

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 |  |  |
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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

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| --- |
| 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 |

# PROJECT PROPOSAL

## 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

## 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.

1. Transparency and Accountability: It will provide users with a secure and transparent platform to access legal services and rate, review lawyers.
2. 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:**

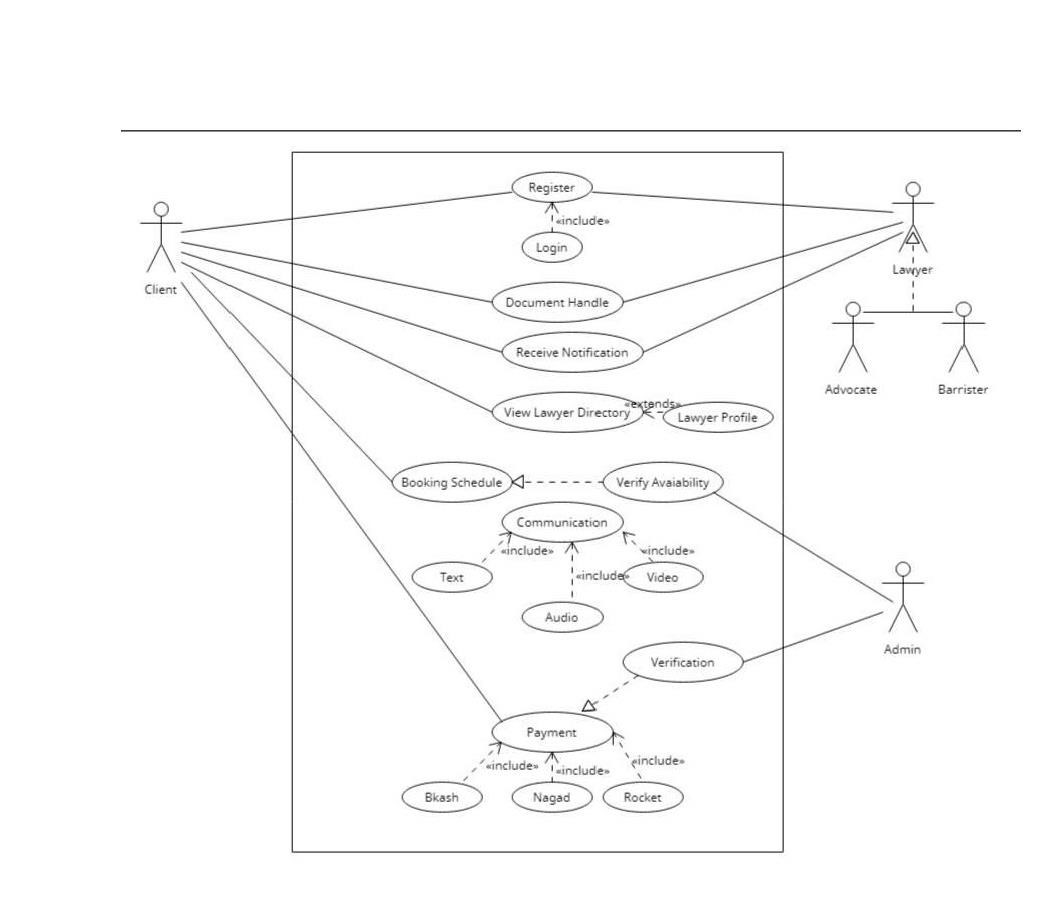
1. System should accept Login attempt with valid email and password.
2. Entering wrong E-mail and password system will not accept and will refresh the page to enter those information’s again. 3. Typing wrong password for several times will verify to Reset the Password.

4. Forgetting E-mail and Password will lead to reset them.

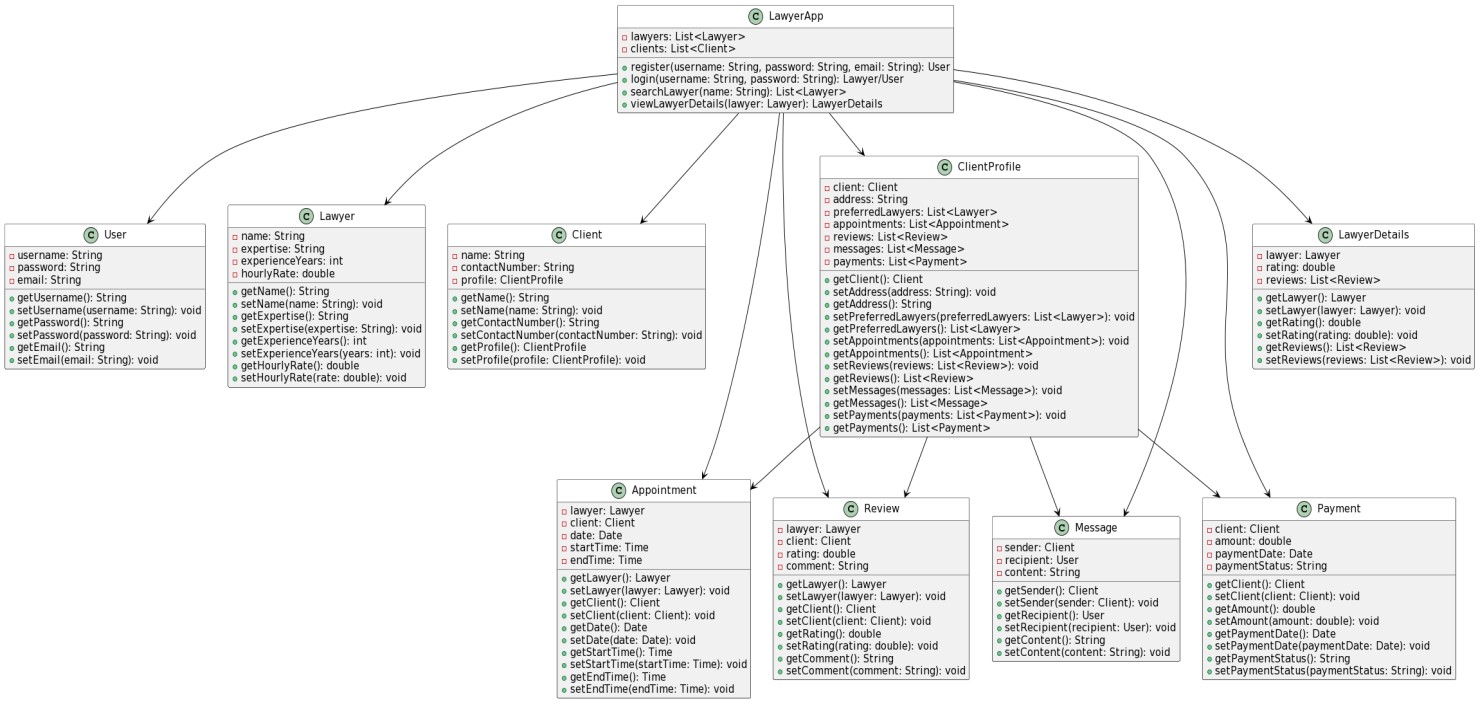
**Non-Functional Requirements:**

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.

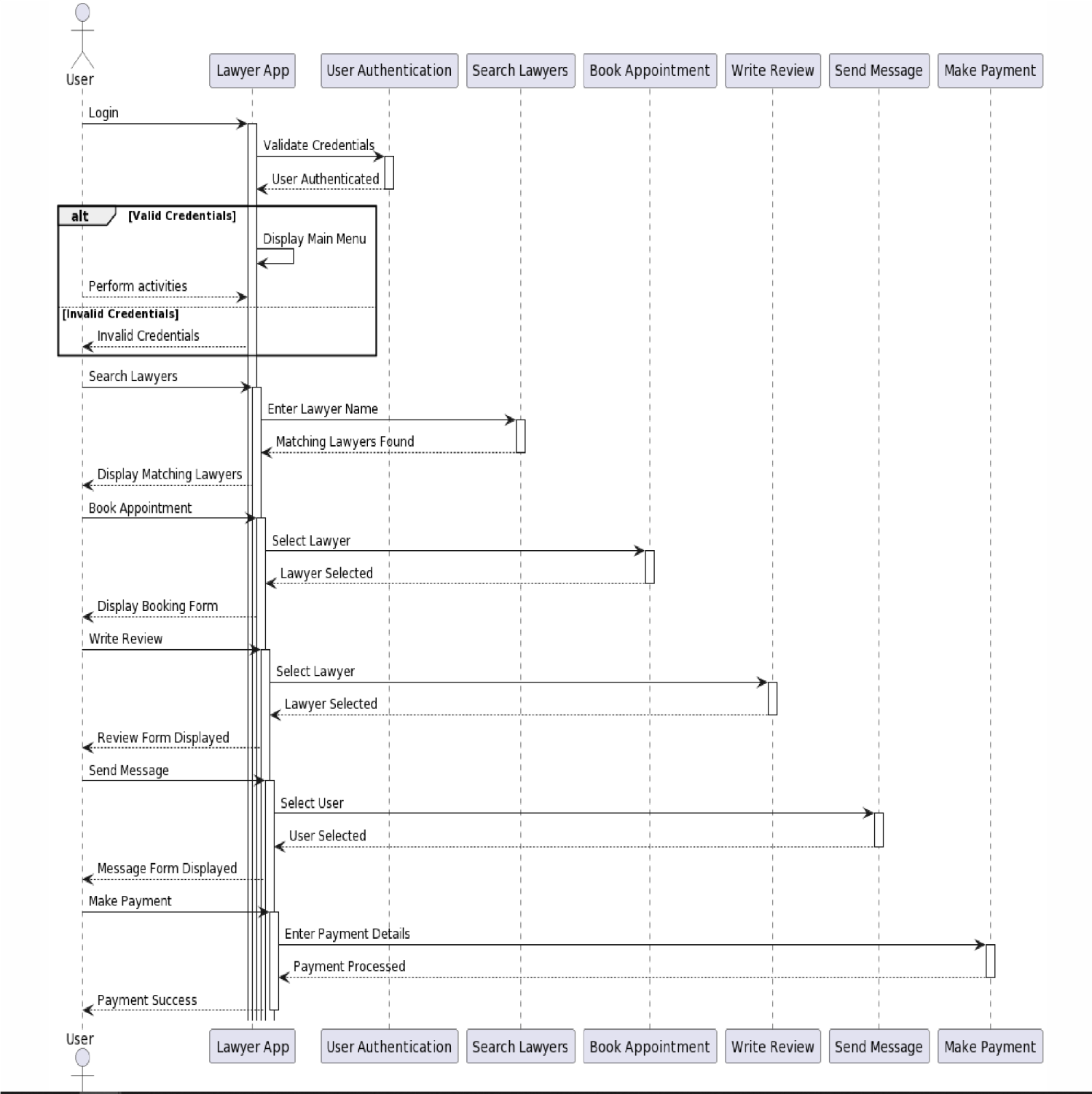
Use Case Diagram:



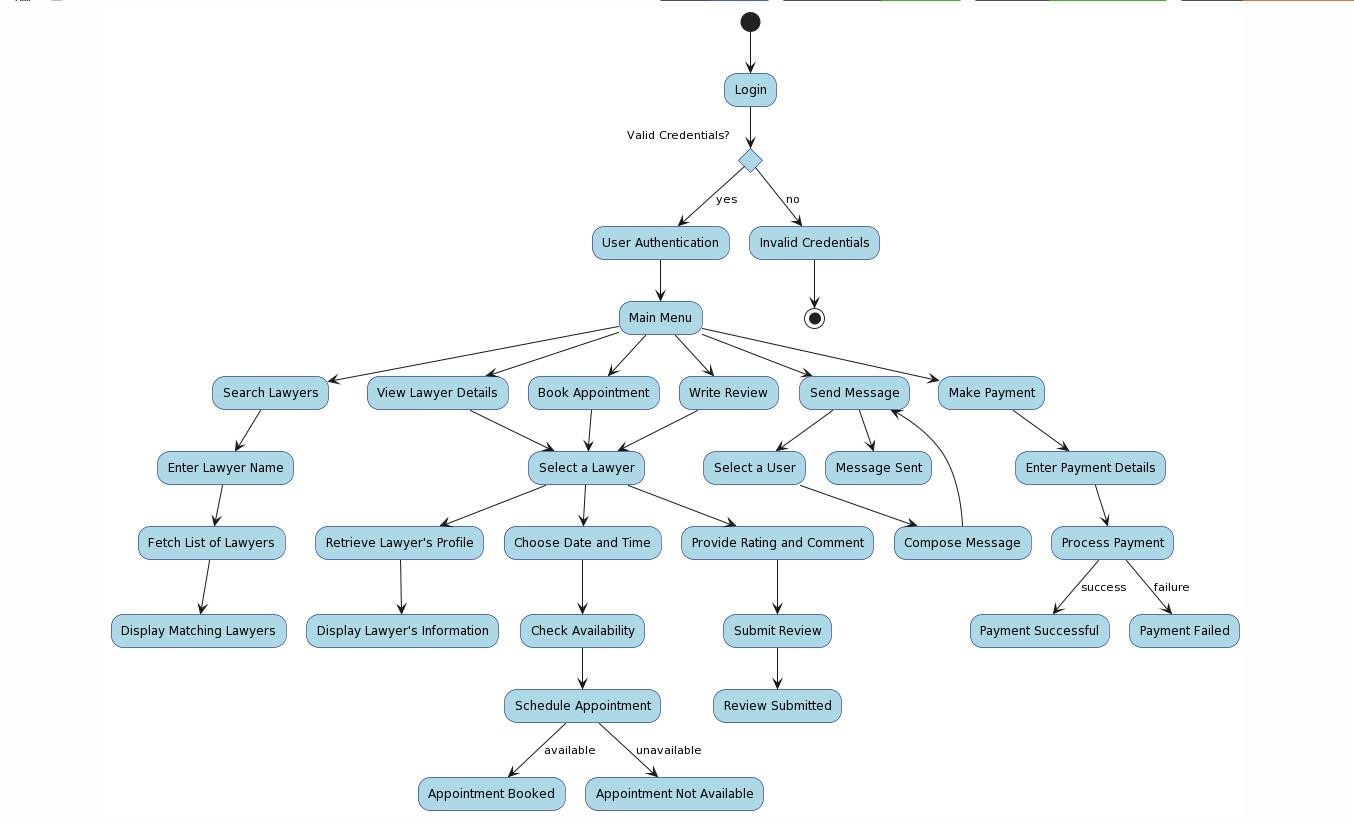
Class Diagram:



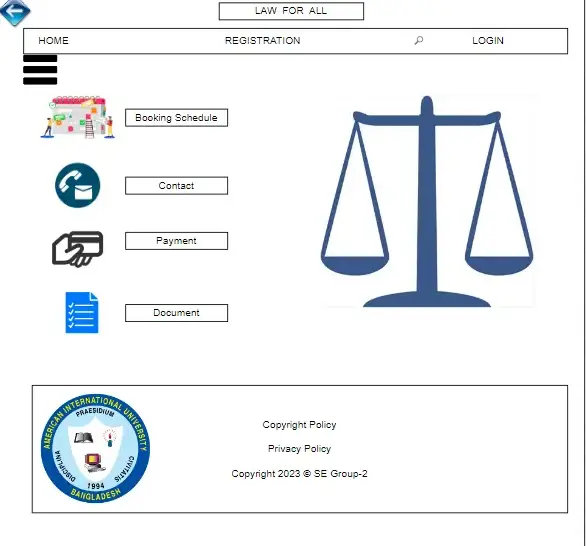
Sequential Diagram:



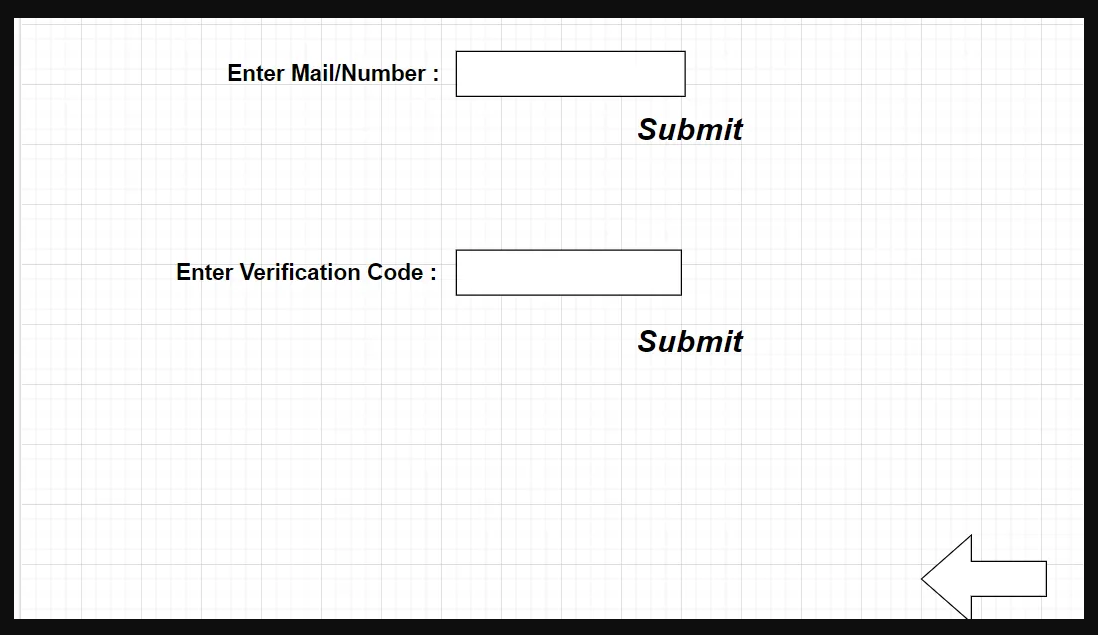
Activity Diagram:

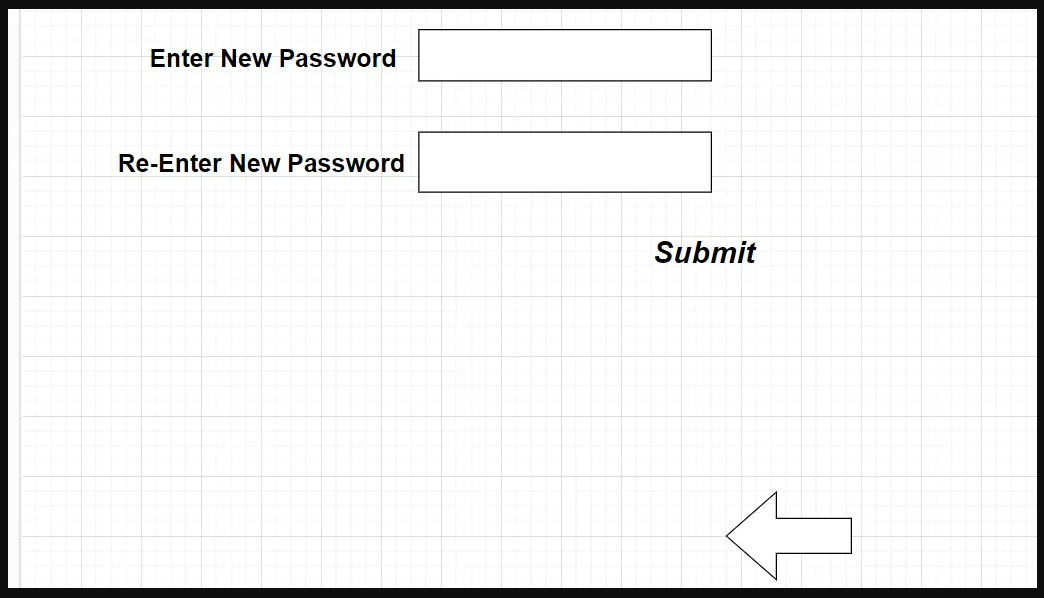


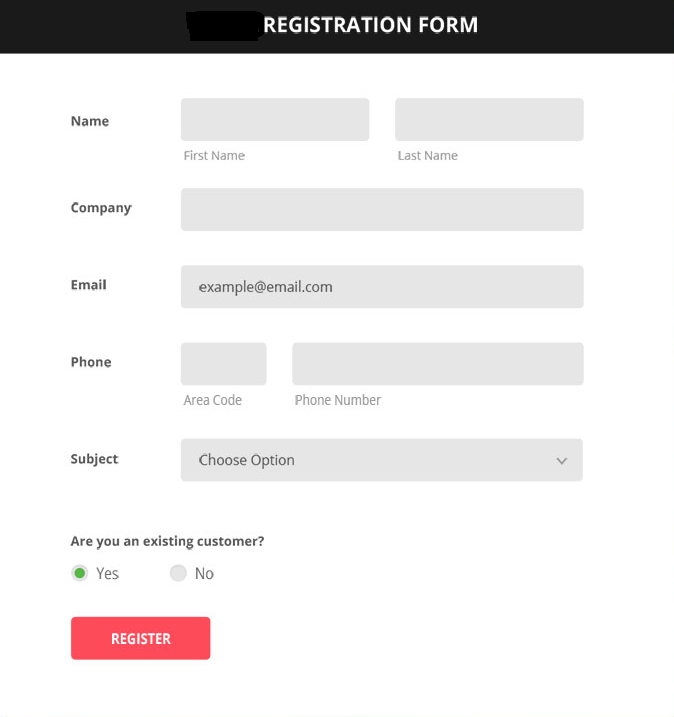
UX design:

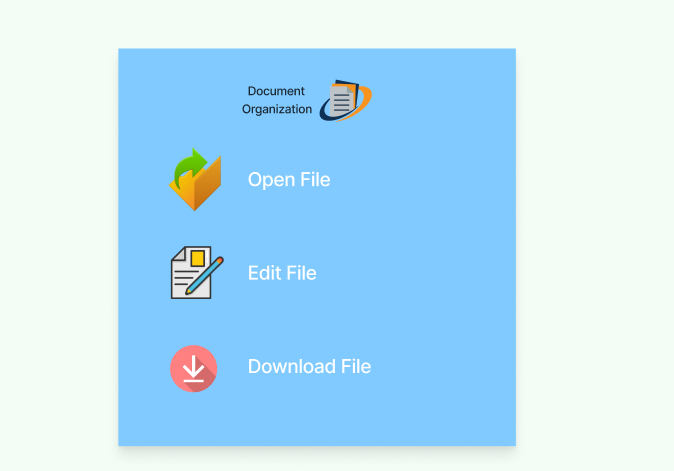
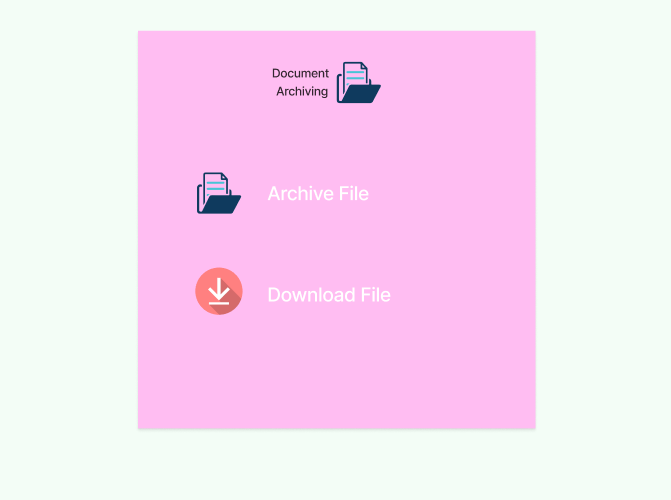
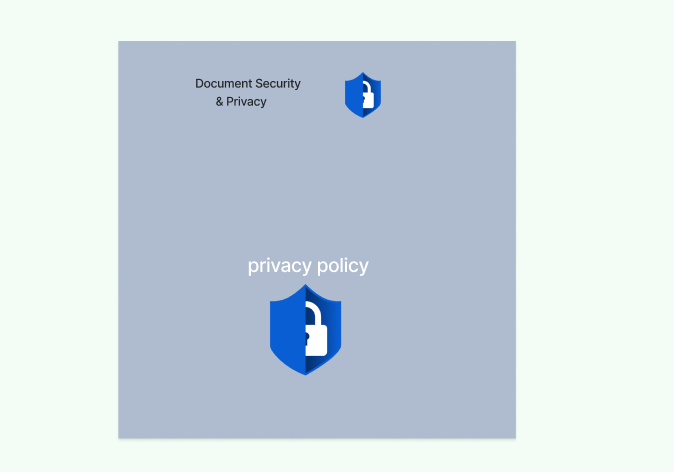
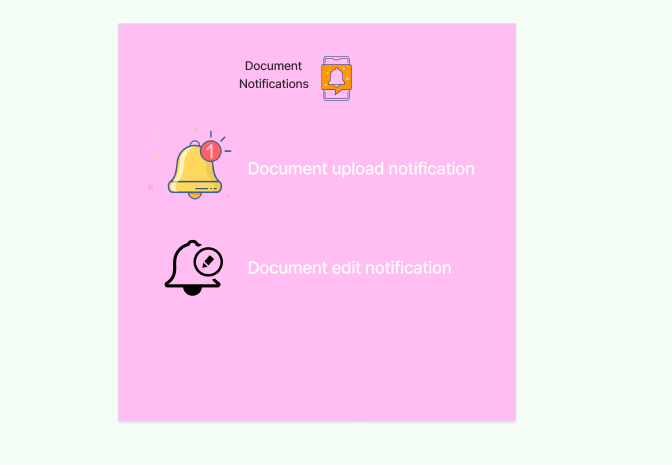
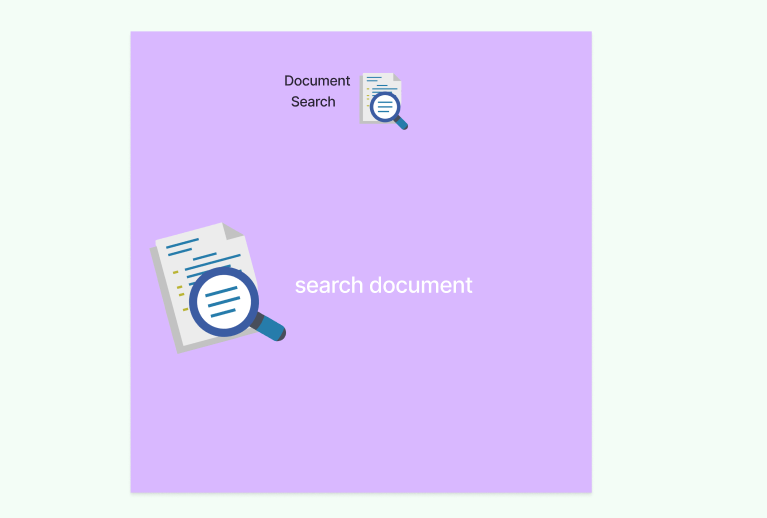
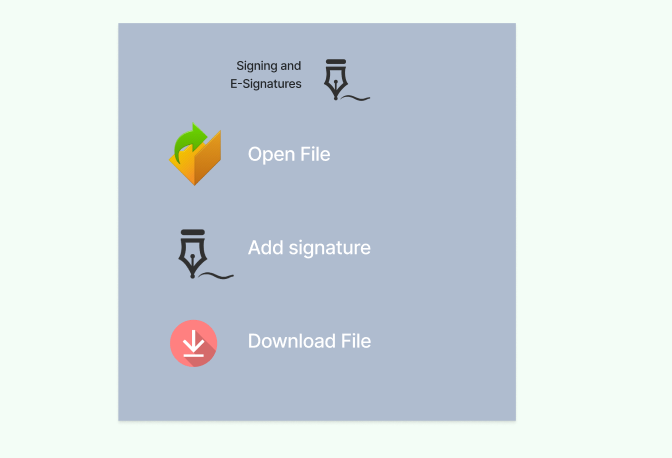
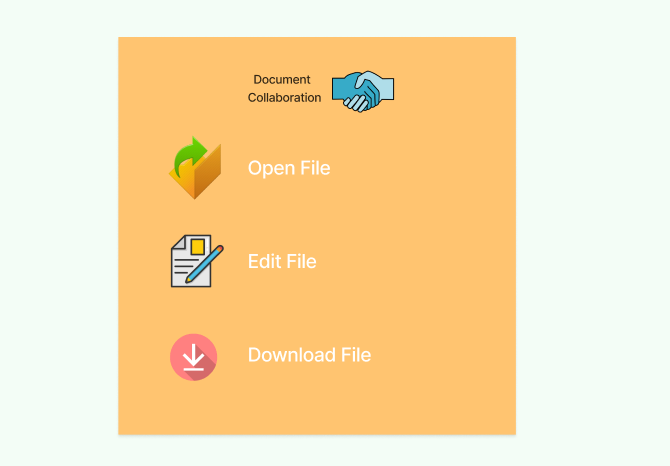
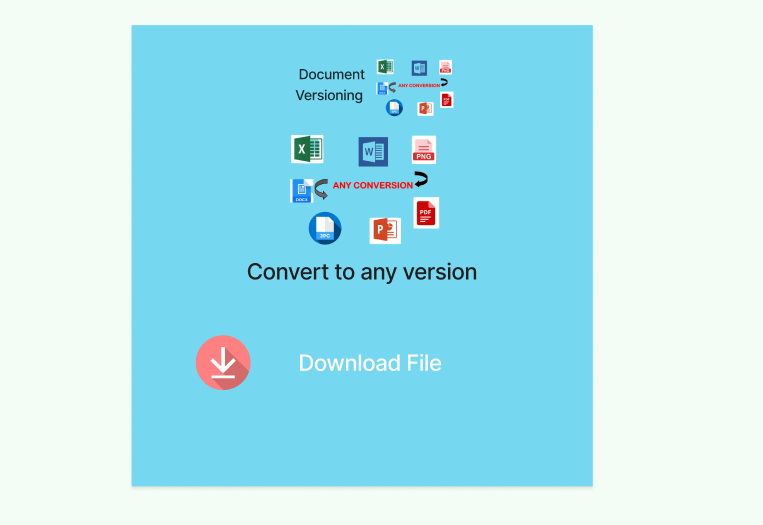
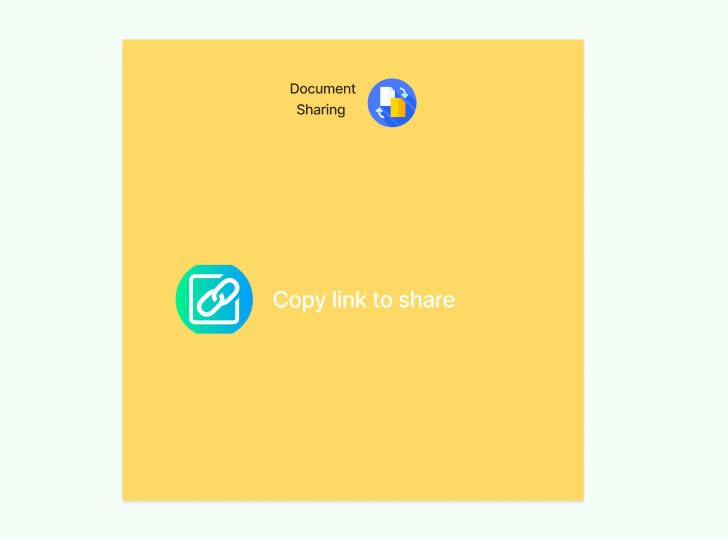
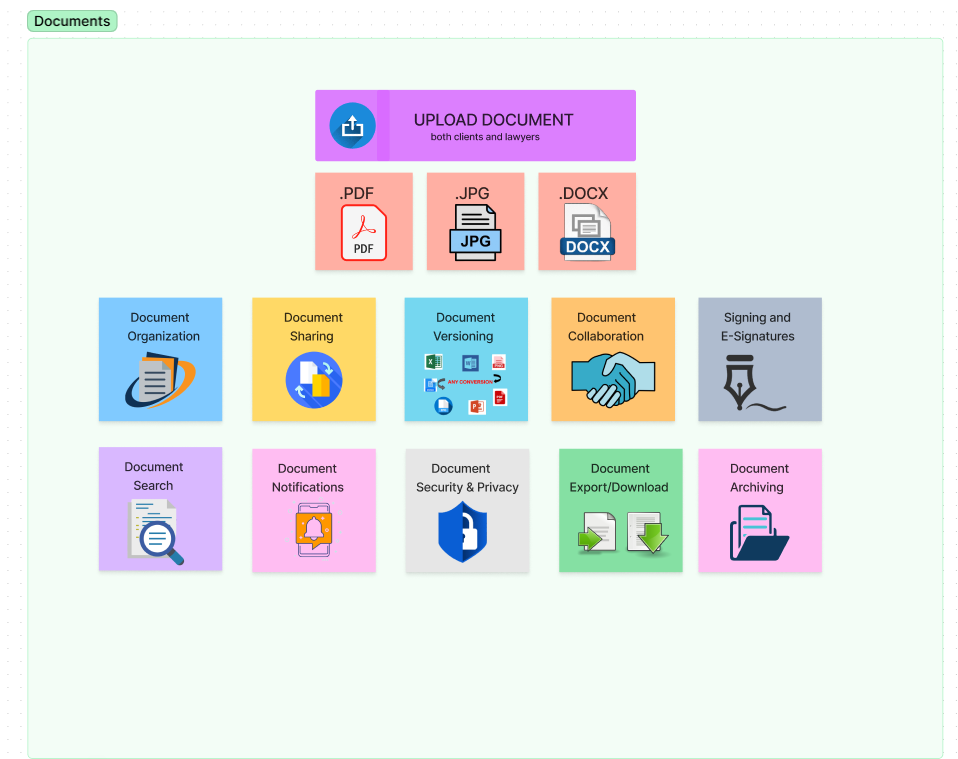


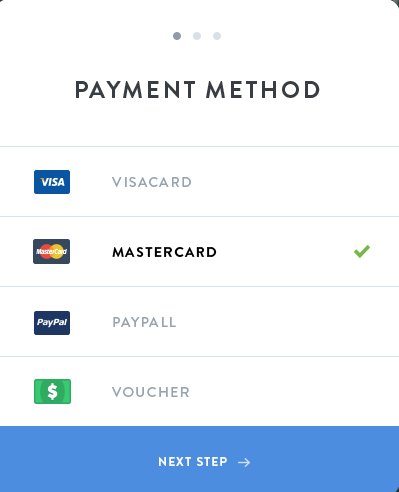












Project text Planning

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| 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 | |  |  |  |
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|  |  |  |  |  | |  |  |  |
| 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 |  |  |  |  |  |  |  |
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Module name: Home

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| Test Steps | |  | Test Data | Expected Results | |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | |  |  |  |
| 1. | Go to the website |  |  | User should be able instantly see the home page | |  |  |  |
| 2. | Go to any page |  |  |  | |  |  |  |
| 3. | Click on Home |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |
| Module name: Logout  Test Steps | |  | Test Data | Expected Results | |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | |  |  |  |
| 1. | Go to the website |  |  | User immediately get logged out and return to home page | |  |  |  |
| 2. | Login |  |  |  | |  |  |  |
| 3. | Click on logout |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Module name: Logout  Test Steps | |  | Test Data | Expected Results | |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | |  |  |  |
| 1. | Go to the website |  |  | User should be able to see all his uploaded documents | |  |  |  |
| 2. | Login |  |  |  | |  |  |  |
| 3.  4. | Click on Contact  Click your Document |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
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Module name: Received Document

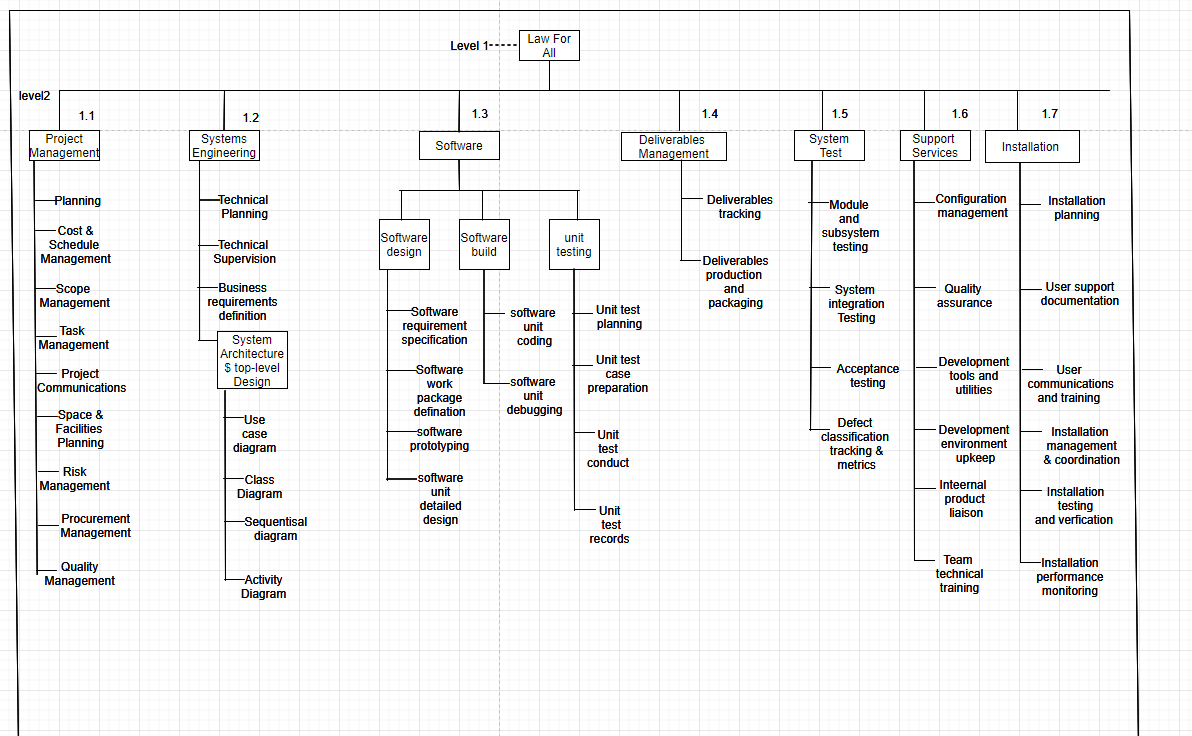
|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test Steps | |  | Test Data | Expected Results | |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | |  |  |  |
| 1. | Go to the website |  |  | User should be able to see all the documents that he received from others | |  |  |  |
| 2. | Login |  |  |  | |  |  |  |
| 3.  4. | Click on Contact  Click on Received Document |  |  |  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| **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](mailto:Sahin123@gmail.com)  Password : \*\*\*\*\*\*\*\* | User should login into the application. |  |  |
| 1. Go to Website. 2. Click on forgot password. 3. Enter verification mail or phone number. 4. Enter verification code. 5. Submit code. | Mail or Phone Number : [Sahin123@gmail.com](mailto:Sahin123@gmail.com)  Verification Code : \*\*\*\*\*\* | User should give verification Mail or Phone Number then user should 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)** |
| 1. Go to Website. 2. Click Documents |  | Documents page should open |  |  |
| 1. Go to Website. 2. Click Documents 3. Click upload documents 4. Upload documents as PDF/JPG/DOCS | Upload any document related with website | Document will be uploaded and save until admin/ user delete it |  |  |
| 1. Go to Website. 2. Click Documents 3. Click Document Organization 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 |  | 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 |  |  |

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| --- | --- | --- | --- | --- | --- |
| **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   1. Tap payment 2. Enter amount 3. 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 :



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

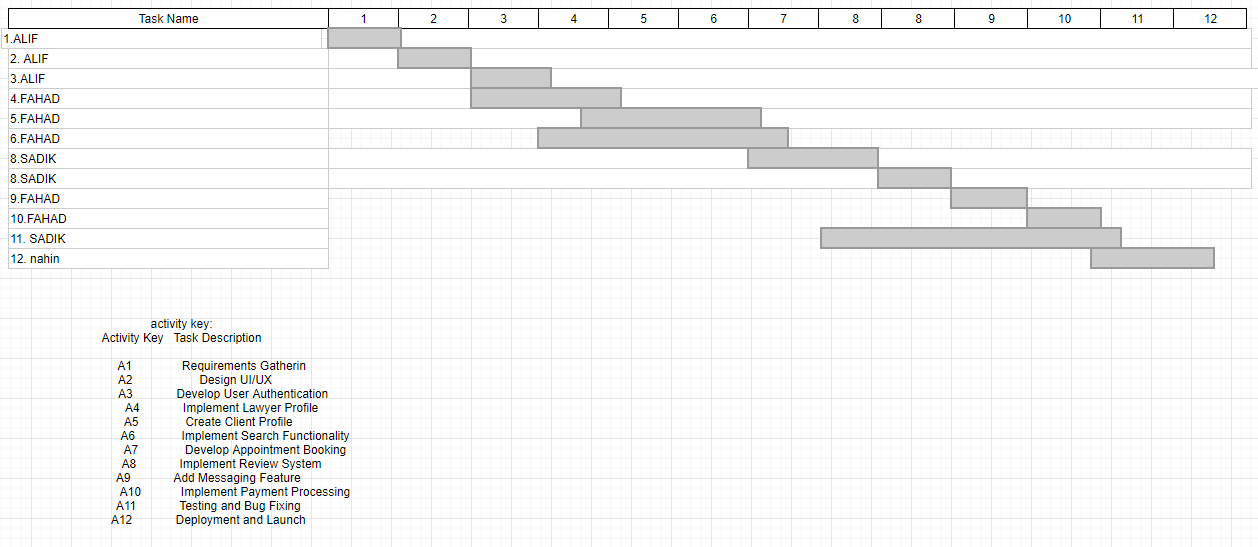
Required number of people = ST = PM/DM

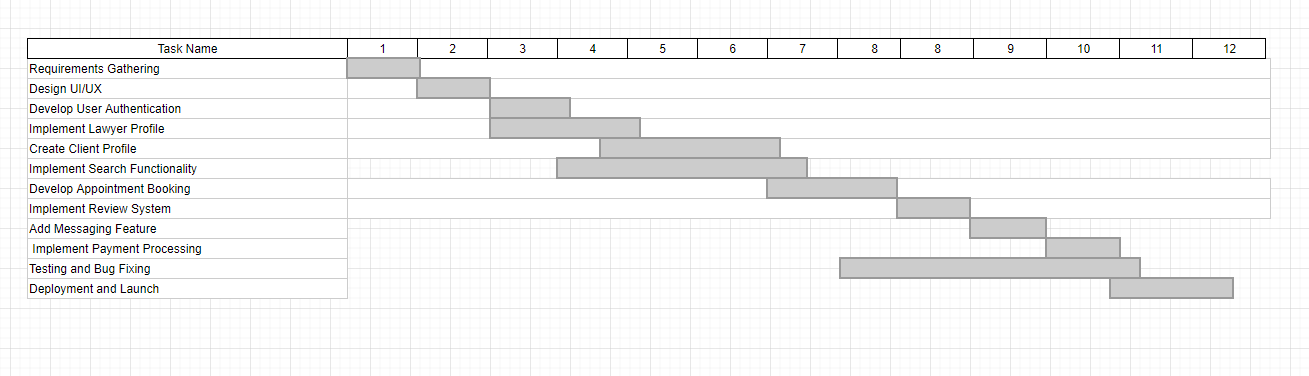
= 2.2

= 3 month

= 12 week

Time Line Chart





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% |