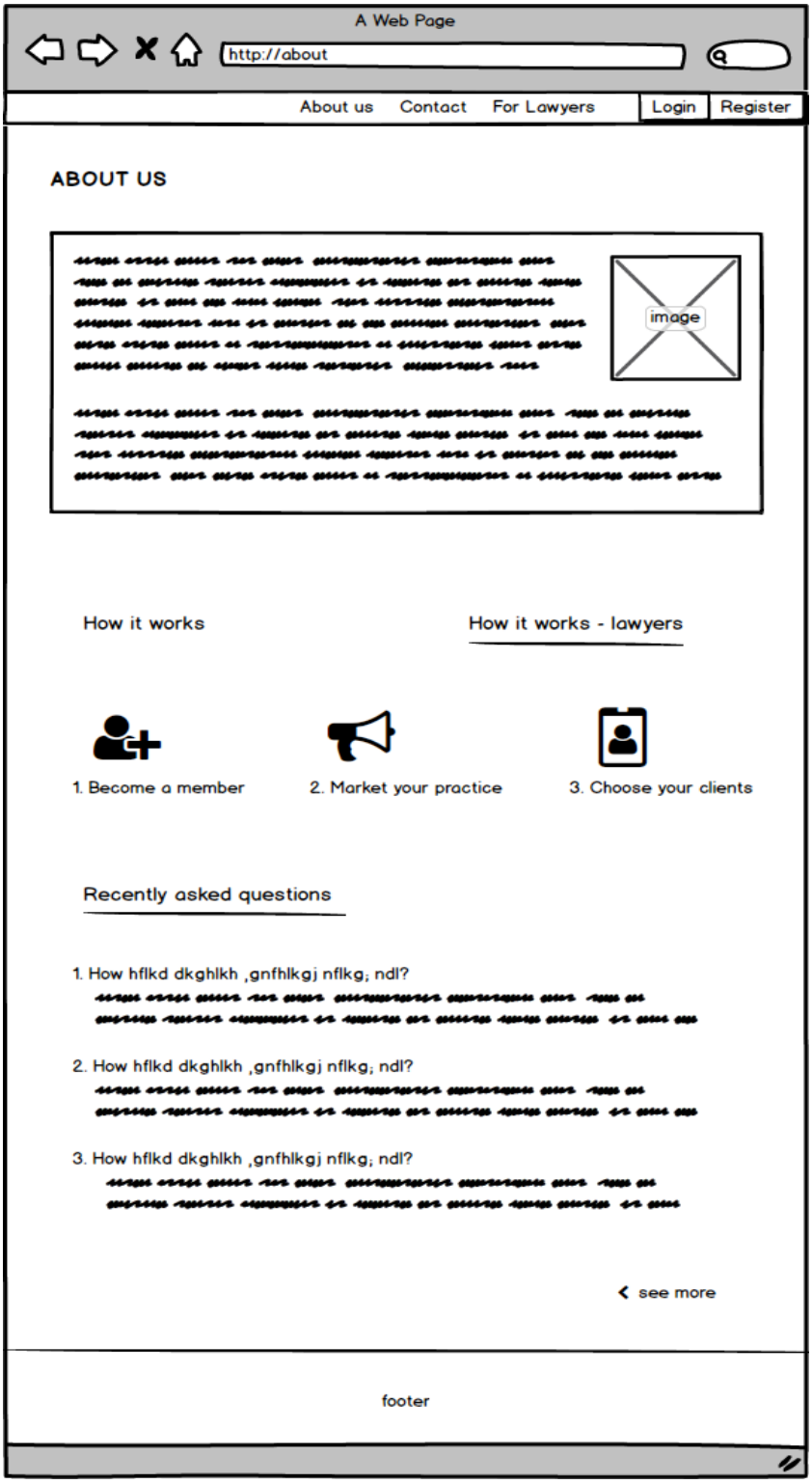


*Figure 72: about us page for lawyers wireframe*