American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science & Technology (FST)

LAW FOR ALL

Section: E

A Software Engineering Project Submitted

By

Semester: Summer_21_22		**Section: E**	**Group Number: 02**	
SN	Student Name	Student ID	Contribution (CO1+CO2)	Individual Marks
	Moshiur Rahman Nahin	17-35959-3		
	A.S.M. FAHAD HASAN	20-42931-1		
	AL-Mehedi Hasan Alif	20-41919-1		
	Md. Reduan Islam Sadik	20-41918-1		
	Amatul Wahid Prottasha	20-42071-1		

The project will be Evaluated for the following Course Outcomes

CO1: *Analyze* the impact of software engineering models over various context of software development to assess societal, health, safety, legal and cultural issues.	Total Marks

Project Background Analysis and feasibility (needs, goal, benefits, etc.)	[5 Marks]	
Analysis the impact of societal, health, safety, legal and cultural issues	[5Marks]	
Review of existing Studies and Relevant Example	[5Marks]	
CO2: *Explain* appropriate software engineering model, project management roles and their skills in the context of professional engineering practice and solutions to complex engineering problems in a software development environment.	Total Marks	
Appropriate Process Model Selection and Argumentation with Evidence	[5Marks]	
Evidence of Argumentation regarding process model selection	[5Marks]	
Submission, Defense, Completeness, Spelling, grammar and Organization of the Project report	[5Marks]	

Description of Student's Contribution in the Project work

Student Name: A.S.M. FAHAD HASAN

Student ID: 20-42931-1

Contribution in Percentage (%): 20%

Contribution in the Project:

- Model section , Functional Requirements
- Sequential diagram, Activity diagram
- Ux design
- Time line chart
- Eva
- Risk Analysis
- Text plan

_____fahad hasan_____

Signature of the Student

Student Name: Moshiur Rahman Nahin

Student ID: 17-35959-3

Contribution in Percentage (%): 20%

Contribution in the Project:

- Background problem and solution
- Use case diagram
- Ux
- WBS
- Text plan

_____ Nahin _____

Signature of the Student

Student Name: AL-Mehedi Hasan Alif

Student ID: 20-41919-1

Contribution in Percentage (%):20%

Contribution in the Project:

Basic Functionalities

Over all idea

Text plan

UX design

_____ Alif ___ _____ Signature of the

Student

Student Name: Md. Reduan Islam Sadik

Student ID: 20-41918-1

Contribution in Percentage (%): 20% Contribution in the Project:

- Class Diagram
- Over all idea
- UX design
- Text plan

_____Sadik_____

Signature of the Student

Student Name: Amatul Wahid Prottasha

Student ID: 20-42071-1

Contribution in Percentage (%): 20% Contribution in the Project:

- Designing and overall idea
- WBS

_____Prottasha_____

Signature of the Student

1. PROJECT PROPOSAL

1.1 Background to the Problem

Background Description: The legal system can be very complex and overwhelming for individuals who need legal advice and representation. People may find difficulty to appoint a qualified legal advisor. A lawyer appointment application is a software tool designed to streamline the process of selecting and appointing lawyers to handle legal cases. The purpose of the project proposal is to outline the scope, goals, and expectations of the development of the software, as well as the resources, timelines, and budget required to complete it. The background of the project proposal may include factors such as the current challenges faced by law firms in the appointment process, the need for a more efficient and effective solution, and the potential benefits of the software for both law firms and clients. The proposal should also provide an overview of the proposed features and functionality of the software, as well as any relevant technical requirements or constraints." Law for all " is a lawyer appointing app that

allows users connect individual with qualified lawyers for legal advice and representation which directly means to appoint a lawyer simply for legal purpose.

Firstly, Individuals may struggle to find a qualified lawyer who specializes in their specific legal issue. Next, Traditional law offices may have limited hours of operation and may require individuals to visit in person to schedule appointment. After that, legal services can be expensive and many individuals may not be able to afford to pay for legal advice and representation. Then, the traditional legal system can be opaque and individuals may not know what to expect when seeking legal help. Then, many individuals may not be aware of their rights and responsibilities when it comes to legal issues. Lastly, many individuals find hassle to carrying documents with them or any lawyer to seek for documents from their clients and not get it on time

1.2 Solution to the Problem

1. Finding a qualified lawyer: Law for All will simplify the process of finding qualified lawyer to individuals based on their needs. So, the individuals can operate their court situation with the qualified lawyer.
2. Convenient Appointment Scheduling: It will allow individuals to schedule appointments with lawyers at a time that suits and from the comfort of their own home to operate the need of the client.
3.Low-cost legal service: It will allow individuals to take consultancy from experts with virtual communication.

4. Transparency and Accountability: It will provide users with a secure and transparent platform to access legal services and rate, review lawyers.
5. Access to legal resources and information: It will provide users with access to a library of legal resources and information to help educate themselves on their rights and responsibilities.

The application will be developed using Android Studio using Java or Kotlin for the mobile platform and C# ASP.NET framework for the web platform.it should be integrated with a secure payment gateway such as PayPal for global and Bkash , Nogod or Rocket for locals to allow clients to make payments for appointments and a Built in wallet system will be also provided. This will be hosted on a scalable cloud infrastructure to ensure its availability and performance. The user interface should be user-friendly and intuitive, allowing clients and lawyers to easily navigate the app. A robust database system is required to store and manage user information, appointment details, and payment information. A relational database such as MySQL will be used. The application will Encrypt all data which are provided by clients and lawyer between them and also all data will be backed up for any need in future. For the documents it will be pass if authenticated.

Basic Functionalities:

Account registration of a lawyer or client: This application will provide user independence account registration service.

Account Deletion of lawyer or client: This application will provide user independence to delete their account.

Directory of lawyers: This application will provide directory of most qualified lawyers accordingly.

Appointment scheduling and E-mail confirmation: This application will provide clients appointing a lawyer and after appointing their slot will get confirmed by E-mail.

Direct communication via video call or Audio call or Text message: This application will provide clients direct audio, Video call and also text to the lawyer they appointed.

Payment processing**:** There will be most used payment gateways linked with this software so that a client can pay their lawyer they appointed and also there will be built in wallet in this application.

Profile management (for both clients and lawyers): there must be a flexibility to both of users their account management such as editing or change phone, E-mail, picture and so on.

Notification system: There will be a notification system if the users are unavailable, it can be via E-mail or Phone or Application notification bar.

Document management via Cloud Storage**:** there will be a cloud storage to pass the files to each of the user.

Customer support: there will be a customer support option for the users for any kind of help as like suggestion or complain

Target Group of Users: Law for All targeted two main user groups: clients and lawyers. Clients: Law for All is intended for individuals and organizations who need legal services for various issues such as contracts, lawsuits, immigration, and real estate.

Contribution of this project:

1.Enhanced Accessibility: Law for All increases access to legal services through a user-friendly online platform, benefiting underserved populations.

2.Data Collection and Analysis: The platform collects anonymized data on legal issues, client needs, and legal professionals' performance, contributing to research and analysis on legal trends and effectiveness of services.

3.User Feedback and Reviews: Users can provide feedback and reviews, enabling analysis of service quality and establishment of best practices for legal professionals.

4.Research Partnerships: Law for All collaborates with academic institutions and experts to conduct studies and research projects, leading to scientific publications and case studies.

5.Innovation in Legal Technology: Incorporating advancements like AI and online dispute resolution, Law for All contributes to innovative legal solutions, documented through research papers, patents, and case studies.

6.Policy and Legislative Impact: Law for All's aggregated data informs policymakers and regulatory bodies, facilitating evidence-based policy-making and legal reforms.

There are numerous software solutions available to address the management needs of lawyers and law firms. Some popular examples include Clio, MyCase, PracticePanther, LeanLaw, and CosmoLex, as mentioned earlier. These apps typically offer features like client and matter management, time tracking, billing, document management, and integrations with other software tools.Additionally, legal project management software solutions can help with project planning, task management, collaboration, and

resource allocation. Examples of such tools include Monday.com, Asana, and Trello, which are not specifically tailored for the legal industry but can be adapted to legal project management needs.

Model Section:

Law For All– A legal consultation application

First of all, in this application there are so many functionalities. They are:

1. Login/Signup -> Both Lawyer and client
2. Booking Schedule -> Client does
3. Account delete -> Lawyer/Client
4. Lawyer Directory -> Client sees
5. Upload/Download documents -> Both
6. Calling -> Audio/Video/Text -> Both
7. Notification
8. Payment -> Wallet/Bkash/Paypal and so on. so we can consider each functionalities to each module.

There is a model named **Incremental Model**. The Incremental model is a software development model in which the product is built incrementally, i.e., in multiple small incremental builds, with each increment adding additional functionality to the product. Each increment goes through the phases of the software development life cycle, including requirements, design, implementation, testing, and maintenance. in this model, the development process is divided into several smaller development cycles, each of which delivers a small piece of functionality. Each cycle is a complete development process, including planning, requirements, design, development, testing, and deployment. This model is also known as the iterative model, where iterations are repeated until the complete product is built. the main advantage of the incremental model is that the product can be delivered in increments, which allows the customer to review and provide feedback at each stage of development. This helps to ensure that the final product meets the customer's requirements and reduces the risk of failure.

Since, there is so many complex functionalities here in the application so we can use this model to lead the project not to fail in any case.

Functional Requirements:

User Registration/Signup:

1. Email address to be associated with the user's prole and serve as login name
2. Password which will be used to log into the site
3. Confirmation of password
4. Confirmation of user's acceptance of Terms & Conditions (note that different versions of T&C must be displayed depending on selected registration option) **5.** Once user has finished providing required Manual Signup input, they must click 'Sign Up' to trigger registration validation and completion of the registration.

User register acceptance:

1. System should accept user registration with valid information.
2. System Should not accept the wrong or misinformation will terminate page and will return to Signup.
3. Several wrong input will lead to closure of the application for few minutes.
4. Putting wrong input for several time need to verify the user.
5. Strictly required fields must be filled with accurate information otherwise Signup will not take to the next page.

User Login:

1. The software shall allow users to login with their given username and password.
2. The login credentials (username and password) will be verified with database records.
3. If the login successful the home page of the user account will be displayed. **4.** If the username and/or password has been inserted wrong, the random verification code will be generated and sent to the user's email address by the system to retry login.
5. If the number of login attempt exceed its limit (3 times), the system shall block the user account login for one hour [optional function].

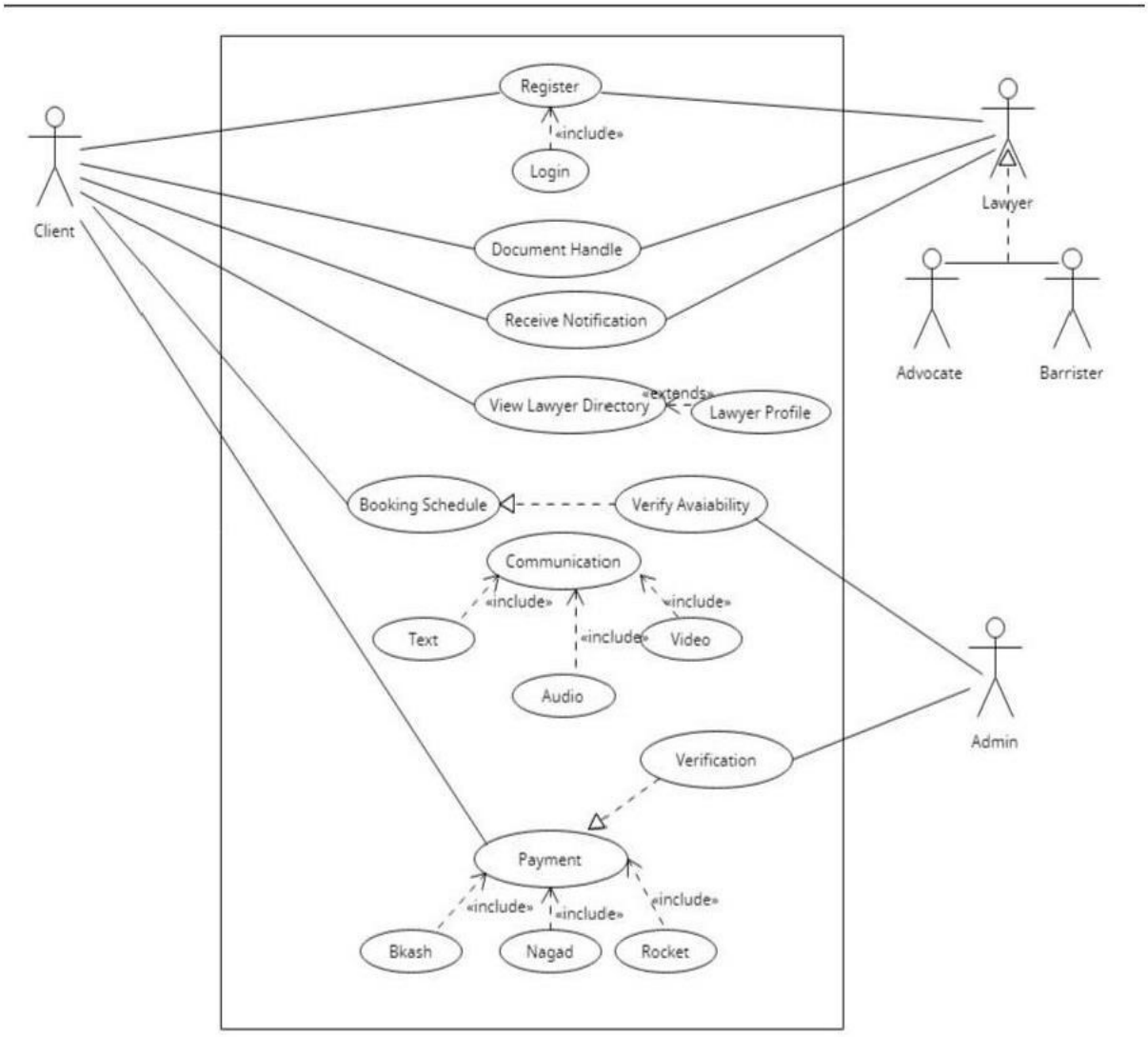
Login acceptance:

1. System should accept Login attempt with valid email and password.
2. Entering wrong E-mail and password system will not accept and will refresh the page to enter those information's again. 3. Typing wrong password for several times will verify to Reset the Password.
4. Forgetting E-mail and Password will lead to reset them.

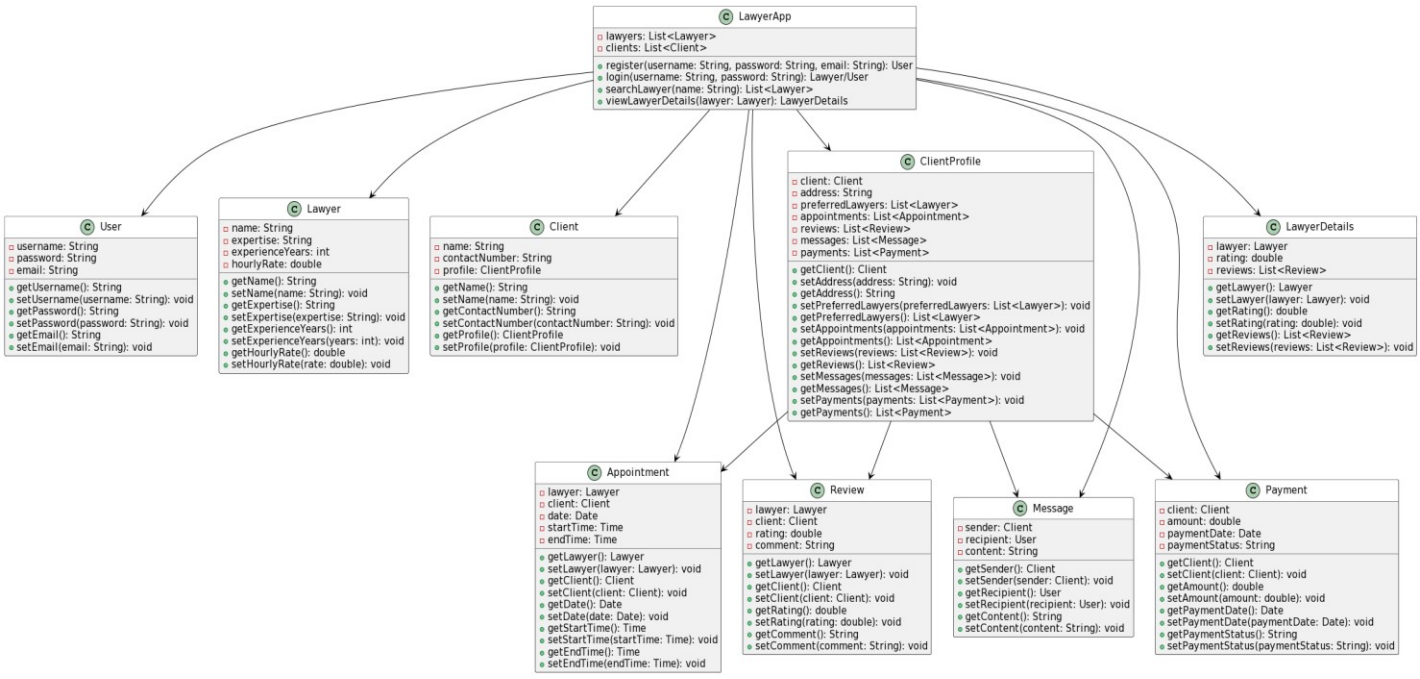
Non-Functional Requirements:

1. **Usability:** The Law Service System has an easily understandable design for users to use it. When the user commits possible errors, the system provides necessary information.
2. **Maintainability:** The system should have maintainability when the user use the application. The system should have the functionality of faults detection and fixation. The requirement address user concern or how easy it is to protect and repair the system.
3. **Supportability:** Supportability requirements include testability, extensibility, adaptability, configurability, installability etc. The system may produce invalid information and for the developer concern they should have the ability to reproduce valid data flow through the system. The hacker may have tried to break the system security mechanism and the system must understand what the hacker did.
4. **Security:** All passwords are stored in encrypted form to protect valuable credentials of user from being stolen. The integrity requirement reduces the value of stolen user credentials; it is not easy to decrypt the password.
5. **Privacy:** There should be protection of the database in Law service system. Through registration the user have access to personal data that are available on the system. For that protection of database should be incremented. The system does not allow the client and lawyer to access the database. The privacy of client and lawyer should be protected.

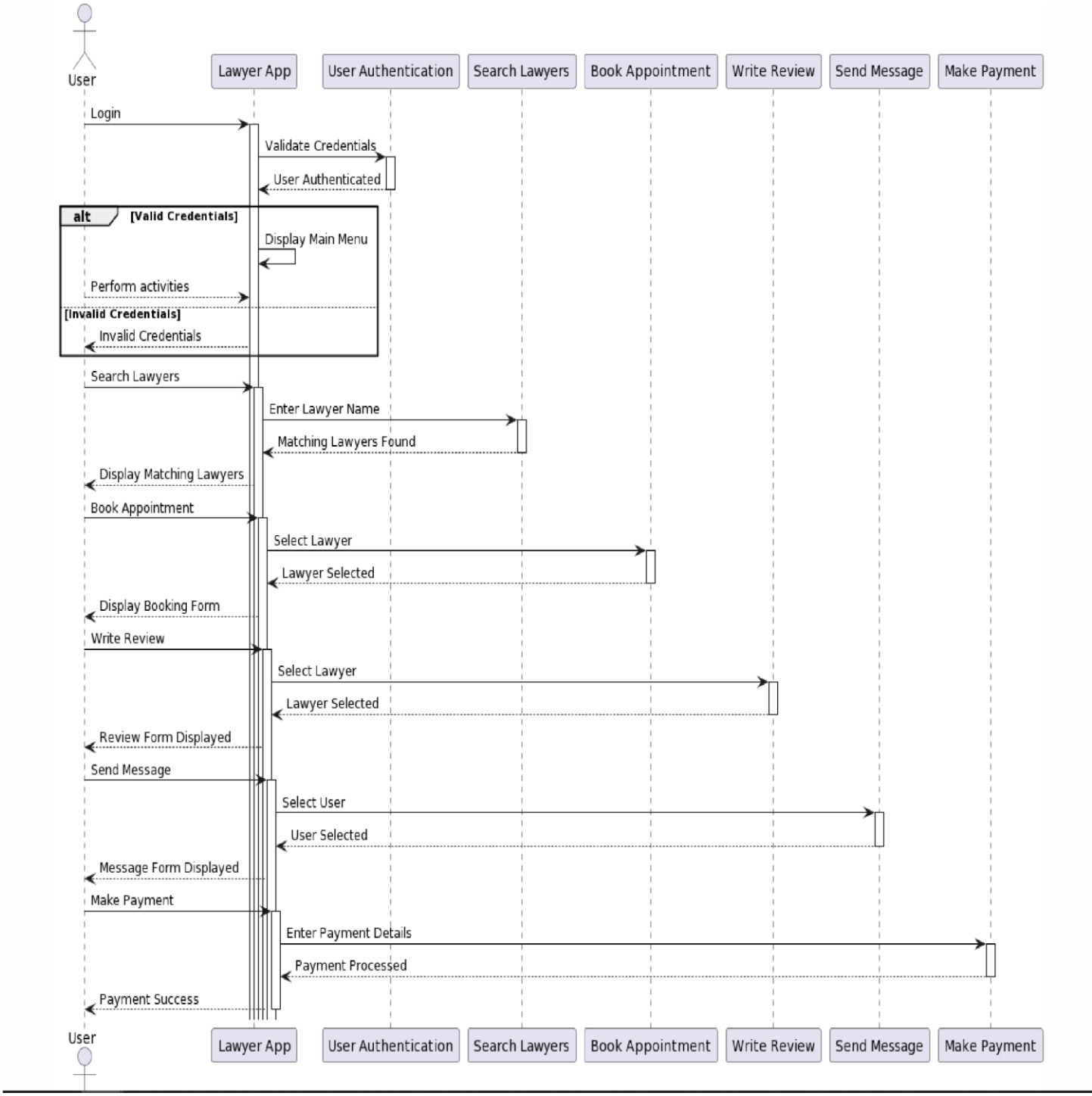
Use Case Diagram:



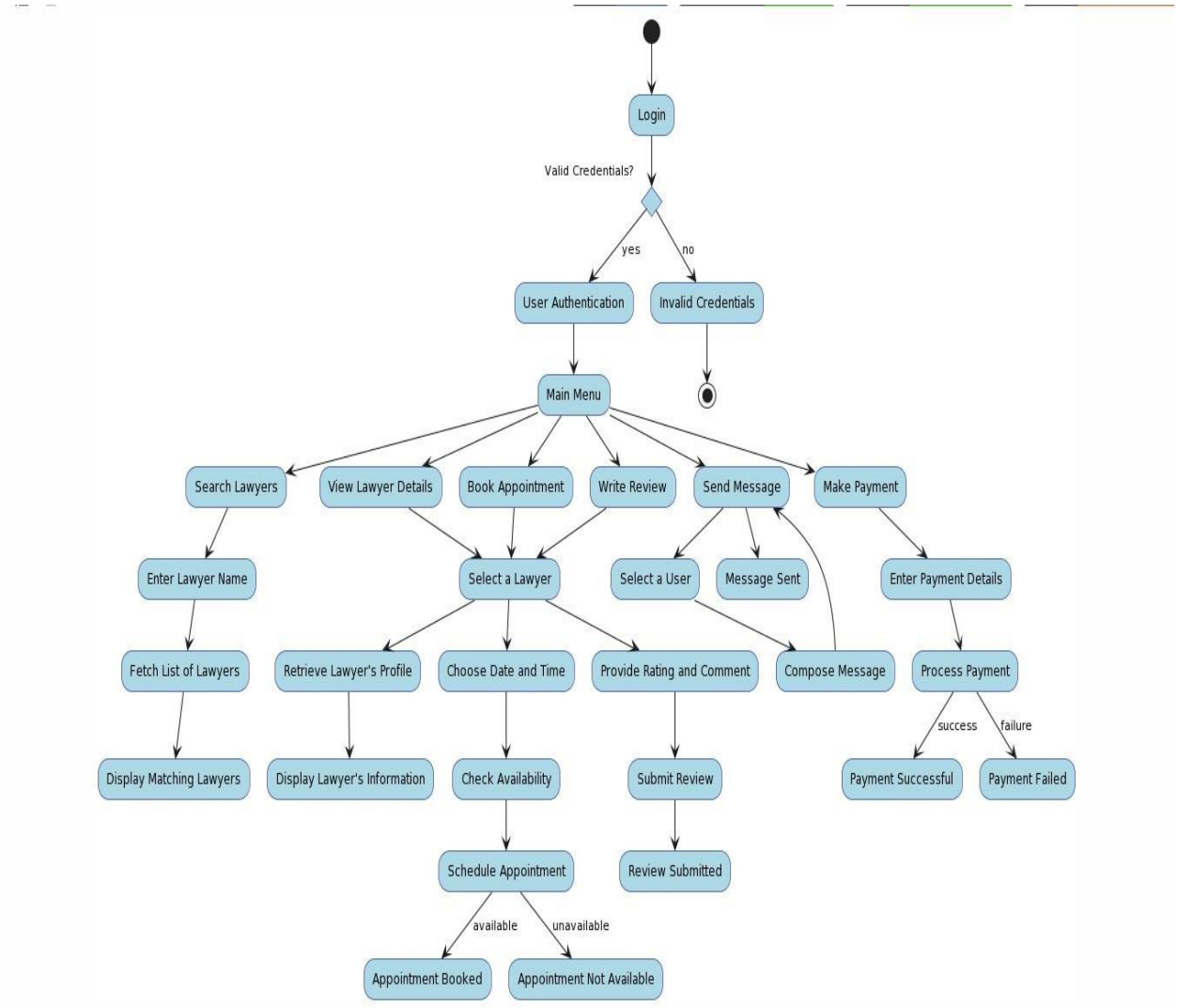
Class Diagram:



Sequential Diagram:

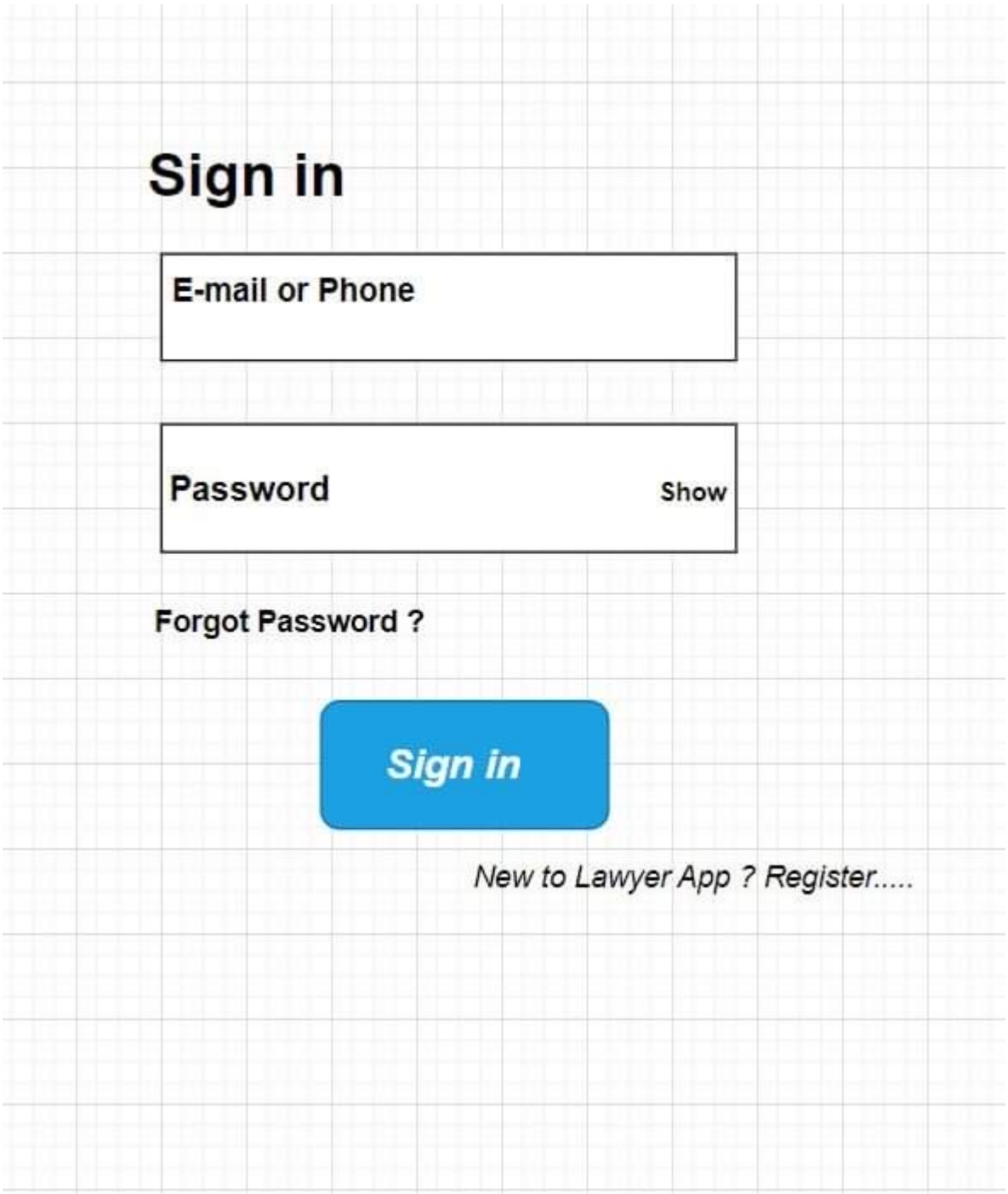


Activity Diagram:



UX design:


LAW FOR ALL
HOME
REGISTRATION
LOGIN
Booking Schedule
Contact
Payment
Document
Copyright Policy
Privacy Policy
Copyright 2023 © SE Group-2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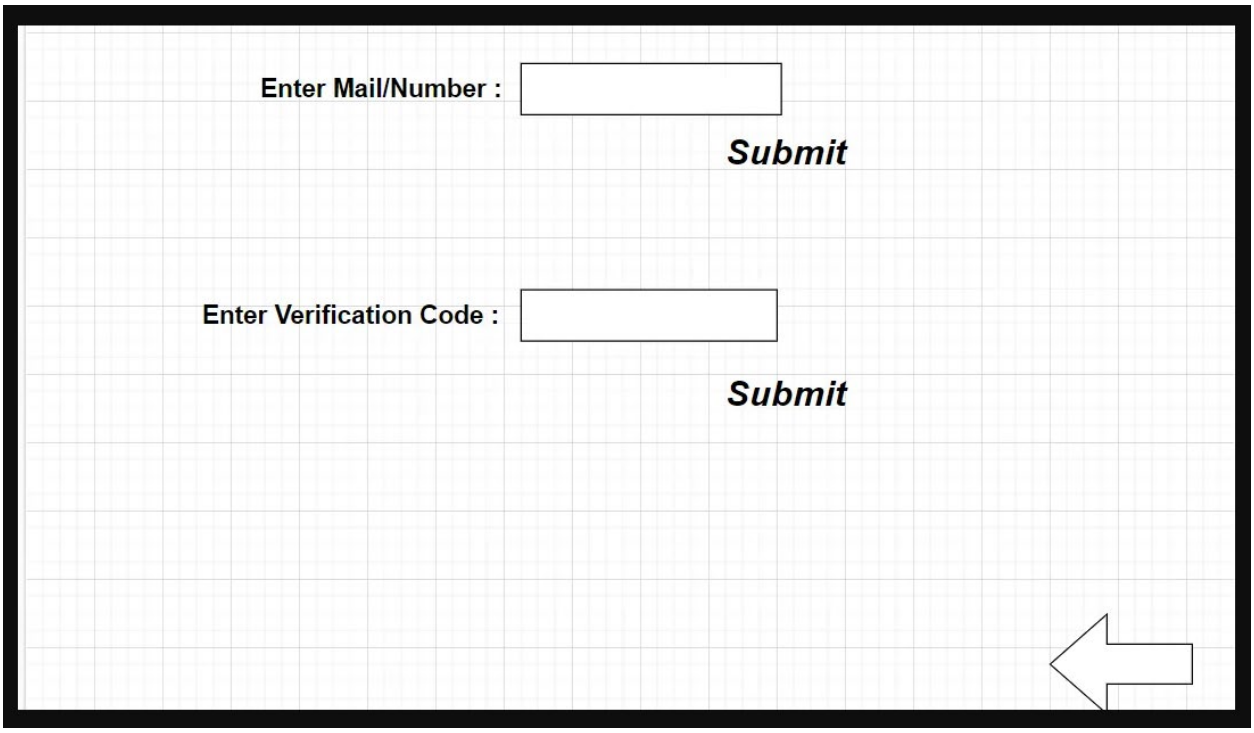
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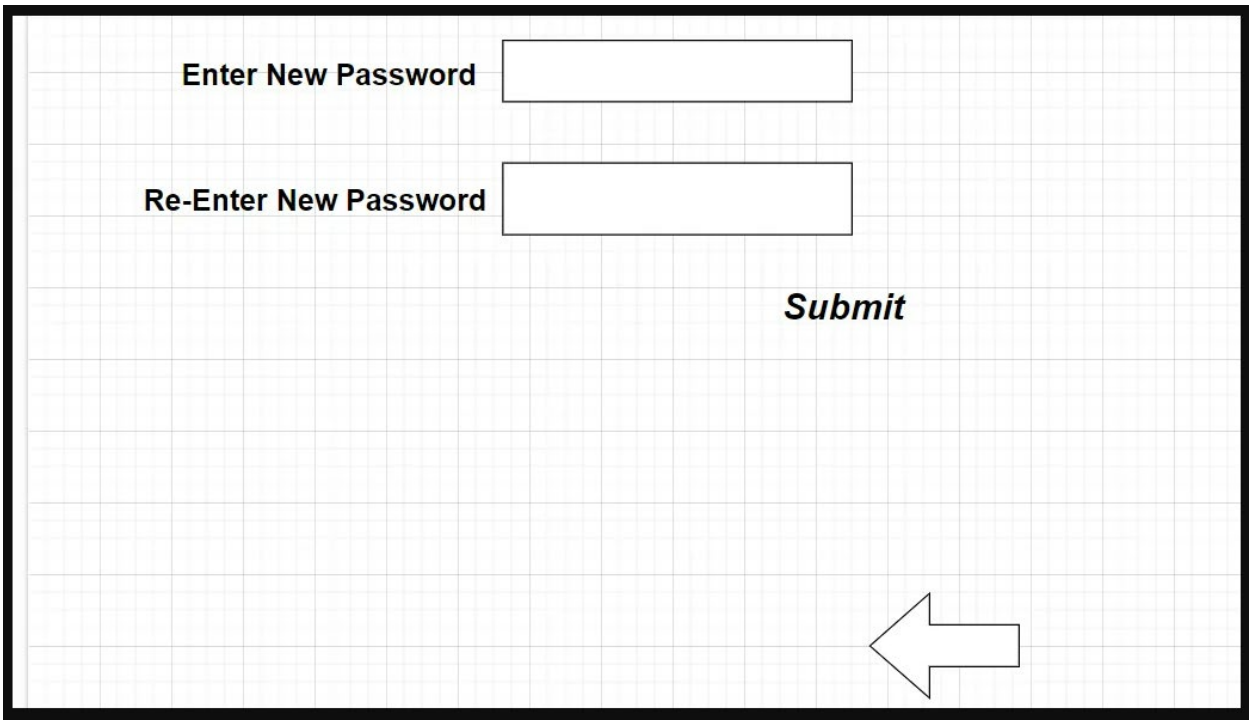
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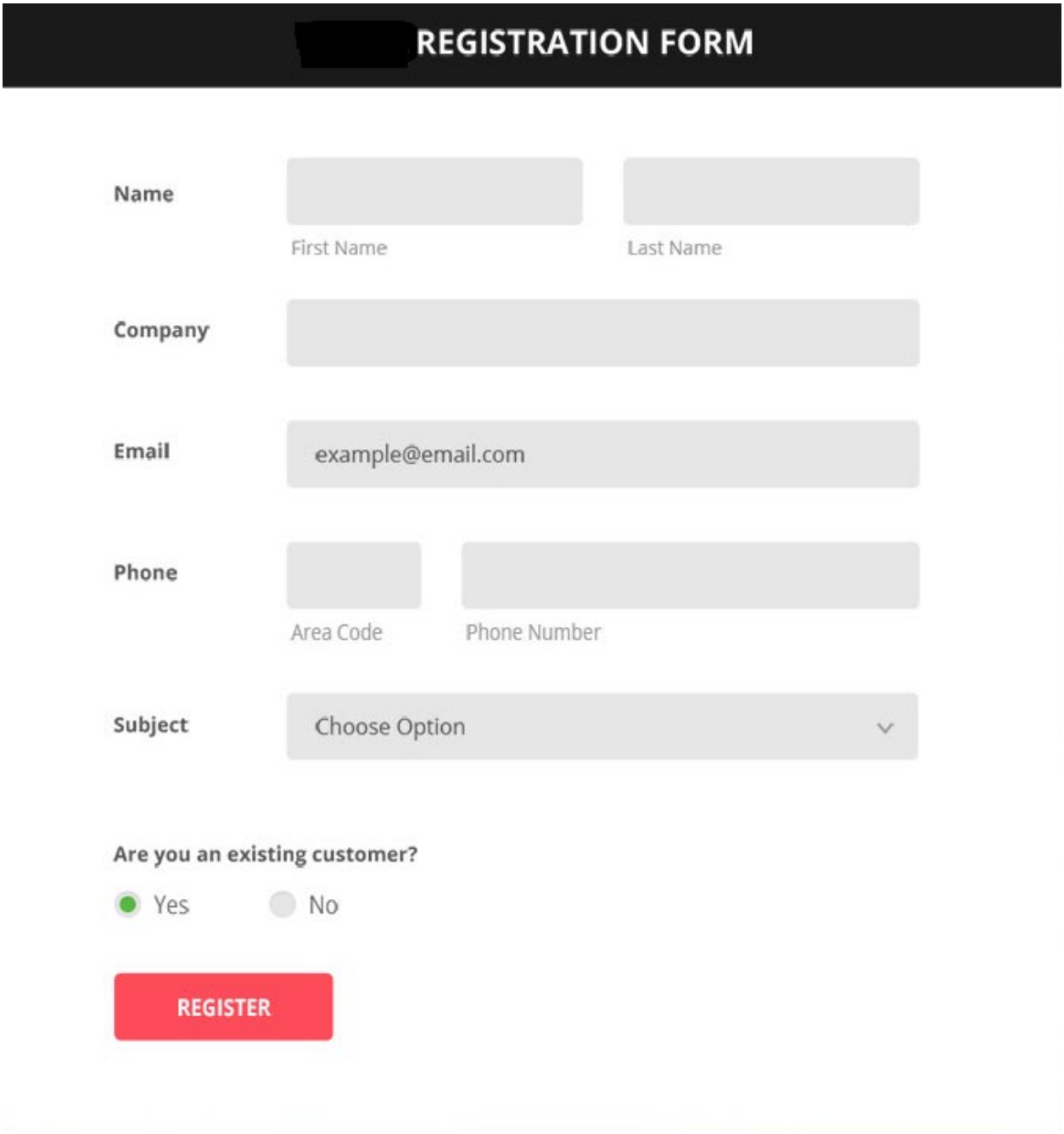
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Last Name
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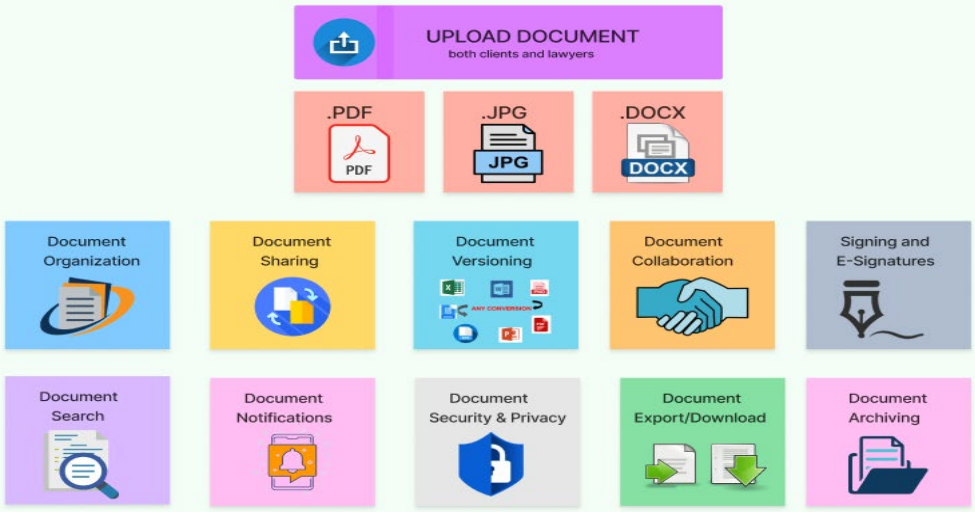
Choose Option
Are you an existing customer?
Yes
No
REGISTER

Documents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Document Versioning
Document Collaboration
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Document Search
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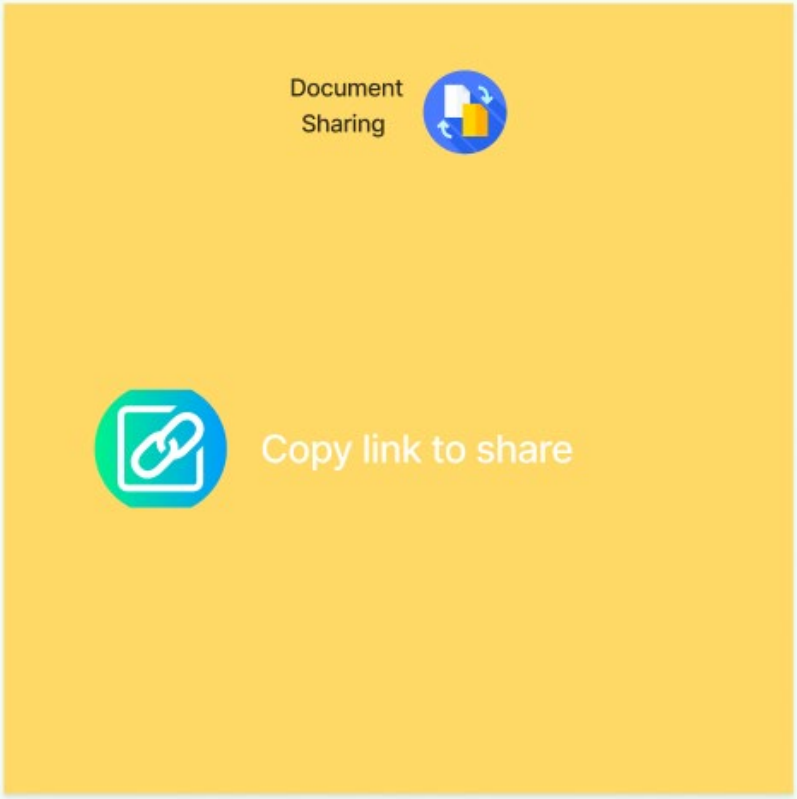
Document Security & Privacy
Document Export/Download
Document Archiving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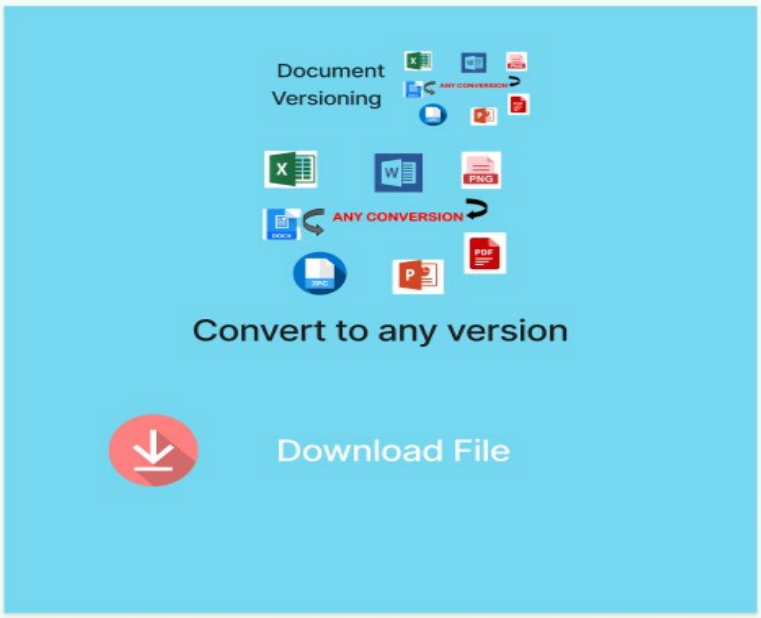
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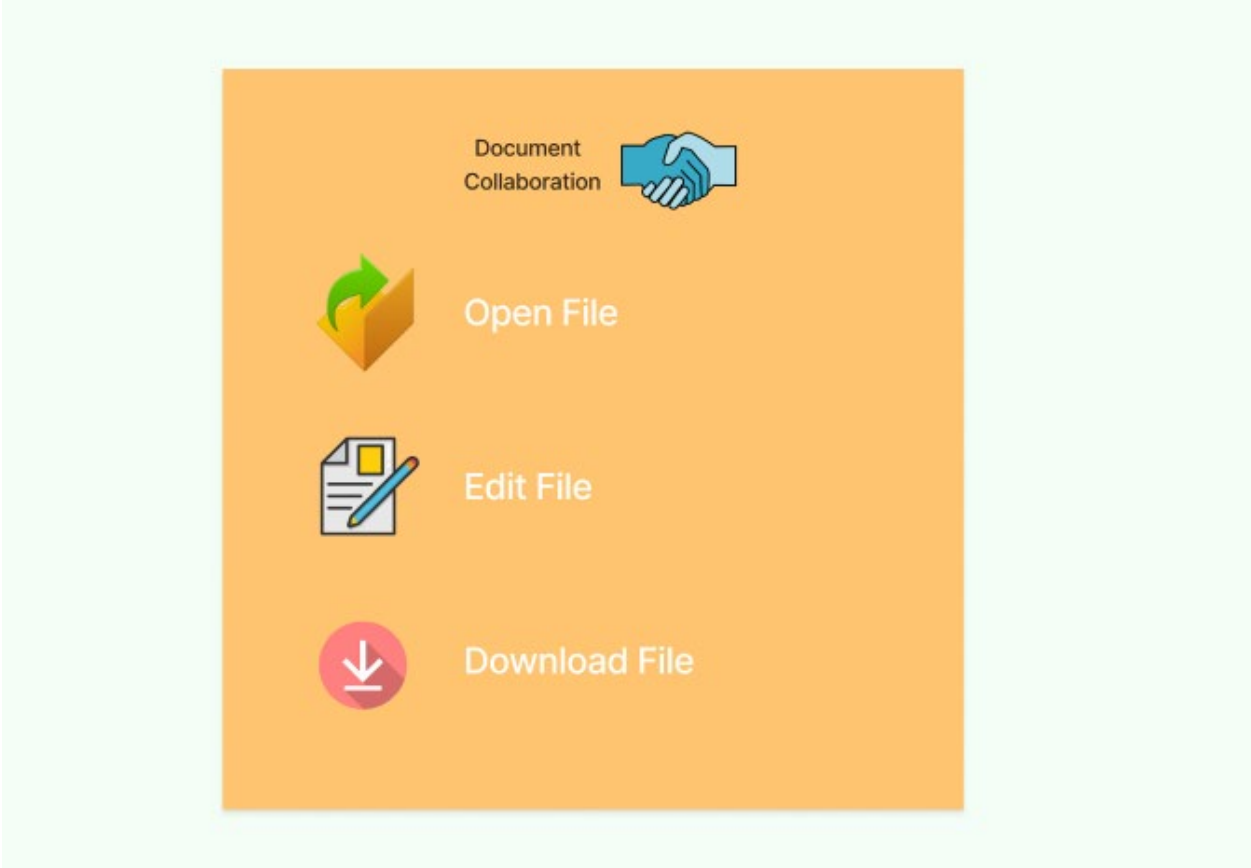
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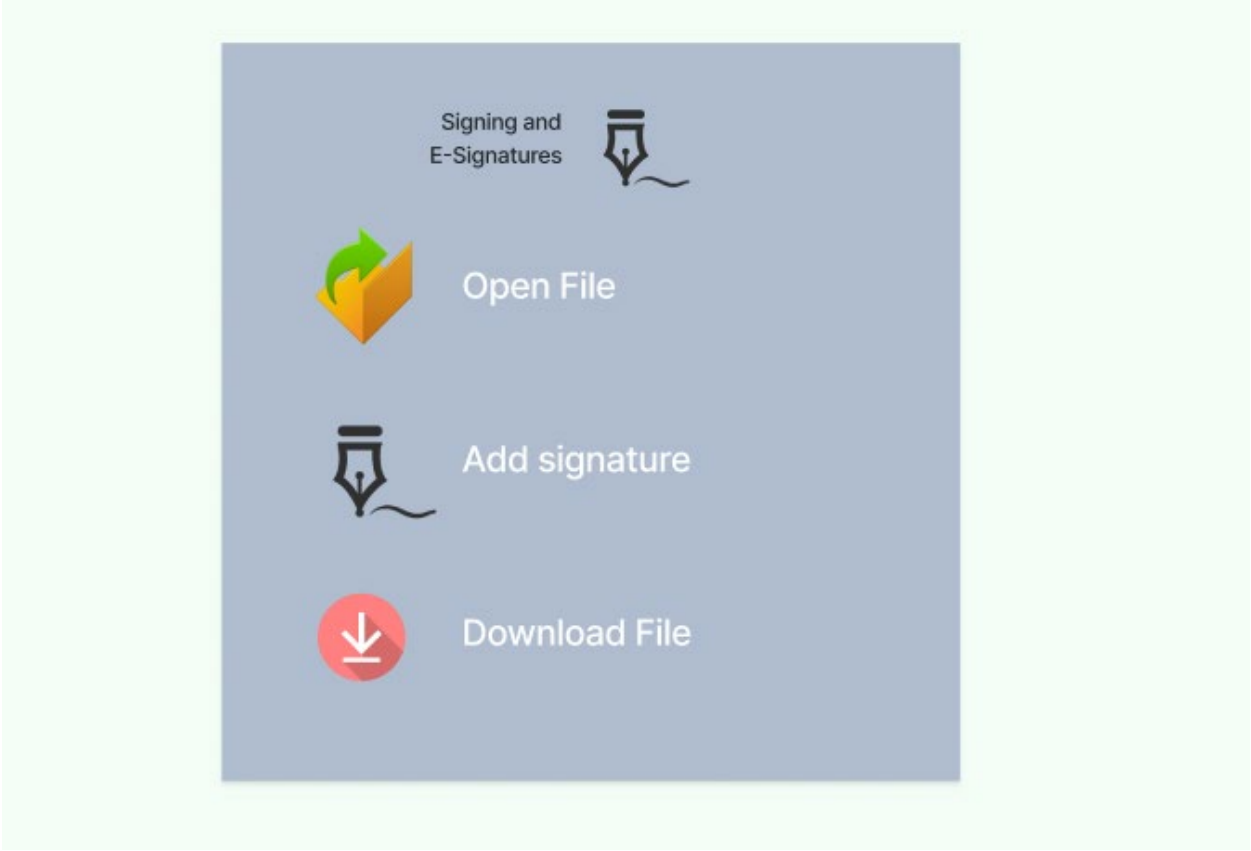
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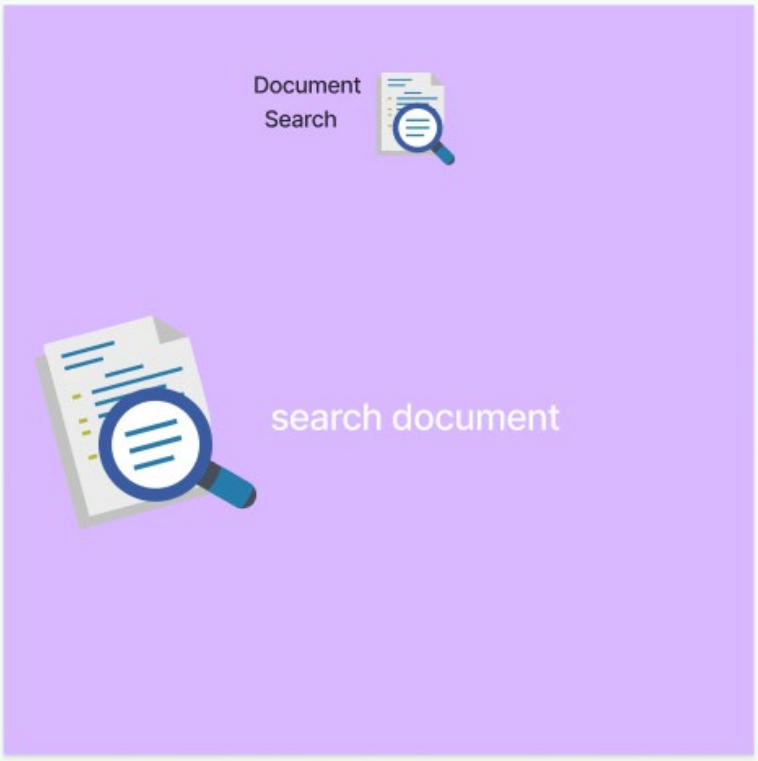
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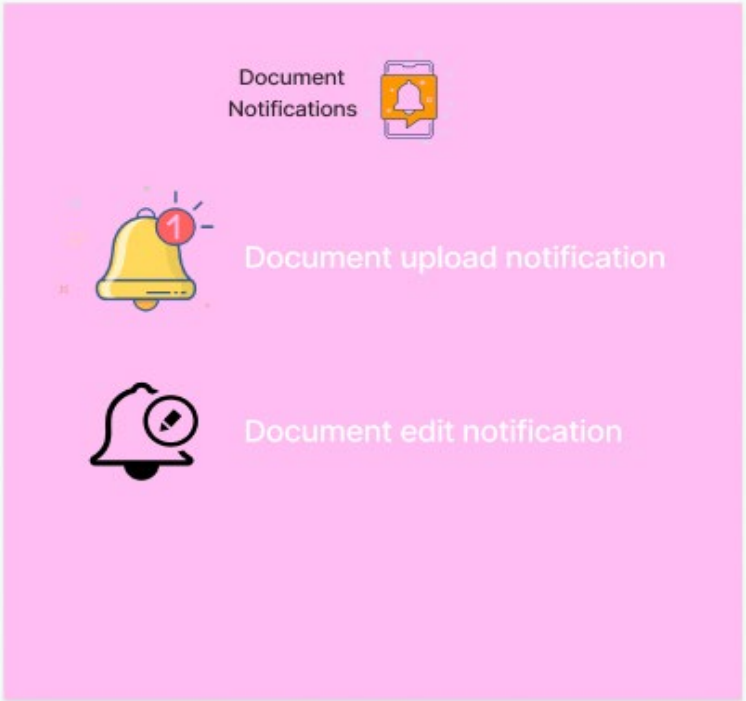
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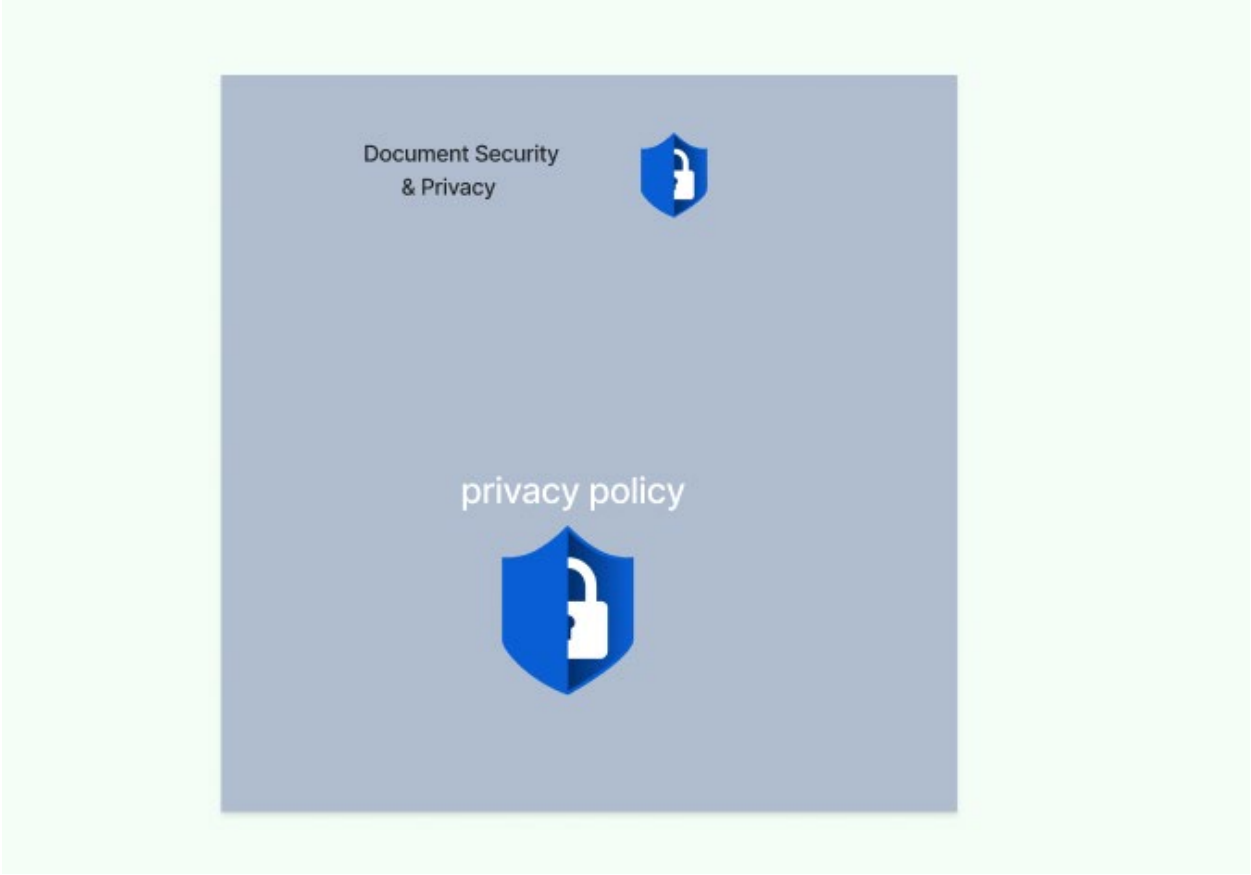
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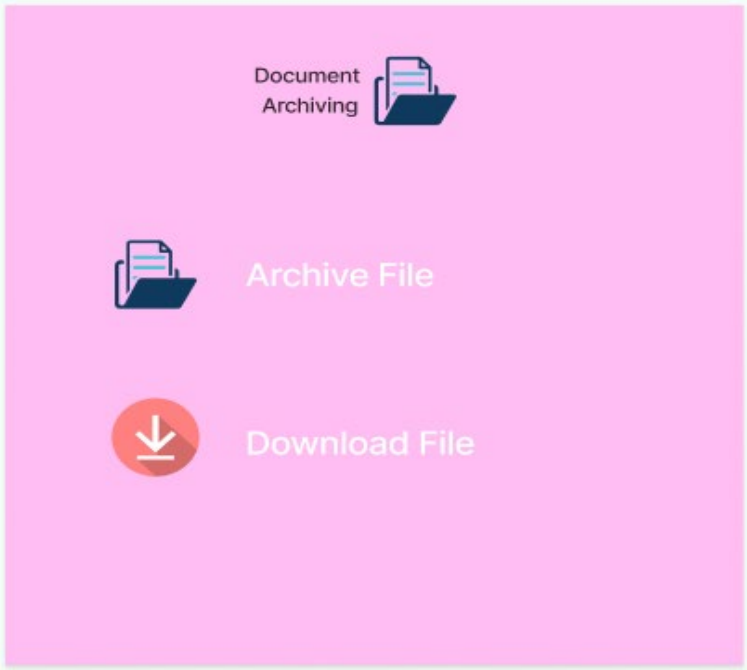
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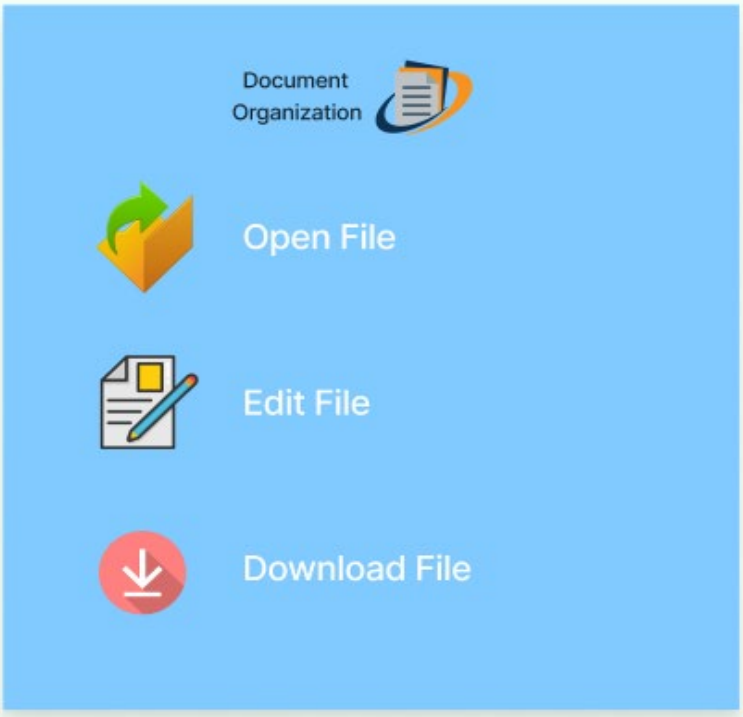
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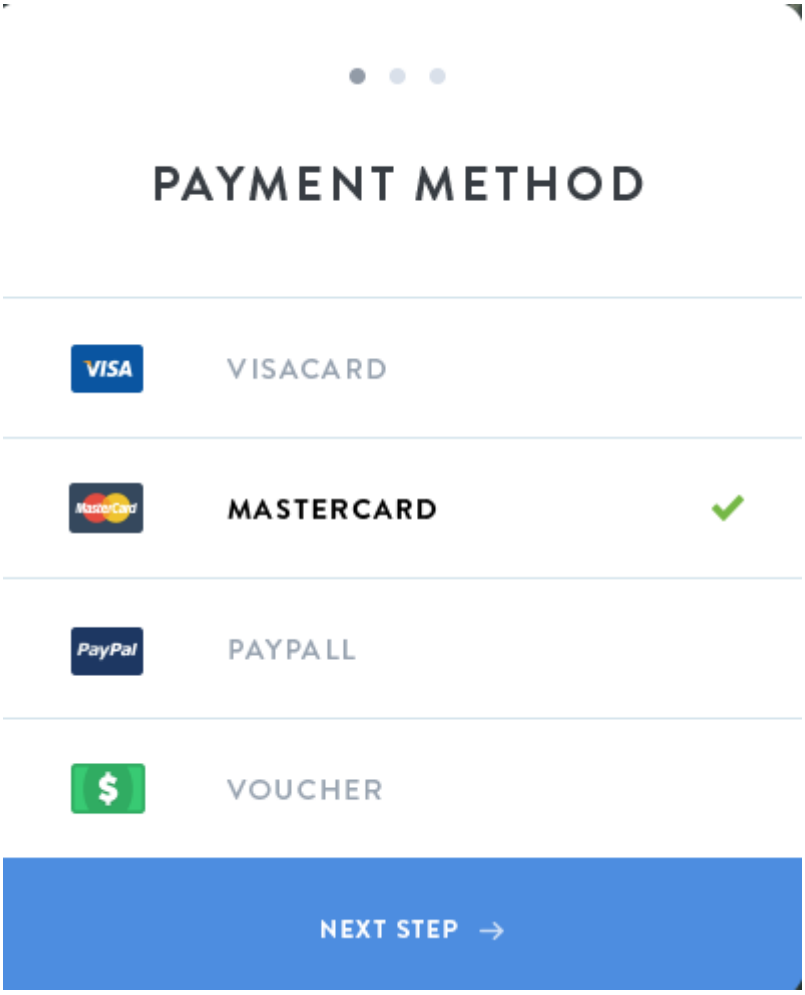

PAYMENT METHOD
VISACARD
MASTERCARD
PAYPALL
VOUCHER
NEXT STEP

Project text Planning

Project Name: Law For All	Test Designed by: Moshiur Rahman Nahin
Test Case ID: FR_1	Test Designed date: 8/20/23
Test Priority (Low, Medium, High): Medium	Test Executed by: myself
Module Name: Contact	Test Execution date: 8/20/23

Test Title: verify Contact feature

Description: Test Contact working properly

Precondition (If any):

Test Steps	Test Data	Expected Results		
1. Go to the website		User should be able to go forward to the Contact page.		

2. Open the side bar 3. Click on Contact				

Module name: Home

Test Steps	Test Data	Expected Results		
1. Go to the website 2. Go to any page 3. Click on Home		User should be able instantly see the home page		
Module name: Logout Test Steps	Test Data	Expected Results		

1. Go to the website 2. Login 3. Click on logout		User immediately get logged out and return to home page		

Module name: Logout

Test Steps	Test Data	Expected Results		
1. Go to the website 2. Login 3. Click on Contact 4. Click your Document		User should be able to see all his uploaded documents		

Module name: Received Document

Test Steps	Test Data	Expected Results		
1. Go to the website 2. Login 3. Click on Contact 4. Click on Received Document		User should be able to see all the documents that he received from others		

Test Step	**Test Data**	**Expected Result**	**Actual Result**	**Status (Pass/Fail)**
(1) Go to Website. (2) Enter Username. (3) Enter Password. (4) Click Submit.	Username: Sahin123@gmail.com Password : ********	User should login into the application.		
(1) Go to Website.	Mail or Phone Number : Sahin123@gmail.com	User should give verification Mail or Phone Number then user should		

(2) Click on forgot password. (3) Enter verification mail or phone number. (4) Enter verification code. (5) Submit code.	Verification Code : ******	give verification code		
(1) Give verification code. (2) Enter new password. (3) Re-Enter new password. (4) Submit new password.	Enter new password : ********** Re-Enter new password : **********	User should give new password twice and submit it.		

Test Step	**Test Data**	**Expected Result**	**Actual Result**	**Status (Pass/Fail)**
(5) Go to Website. (6) Click Documents		Documents page should open		
(6) Go to Website. (7) Click Documents (8) Click upload documents (9) Upload documents as PDF/JPG/DOCS	Upload any document related with website	Document will be uploaded and save until admin/ user delete it		

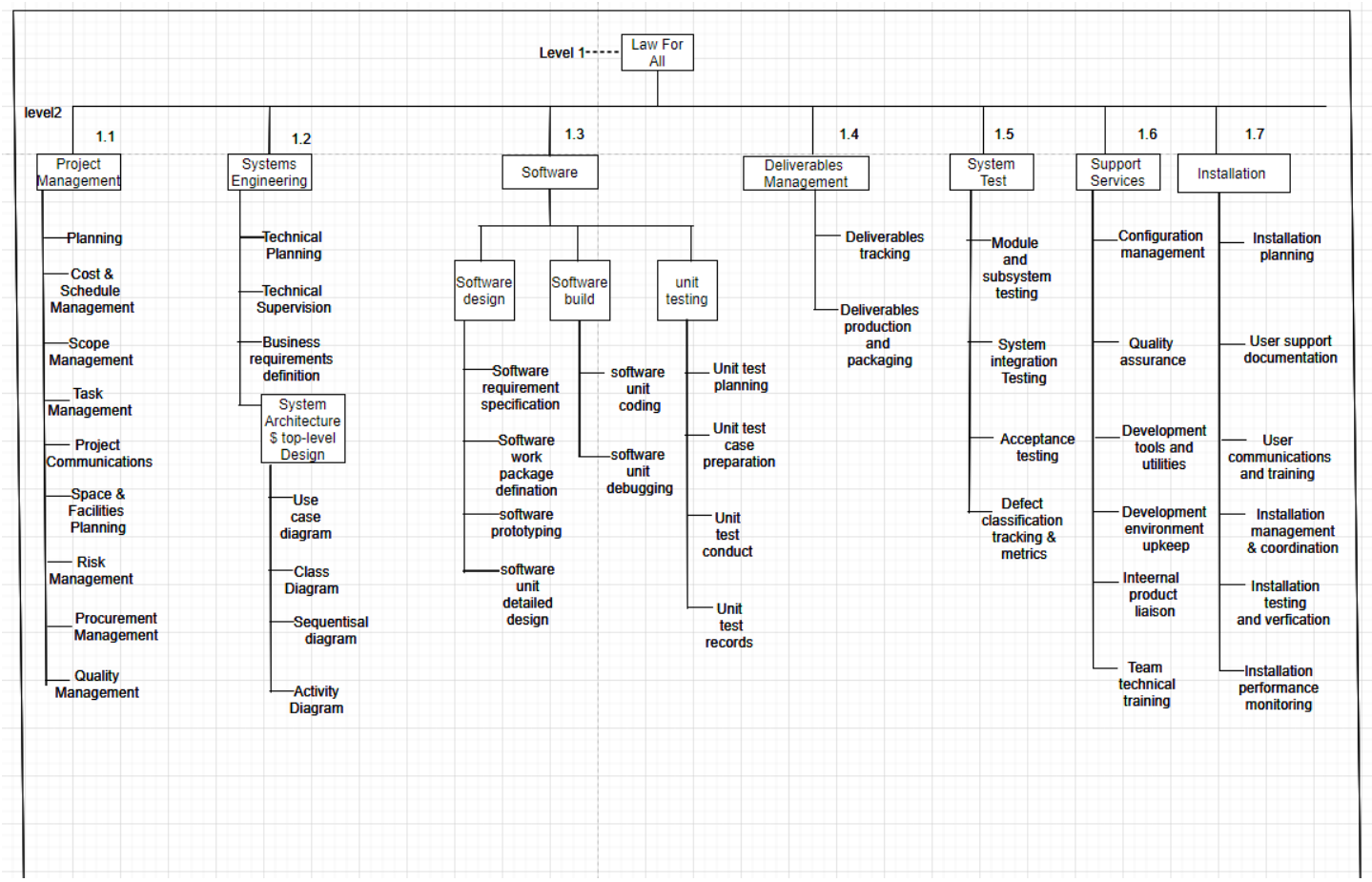
(5) Go to Website. (6) Click Documents (7) Click Document Organization (8) Click Open file to show saved files (9) Click edit file to edit or add something new to previously saved file (10) Click download file to download all the saved files		Document will be uploaded and saved and edited	Uploaded documents can be organized here	
(1) Go to Website. (2) Click Documents (3) Click Document Sharing (4) Click "Copy link to share" (5) Share document at any platform		Document will be shared using link	Uploaded documents will be share from here	
(1) Go to Website. (2) Click Documents (3) Click Document Versioning (4) Convert to any version (5) Download converted version		Documents format/version can be changed here	Download any required version after converting	
(1) Go to Website. (2) Click Documents (3) Click Document Collaboration (4) Click Open file to show saved files				

(5) Click edit file to edit or add something new to previously saved file (6) Click download file to download all the saved files				
(1) Go to Website. (2) Click Documents (3) Click Signing and E-signature (4) Click Open file to show saved files (5) Click add signature to add signature with document (6) Click download file to download all the saved files		Sign will be added	Signature will be add with the documents	
(1) Go to Website. (2) Click Documents (3) Click Document search (4) Click search document to find required documents		Will find specific document		

(1) Go to Website. (2) Click Documents (3) Click Document notification (4) Click document upload notification to see new uploads (5) Click document edit notification to see which documents are edited				
(1) Go to Website. (2) Click Documents (3) Click Document security and privacy (4) Click privacy policy to see this		Privacy policy will be shown		
(1) Go to Website. (2) Click Documents (3) Click Document archiving (4) Click archive file to upload unnecessary or unused files (5) Click download to download any archive files		Document will go archive and be downloaded while needed		

Project Name: Law For All			**Test Designed by:** A.S.M. FAHAD HASAN	
Test Case ID:			**Test Designed date:** 05/07/2023	
Test Priority (Low, Medium, High): High			**Test Executed by:** FAHAD	
Module Name: Payment			**Test Execution date:** 5/08/2023	
Test Title: Transfer money checking				
Description: Test balance after sending money				
Precondition (If any): User must have valid username and password				
Test Steps	**Test Data**	**Expected Results**	**Actual Results**	**Status (Pass/Fail)**
1. Open application 2. Tap payment 3. Enter amount 4. Enter password 5. Tap send 6. Check balance	Amount: 2000 Password: 321	Balance should be reduced after sending money	Balance remained same	Fail
Post Condition: User balance should be reduced after sending money. .				

WBS :


Level 1
Law For All
level2
1.1
Project Management
Planning
Cost & Schedule Management
Scope Management
Task Management
Project Communications
Space & Facilities Planning
Risk Management
Procurement Management
Quality Management
1.2
Systems Engineering
Technical Planning
Technical Supervision
Business requirements definition
System Architecture $ top-level Design
Use case diagram
Class Diagram
Sequentisal diagram
Activity Diagram
1.3
Software
Software design
Software requirement specification
Software work package defination
software prototyping
software unit detailed design
Software build
software unit coding
software unit debugging
unit testing
Unit test planning
Unit test case preparation
Unit test conduct
Unit test records
1.4
Deliverables Management
Deliverables tracking
Deliverables production and packaging
1.5
System Test
Module and subsystem testing
System integration Testing
Acceptance testing
Defect classification tracking & metrics
1.6
Support Services
Configuration management
Quality assurance
Development tools and utilities
Development environment upkeep
Inteernal product liaison
Team technical training
1.7
Installation
Installation planning
User support documentation
User communications and training
Installation management & coordination
Installation testing and verfication
Installation performance monitoring

Constructive Cost Model:

Project type - Organic [2.4 efficient, 1.05P, 0.38T]

SLOC = 6000

∑Effort = PM = Coefficient <effort factor>*$(SLOC/100)^{P}$

= 2.4*$(4000/1000)^{1.05}$

= 4.28

Development time = DM= 2.50*$(PM)^{T}$

=2.50*$(4.28)^{0.38}$

=2.46

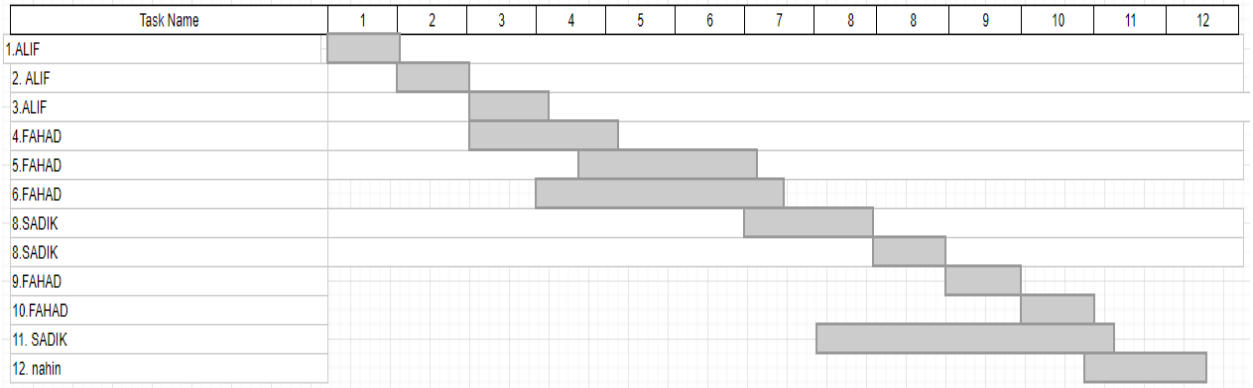
Required number of people = ST = PM/DM

= 2.2

= 3 month

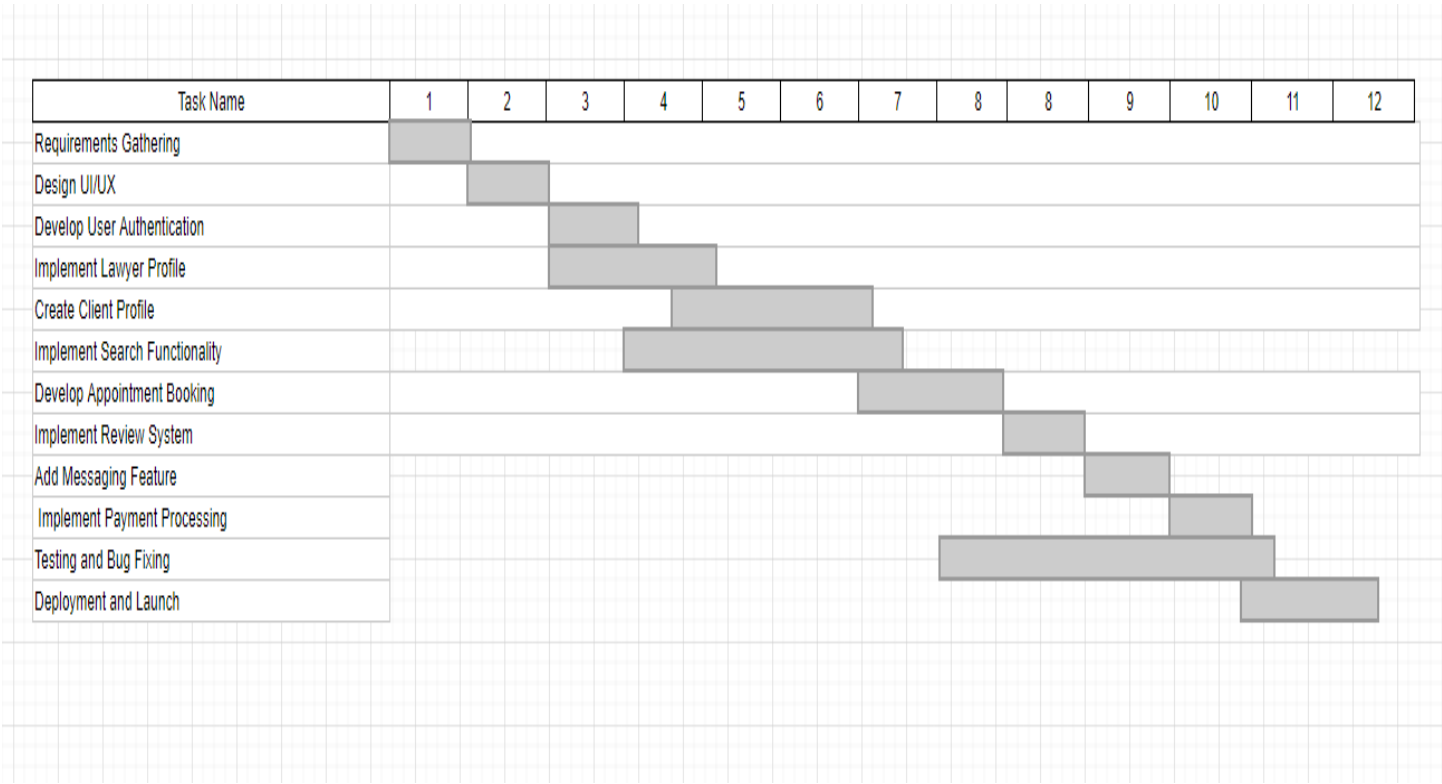
= 12 week

Time Line Chart



activity key:

Activity Key	Task Description
A1	Requirements Gatherin
A2	Design UI/UX
A3	Develop User Authentication
A4	Implement Lawyer Profile
A5	Create Client Profile
A6	Implement Search Functionality
A7	Develop Appointment Booking
A8	Implement Review System
A9	Add Messaging Feature
A10	Implement Payment Processing
A11	Testing and Bug Fixing
A12	Deployment and Launch



Earned value analysis (EVA):

Task	Planned Effort(weeks)	Actual Effort(weeks)
1	1	3
2	1	2.5
3	1	1
4	2.5	2.5
5	3	3.5
6	4.5	5
7	2.8	2.5
8	2.5	3.5
9	1.5	1.5
10	1	1
11	3	2
12	2.5	2.5
13	4	
14	3	
15	2	

- BCWS=35.5
- BCWP=26.5
- ACWP=29.8
- BAC = 84.00 person-week
- SPI = BCWP/ BCWS = 26.5/ 35.5 = 0.7478
- SV = BCWP - BCWS = 26.5– 35.5= -9 person-week
- CPI = BCWP/ ACWP = 26.5/29.8=0.889
- CV = BCWP – ACWP = 26.5-29.8= -3.3 person-day
- % schedule for completion = BCWS/ BAC = 35.5/84
  = 42.26%

[% of work scheduled to be done at this time]

- % complete = BCWP/ BAC = 26.5/84 = 31.15%
  [% of work completed at this time]

Risk Table

Risk	Category	Probability
Product size too large	PS	40%
Technical debt accumulation	PS	30%
Unclear project scope	PS	10%
Inadequate resource allocation	PS	20%
Unrealistic business expectations	BU	30%
Market competition	BU	40%%
Regulatory changes	BU	60%
Economic downturn	BU	30%
Miscommunication with customer	CU	20%
Language barriers	CU	70%
Process gaps and inconsistencies	PR	50%
Deviation from defined process	PR	30%
Inadequate development tools	DE	80%
Technical tool limitations	DE	90%
Insufficient tool training	DE	40%
Complex system architecture	TE	60%
Integration challenges	TE	50%

High team turnover	ST	30%