**(Link-Law.pk)**

**Final Year Project**

**Proposal**

A project submitted in partial fulfilment of the COMSATS University Degree

of

BS in Computer Science / Software Engineering (CUI)

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Department of Computer Science

COMSATS University Islamabad,

Lahore Campus

08-March-2024

**Project Registration**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Project ID (for office use) | | |  | | | | |
| Type of project | | | [✓] Traditional [ ] Industrial [ ] Continuing | | | | |
| Nature of project | | | [✓] Development [ ] Research [ ] R&D | | | | |
| Area of specialization | | | Web Development | | | | |
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| **Declaration:** FYP group members have cleared all prerequisite courses for FYP-I as per their degree requirements.  For BS (Computer Science)  (CSC241 Object Oriented Programming, CSC291 Software Engineering Concepts, CSC371 Database Systems-I, HUM102 Report Writing Skills) | | | | | | | |

**Plagiarism Free Certificate:**

This is to certify that, I am **Muhammad Hatim Khalid** S/O **Khalid Mehmood**, group leader of FYP under registration no CIIT/SP21-BCS-023/LHR at Computer Science Department, COMSATS Institute of Information Technology, Lahore. I declare that my FYP proposal is checked by my supervisor and the similarity index is: % that is less than 20%, an acceptable limit by HEC.

Date: 08/03/2024

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Table of Contents

[1. Abstract: 4](#_Toc160731741)

[2. Introduction: 4](#_Toc160731742)

[3. Success Criterion: 5](#_Toc160731743)

[4. Related work: 5](#_Toc160731744)

[5. Project Rationale: 5](#_Toc160731745)

[**i.** **Aims and Objectives:** 6](#_Toc160731746)

[**ii.** **Aims:** 6](#_Toc160731747)

[**iii.** **Objectives:** 6](#_Toc160731748)

[**iv.** **Scope of the project:** 6](#_Toc160731749)

[6. Proposed Methodology and Architecture: 7](#_Toc160731750)

[**i.** **Methodology:** 7](#_Toc160731751)

[ii. Requirement Analysis: 7](#_Toc160731752)

[iii. Platform Design: 7](#_Toc160731753)

[iv. Database Development: 7](#_Toc160731754)

[v. Frontend Development: 7](#_Toc160731755)

[vi. Dataset Collection: 7](#_Toc160731756)

[vii. Data Processing: 8](#_Toc160731757)

[viii. Model Training: 8](#_Toc160731758)

[ix. Integration Machine Model: 8](#_Toc160731759)

[x. Backend Development: 8](#_Toc160731760)

[xi. Integration of Features: 8](#_Toc160731761)

[xii. Security Implementation: 8](#_Toc160731762)

[xiii. Testing and Quality Assurance: 8](#_Toc160731763)

[xiv. Deployment and Launch: 8](#_Toc160731764)

[xv. Post-launch Monitoring and Maintenance: 8](#_Toc160731765)

[xvi. User Training and Support: 8](#_Toc160731766)

[xvii. Documentation and Reporting: 9](#_Toc160731767)

[**i.** **Architecture:** 9](#_Toc160731768)

[ii. Client-Side (Frontend): 9](#_Toc160731769)

[iii. Server-Side (Backend): 9](#_Toc160731770)

[iv. Database: 9](#_Toc160731771)

[v. Authentication and Authorization: 9](#_Toc160731772)

[vi. Communication Infrastructure: 9](#_Toc160731773)

[vii. External Integrations: 9](#_Toc160731774)

[viii. Infrastructure and Deployment: 10](#_Toc160731775)

[7. Individual Tasks 10](#_Toc160731776)

[8. Gantt chart (Link-Law.pk): 11](#_Toc160731777)

[9. Tools and Technologies 12](#_Toc160731778)

[**Tools:** 12](#_Toc160731779)

[**Technologies:** 12](#_Toc160731780)

[10. References: 13](#_Toc160731781)

# Abstract:

We frequently discover that Pakistanis have trouble accessing correct and relevant information for legal concerns. Our people are unaware of their country's legal rights. In most cases, we see in everyday life that people find it tedious to go to court and deal with lawyers, or that lawyers do not have enough resources to reach out to those who require their services.

One solution is to create a virtual web application platform where people may contact lawyers to discuss concerns, schedule appointments, get legal advice, and learn about their rights. Present. Our app aims to overcome the important gap between a lawyer and his client. People can publish their legal issues on the online portal Link-Law.pk, and legal professionals will contact them. In addition to sharing experiences and conversing with possible clients, attorneys can market their profiles.

# Introduction:

We witness that Pakistanis often need legal services on a daily base, but to get the services of a lawyer becomes a big challenge to handle legal proceedings, know your rights, and ask questions and get help, especially for those living in villages and backward areas. To counter these issues, we are providing an idea of a brand-new website only for Pakistanis called Link-Law.pk. As a digital platform for those in need of legal help and reaching lawyers, this platform hopes to raise legal know how of the public and improve accessibility to their rights.

We hope to provide, cases reviews, and a platform for lawyers too. People will get easy legal advice and then they will make informed decisions and defend their rights thanks to the availability of our platform. In the race to improve justice in society, this brief introduction sets new goals for other projects and provides inspiration to new ideas.

The website will also offer a prediction tool that is based on machine learning in addition to other features. This innovative feature of paring a Machine trained model with the main idea will predict probable legal outcomes based on the situation of the case. this tool will give our users more facilitates and allow their ability to access justice and make wiser decisions.

# Success Criterion:

Our project Link-Law.pk will have the ability to provide its users with complete legal help while managing client wishes and needs, regular maintainability and continuous innovation will be the key to its success. The success of this platform is based on the feature to stay up-to-date and accessible legal advice, abrupt measures to measure user requirements and satisfaction of the user, with the hint of promoting effective publishing files that allow users to interact with the platform more openly.

Expert lawyers, easy to use interface, strict compliance with legal rules and continuous improvement of the platform will ensure its success. With these standards this platform will surely fill the gap in our society of people lacking access to attorneys. This will eventually increase transparency and trust of the people in the legal doings of our community and form the building block for easy legal help in Pakistan.

# Related work:

There are other platforms that offer helpful legal advisory. We came across a few of these platforms while researching on Link-Law.pk. There are Platforms such as **Avvo**, **LegalZoom**, and **Rocket** **Lawyer** that offer legal service to clients on a global and regional range and provide the users with vital needs of quick legal help. Such Multinational corps and programs lay the groundwork for a user-friendly platform for people of Pakistan. In this way, the public living in a country where legal proceedings are no less than a nuisance, become easy

On a local level to address the problem at hand of providing legal services in Pakistan, initiatives like the **Sindh Legal Advice Call Centre** and **the Punjab Law Authority Legal Aid Program,** offer legal advice, maintenance and help over the cell phone. Furthermore, circling back to our Link-Law.pk website style, design and implementation provides a great deal to do research on user behaviour on online legal platforms too.

Using the information from bar associations, government agencies, and legal organizations will drastically support the development of a paradigm altering online legal culture in Pakistan. Compliance with rules and regulations Link-Law.pk can easily handle the problems on a legal scale for the people and it will ensure privacy and transparency of the user on every level.

# Project Rationale:

Considering the issues faced by the Pakistani people in their legal proceedings led the way to this idea of establishing an online legal services platform. On the other hand, many people face hurdles such as limited access to legal services and lack of proper guidance about laws and procedures such as personal matters, and financial guidance. Most people in a 3rd world country cannot afford the services of a high-profile lawyer, such as documentation and attending court dates. This is especially true for people living in rural and underprivileged communities.

Furthermore, Pakistan's current legal system has severe loopholes and corruption, resulting in uneven access to justice. Online legal advice platforms such as Link-Law uses technology to tackle these shortcomings. The basic aim is to help people overcome legal problems and tell them how to use their rights.

The integration of machine learning model into online legal assistance platforms proves to be a cherry on top and it will enhance the legal work on these platforms on another level. Prediction engine that will be trained uses algorithms to provide users with compact related information to the users and provide an outlook on the outcome. This thoroughly manages the gap between legal knowledge and practical implementation. This feature showcases the ability of the platform innovativeness, efficiency, and relevancy in providing legal help.

## **Aims and Objectives:**

### **Aims:**

Our main goal regarding this project is to develop a unique user friendly online legal advice platform that is oriented to the needs and problems usually faced by Pakistani public who are in search of legal aid.

The intention of developing such a website application is to make good partnerships with governmental authorities, civil society groups, and legal aid organizations to enhance the application’s service to people, particularly in underdeveloped populations.

### **Objectives:**

The first objective that came to our minds was user-friendliness of the web application that fulfills the needs of users from different cultures and offers a deep knowledge of Pakistan's constitution.

The next objective that came to our minds was to build and facilitate people with a platform that allows clients to communicate with skilled lawyers to receive rapid help.

Along with these lastly, we wanted the people of our beloved country to be legally educated and know what their rights are in this country.

### **Scope of the project:**

Handling the specific and unique needs of the residents of Pakistan was the main motive of the project. The basic idea revolves around the fact that if other countries have the system that is making sure the swift service of guidance on legal ends why is there no platform in our system that offers the same. The application grids the link of client to lawyer, and in this way, they can take the services of lawyer in every legal way possible. The platform also offers the feature of chatting and posting queries on the platform, and this will be handled with strict security measures making it end to end encrypted. The intensive tests and fixes on the application will ensure its feasibility and reliability.

With the help of these features and services Link-Law will bridge the complex legal system with the client and it will be easy to access for both. And with the Machine- Learning model of the application that will be integrated within the application will be a dynamic role player as it will make the knowledge of a high-end profession in the access of people, so they have a better chance of understanding their rights.

# Proposed Methodology and Architecture:

The developmental model that will be used in this whole endeavor is the Agile technique which is ideal for our project because of its flexibility. Agile enables developers to react to changing requirements, especially when we are working with machine learning, where the data models change continuously. Finally, Agile will assist us in successfully integrating the utmost forecasting capability Link-Law, allowing us the developers to deliver deliverables numerous times.

## **Methodology:**

### Requirement Analysis:

A thorough analysis on what the user needs, and being the user, which is the lawyer and the client here, gathering of requirements for all stakeholders is crucial.

### Platform Design:

Assembling the design of the project is foremost and important point of the project, in our case our design should be easily understood considering the key audience is public, also the prototypes will be user oriented facilitating the user at every end.

### Database Development:

We will be using and building a comprehensive, connected database for this project which ensures, the use of proper data model and management approaches.

### Frontend Development:

Use current web development tools like HTML, CSS, and JavaScript to implement the web application's front-end components while following responsive design guidelines to ensure cross-browser and device compatibility.

### Dataset Collection:

Compile pertinent statutes, court rulings, and legal cases from reliable sources to build a dataset that will be used to train the machine learning model. Put labels on each case that correspond to elements like the type of offense, aggravating or mitigating circumstances, relevant laws, etc. Provide outcome information for each case, such as the length of the sentence (fines, length of incarceration, etc.) or the legal ramifications.

### Data Processing:

To extract useful features from the dataset, such as the type of offense, the defendant's background, the jurisdiction in which the case is being heard, etc., use feature engineering. Handle missing values, encode category variables, and scale numerical features as needed to preprocess the data.

### Model Training:

Select the proper machine learning techniques (classification, regression) according to the type of prediction task (severity prediction, for example). To train the model on labeled data and assess its efficacy, divide the dataset into training and testing sets. Try varying the models and hyperparameters to maximize performance measures like recall, accuracy, and precision.

### Integration Machine Model:

Provide a tool on the platform that allows users to add tags or pertinent information about their legal problems. Utilize the machine learning model that has been built to forecast probable legal ramifications or the severity of a punishment based on the user's input. Present the user with the forecast findings together with any justifications or suggestions derived from the model's analysis.

### Backend Development:

Using either Django or Node.js which one is suitable to requirement, development of the most important feature will be done and this will handle the back end of our application which usually handles the critical part.

### Security Implementation:

Making sure everything is in encryption, access restrictions, and secure authentication techniques to protect the date given by the user.

### Testing and Quality Assurance:

The use of different testing methods such as the unit testing, integration testing, and user acceptance testing to comprehensively debug the platform for public.

### Deployment and Launch:

To ensure a seamless transfer and little downtime, deploy the web application to a dependable hosting provider, set up server architecture, and formally open the platform to the public.

### Post-launch Monitoring and Maintenance:

To guarantee ongoing functionality and relevance, set up monitoring systems to keep an eye on user feedback, metrics for performance, platform usage, and emerging problems. Additionally, do routine maintenance and updates.

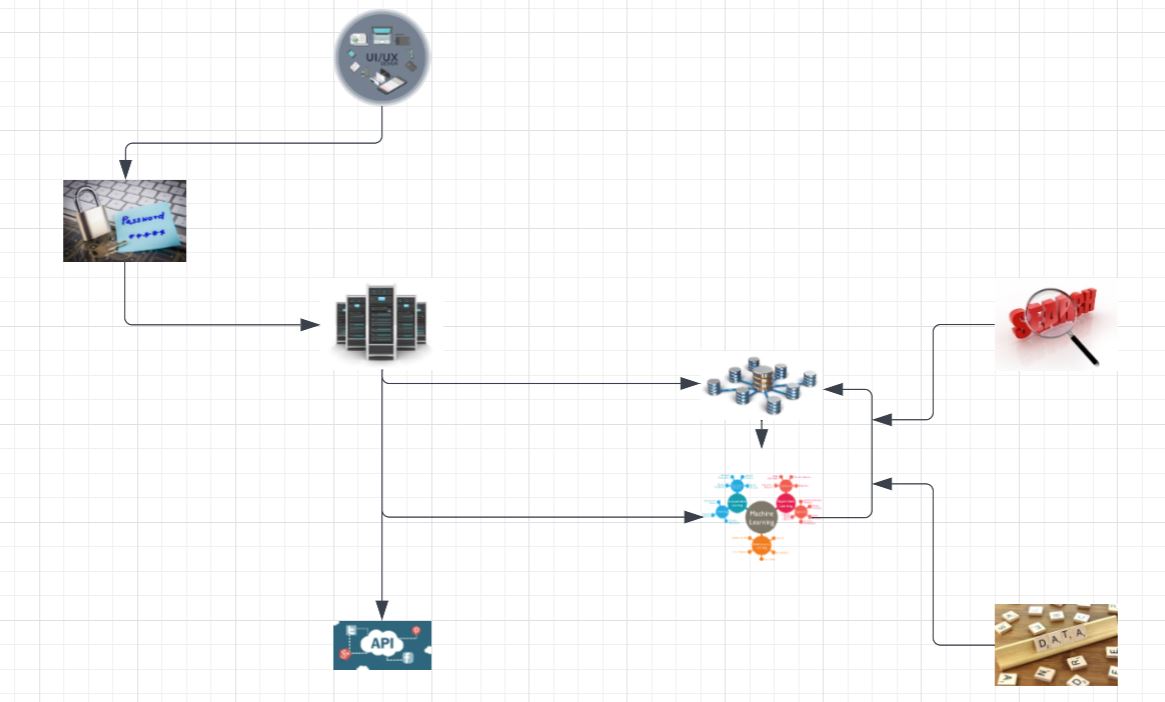
### User Training and Support:

Make a proper user guide for the platform, the non-technical audience can also understand the navigation of the application and use the features properly. This could also include the availability of tutorials for the user.

### Documentation and Reporting:

Keeping a record of the platform's features, user manuals, method followed in development. Documenting the whole idea for better understanding.

## **Architecture:**



### Client-Side (Frontend):

On the client-side end this component represents the web application's user interface, which users will be using in Realtime. This will be constituting of JavaScript, HTML, CSS, React.JS code that’s helps in the core cause of displaying the UI components.

### Server-Side (Backend):

To process client requests, the backend server communicates with the main database, carries out authorization that the user that is requesting is indeed the client or a lawyer and authentication procedures, and runs business logic, basically this component handles the main functionality of the whole application.

### Database:

The most important data of the application, which generally includes the information of the user, the data of bookings of clients with attorneys, will be stored securely and managed by the database component of the application. In the case we want data integrity, and we also want to meet the demanding querying needs, a relational database management system such as MySQL more assuredly will be utilized for the project.

### Communication Infrastructure:

This component will be providing and handling the girdle of the project by ensuring the feature of file sharing, video conferencing, and texting is smoothly working. (Web Real-Time Communication) technology will be used to support peer-to-peer communication between clients, and the third-party communication such as APIs (Twilio).

### External Integrations:

For the sake of improvement, the platform will integrate with third-party services or APIs. Which will ensure the safe usage and smooth running of the platform.

### Deployment:

The platform will be set up in a hosting environment like dedicated servers or cloud infrastructure (like AWS, Azure, and Google Cloud). For simple deployment and scaling, the program and its dependencies will be measured first then the containerization technologies like Docker will be used.

# Individual Tasks

|  |  |
| --- | --- |
| **Team Member** | **Activity** |
| Muhammad Hatim Khalid, Ehtisham Ali, Muhammad Zain | Research (Dataset creation) |
| Muhammad Hatim Khalid, Ehtisham Ali, Muhammad Zain | Requirement Analysis |
| Muhammad Hatim Khalid, Muhammad Zain | System Design and Prototype |
| Muhammad Hatim Khalid, Ehtisham Ali | System Testing and trials |
| Muhammad Hatim Khalid, Ehtisham Ali, Muhammad Zain | Frontend development, Model Training |
| Muhammad Hatim Khalid, Ehtisham Ali | Database management |
| Ehtisham Ali, Muhammad Zain | Server-side development |
| Muhammad Hatim Khalid, Ehtisham Ali, Muhammad Zain | Testing and Modifications |
| Muhammad Hatim Khalid, Ehtisham Ali, Muhammad Zain | Further debugging and Modifications |

# Gantt chart (Link-Law.pk):

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# Tools and Technologies

## **Tools:**

Visual studio code

Visual studio

Figma

Microsoft Word

Jira

SQL Server

Docker

Git/GitHub

Prometheus

## Technologies:

HTML

CSS

JavaScript

Express JS

Node JS

React JS

SQL

MongoDB

Django

Tensor Flow

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