



# International Journal of Research Publication and Reviews

Journal homepage: [www.ijrpr.com](http://www.ijrpr.com) ISSN 2582-7421

## Legal Ease An Android Application

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### ABSTRACT:

This project proposes the development of an innovative Android application designed to streamline the process of finding and consulting advocates online. The application enables users to efficiently search for legal professionals based on location, area of specialization, and other pertinent criteria. Once an advocate is identified, users can view comprehensive profiles detailing their ratings, fees, and professional background. The platform also facilitates seamless online consultations, allowing for real-time legal advice without geographical constraints. Users can rate and review advocates, contributing to a transparent and trustworthy community. Additionally, the application integrates a secure payment gateway to manage consultation fees and offers push notifications for appointment reminders and new messages. This solution aims to bridge the gap between clients and legal experts, making legal assistance more accessible and user-friendly. Key functionalities include video calling, chatting, document management, and a secure payment system for consultations. Users can see whether an advocate is online, schedule appointments, manage documents securely, and share their location for convenient in person meetings. The app's searchable database allows users to find and review professional advocates based on detailed profiles, expertise, and client feedback, ensuring trust and quality. To enhance user experience, the app includes a library of legal resources, articles, and FAQs, helping users understand common legal issues. It prioritizes accessibility by incorporating features such as voice control, screen readers, and a speech recognition tool for users with disabilities. Multilingual support broadens the app's reach, while stringent privacy and security measures safeguard user data.

**Keyword:** LegalTech, android application, legal assistance, legal consultation, advocate search, online legal services, secure payment, accessibility, case law retrieval, legal research automation, mobile legal services, client-attorney communication, legal document processing, justice accessibility, user-friendly legal solutions, real-time legal support.

### INTRODUCTION :

In today's digital era, technology is transforming various sectors, including the legal industry. Many individuals face challenges in accessing legal information due to complexity, cost, and lack of awareness. \*Legal Ease\* is an Android-based application designed to simplify legal processes and provide accessible legal assistance. This application integrates Artificial Intelligence (AI) and machine learning to offer real-time legal support, case law retrieval, and automated document processing. Legal Ease aims to bridge the gap between legal professionals and clients by offering a user-friendly platform for legal consultations, case tracking, and legal research. The app enables users to search for relevant laws, legal precedents, and statutes efficiently. By leveraging Natural Language Processing (NLP), the application enhances the accuracy of legal queries and responses. One of the primary goals of Legal Ease is to democratize legal knowledge, making it available to individuals regardless of their legal expertise. The application also assists law students and researchers in quickly accessing legal documents and references. Additionally, lawyers can benefit from its features such as case organization, legal reminders, and client communication tools. The development of this application focuses on usability, security, and reliability to ensure a seamless experience for users. Legal Ease contributes to the growing field of LegalTech, aiming to enhance legal accessibility and streamline legal procedures. By integrating cutting-edge technology, this project aspires to revolutionize legal assistance and make justice more approachable for all.

### LITREATURE REVIEW:

In this chapter of literature survey of all the latest papers referred for the project report are summarized below.

The literature review explores existing LegalTech solutions, highlighting their limitations in accessibility, automation, and user experience. It examines advancements in AI-driven legal assistance, mobile legal applications, and case law retrieval to establish the need for Legal Ease, An Android-based legal aid platform.

S. Werner, S. Masoudi, F. Castillo, F. Piper and J. Heiss contributed to the paper "Advocate - Trustworthy Evidence in Cloud Systems,"

This paper introduces Advocate, a novel agent-based system designed to generate attested evidence of cloud-native application operations. By integrating with existing infrastructure tools, such as Kubernetes and observability services, Advocate captures, authenticates, and stores evidence trails in a tamper-resistant manner. This approach not only supports the auditing process but also allows for privacy-preserving evidence aggregation. Advocate's extensible architecture facilitates its deployment in diverse environments, enabling the verification and adherence to policies and enhances trust in cloud services.[1]

M. D. Ramadhan, S. R. Nehemia and T. Prasandy, "UX Analysis of Legal Analytics Applications at Internal Telkom South Jakarta Using the TAM," Legal Analytics, a digital application launched on January 27, 2022, is designed to streamline the process of drafting laws and regulations. This study aims to assess user interest in the Legal Analytics application and explore how it can be accepted by users through the application of the Technology Acceptance Model (TAM). The study utilizes TAM to analyze factors such as Perceived Usefulness, Attitude Toward Use, Actual System Usage, Behavioral Intention of Use, and Perceived Ease of Use, which influence user acceptance. Smart PLS software was employed to process the test results.[2]

J. Kirtane, R. Sharma, T. Mayekar, S. Khade and A. Kale, "LAWTRIX: NLP Powered Legal Revolution," LAWTRIX is a groundbreaking platform transforming legal services in India by bridging the gap between legal professionals and citizens. Its innovative, incentives-based design aims to make legal services more accessible and efficient. The platform offers a variety of features, including the onboarding of legal service providers, translation of legal jargon into everyday language using NLP, and a LinkedIn-like interface for networking and collaboration. With its professional networking features, LAWTRIX empowers legal experts to connect, collaborate, and expand their opportunities within the legal field.[3]

A. Punnapurath, L. Zhao, A. Abdelhamed and M. S. Brown, "Advocating Pixel-Level Authentication of Camera-Captured Images," The authenticity of digital images shared online is increasingly scrutinized due to the prevalence of photo-editing tools and generative AI technologies, such as deepfakes, that can manipulate visual content. This paper highlights the need for in-camera solutions to verify the authenticity of images at a pixel level. We propose an "authenticity" mask that would store additional metadata with each image, which could be extracted and overlaid to identify any hallucinated areas. Given the significant consequences of image authenticity in contexts like legal evidence and media, we foresee that this metadata-driven approach will become a standard for any ISP incorporating AI.[4]

S. A. Suban, A. M. Sakthivel and S. A. S., "Mapping the Intellectual and Social Structure of Brand Advocacy Research: A Bibliometric Analysis," This study presents a comprehensive bibliometric analysis of brand advocacy research, examining its intellectual structure. The analysis utilizes data from the Scopus database, combining performance analysis with science mapping tools. The study's managerial implications highlight the importance of robust digital engagement strategies, the integration of corporate social responsibility (CSR) initiatives, and the focus on emotional and relational aspects of customer behavior to foster brand advocacy. This bibliometric analysis offers a solid foundation for developing both theoretical insights and practical strategies in brand advocacy.[5]

Y. Apolo and K. Michael, "Beyond A Reasonable Doubt? Audiovisual Evidence, AI Manipulation, Deepfakes, and the Law," This paper explores the potential applications of AI technologies in criminal proceedings, focusing on the implications of evidence manipulation through AI, particularly in relation to deepfake technology. The central question raised is whether deepfake evidence could be admissible in court, depending on the decisions of human actors. The paper also examines the future role of visual evidence in high-profile criminal cases and the impact of Generative AI and deepfakes on forensic analysis.[6]

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## ANALYSIS OF PROBLEM:

Access to legal services remains a significant challenge for many individuals, particularly those who lack financial resources or legal knowledge. The legal system can be complex, with laws, procedures, and terminology that are difficult to understand for the average person. Many people struggle to find reliable legal assistance or guidance without incurring substantial costs. Additionally, traditional legal consultation methods often involve long waiting times and geographical limitations, making it inconvenient for users to access legal aid when needed.

The advent of digital technology has transformed various industries, but the legal sector still faces challenges in adopting technological advancements to improve accessibility. Many existing legal service platforms are either expensive, lack user-friendly interfaces, or do not provide sufficient guidance for users unfamiliar with legal procedures. Moreover, free legal resources are often scattered across multiple websites, making it difficult for users to find accurate and relevant information.

Legal professionals also face difficulties in managing cases, responding to queries efficiently, and reaching a broader audience in need of legal aid. A centralized and accessible mobile application could bridge the gap between legal professionals and individuals seeking legal help. An Android application like Legal Ease aims to address these challenges by offering a user-friendly, cost-effective, and informative platform for legal assistance.

The primary problem being addressed is the lack of accessibility and affordability in legal consultation and legal knowledge dissemination. The solution involves leveraging mobile technology to create an application that provides legal information, connects users with lawyers, and offers AI-driven assistance for common legal queries.

Other challenges include ensuring data security, maintaining updated legal information, and building an intuitive user interface that accommodates individuals with little to no legal background. Furthermore, regulatory compliance and ethical considerations must be addressed to ensure the legitimacy and reliability of legal guidance provided through the application.

By developing Legal Ease, the goal is to create an innovative digital solution that simplifies legal access, enhances awareness, and empowers individuals to make informed legal decisions without unnecessary financial burdens.

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## PROPOSED WORK:

The architecture of the LegalEase app is designed to provide a smooth, efficient, and user-friendly experience for users searching for advocates. The system follows a layered architecture pattern, separating the concerns of frontend, controller, and database to enhance modularity and scalability. The system consists of three primary layers: the Frontend Layer, Controller Layer, and Database Layer. Each layer has specific responsibilities, and they work together to ensure the proper functioning of the application.

1. **Frontend Layer (User Interface – XML):** The frontend is the interface where users interact with the app. It is responsible for presenting the app's content, gathering user input, and displaying results. XML (Extensible Markup Language) is used to define the layout and structure of the user interface.
2. **Controller Layer (Java):** The controller layer acts as the intermediary between the frontend and the database. It contains the business logic that processes user requests, fetches data from the database, and returns it to the frontend for display. Java is used for the controller layer, making it the core of the app's logic. This layer handles the application's functional operations such as data manipulation, validation, and decision-making.
3. **Database Layer (SQLite):** The database layer is responsible for storing all the data related to advocates and the legal services provided. It ensures that data is securely stored, efficiently retrieved, and updated as necessary. SQLite is used for this layer due to its lightweight, serverless, and fast database capabilities. It is ideal for a mobile app environment where a full-fledged database server is not required.

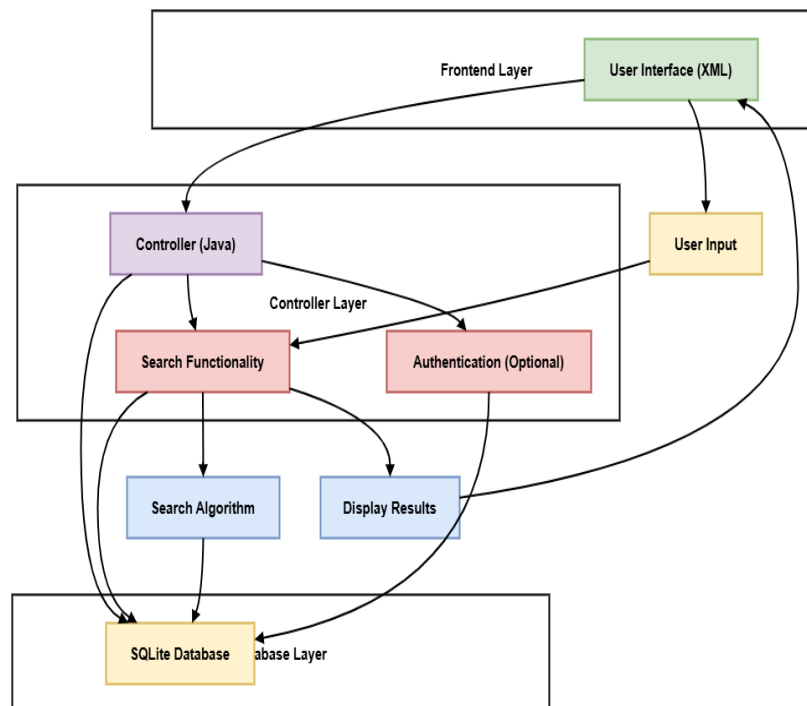


Figure 1. Architecture of Proposed System

## OBJECTIVES:

The Legal Ease Android application aims to provide an accessible and user-friendly platform to assist individuals in understanding legal concepts, accessing legal resources, and connecting with legal professionals. The primary objective of this project is to bridge the gap between legal information and the general public by offering an intuitive interface that simplifies complex legal terminology and procedures. The app will include features such as legal document templates, FAQs on common legal issues, a legal dictionary, and a chatbot for answering basic legal queries. Additionally, it will facilitate easy navigation through legal provisions and offer case law references for users seeking in-depth legal insights. By leveraging SQLite for data storage, XML for the frontend, and Java for the backend, the project aims to ensure seamless functionality and efficient performance. Ultimately, Legal Ease seeks to enhance legal awareness, promote self-reliance in handling legal matters, and support individuals in making informed decisions regarding their legal rights and obligations.

## SYSTEM REQUIREMENT

The system requirements for a Legal Ease An Android Application includes is:

### 1. Hardware Requirements:

- Device: Android smartphone or tablet
- Processor: Minimum Quad-core 1.8 GHz
- RAM: At least 3GB (Recommended 4GB+)
- Storage: Minimum 500MB free space
- Internet Connection: Required for online features

### 2. Software Requirements:

- Operating System: Android 8.0 (Oreo) or later

- Development Tools:
  - Android Studio (Latest version)
  - Java Development Kit (JDK 8 or later)
  - Emulator or Physical Android Device for Testing

### 3. Technology Stack:

- Frontend: XML (for UI Design)
- Backend: Java (Android SDK)
- Database: SQLite (for local storage)
- APIs: REST APIs (if integrating external legal databases)

### 4. Functional Requirements:

- User Authentication: Secure login/signup
- Legal Document Access: View and download legal templates
- Legal Consultation: Chat or call with legal experts
- Search Functionality: Search for laws, cases, and legal terms
- Notifications: Updates on legal news and case status

### 5. Non-Functional Requirements:

- Security: Data encryption, secure API access
- Performance: Smooth UI, fast search results
- Scalability: Ability to add more legal resources in the future
- Usability: User-friendly interface with simple navigation

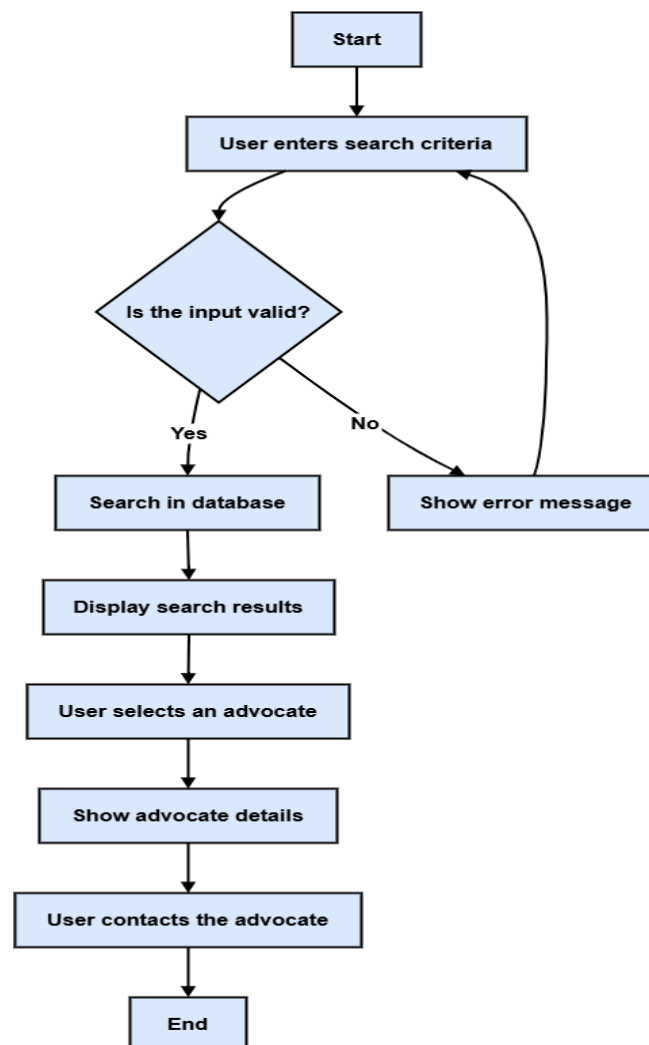


Figure 2. Flowchart

#### Explanation of the Flowchart:

1. **Start:** The flow begins with the user interacting with the app.

2. **User enters search criteria:** The user inputs search criteria such as location, specialization, or name of the advocate.
3. **Is the input valid?:** A decision node checks whether the input provided by the user is valid (e.g., non-empty and in the right format).
  - If **Yes**, it moves to the next step.
  - If **No**, an error message is displayed and the user is prompted to enter the search criteria again.
4. **Search in database:** If the input is valid, the system searches the advocate database for matching records.
5. **Display search results:** The results from the database are displayed to the user.
6. **User selects an advocate:** The user chooses an advocate from the search results.
7. **Show advocate details:** Details of the selected advocate are displayed (name, contact, specialization, etc.).
8. **User contacts the advocate:** The user may proceed to contact the advocate using the provided contact details.
9. **End:** The flow concludes once the user contacts the advocate or decides to exit.

This flowchart provides a high-level overview of the main steps involved in the **LegalEase** app's user interaction. It is designed to show how the system processes user input and delivers results in a sequential manner.

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## IMPLEMENTATION:

The Legal Ease Android application is a designed to provide accessible legal assistance through a user-friendly mobile interface. Developed using XML for the frontend, Java for the backend, and SQLite for data management, the app streamlines legal research, case law access, and document generation. It incorporates features such as legal term explanations, case tracking, and automated legal form creation to assist users in navigating legal complexities. The implementation focuses on optimizing performance, ensuring data security, and delivering an intuitive user experience. This research paper explores the development process, challenges encountered, and the app's impact on improving legal accessibility.

### 1. Frontend Implementation(XML)

**XML** (Extensible Markup Language) is used in Android to define the User Interface (UI) of the app. It specifies how the app's screen layout looks and how the user will interact with the app. In the context of the LegalEase app, the frontend is responsible for allowing the user to input search criteria and view the results.

- **Layout Structure:** In Android, the layout of the UI is defined using XML layout files. These files organize the UI components, such as buttons, input fields, and display lists, into a visually structured and user-friendly format.
- **LinearLayout or RelativeLayout** is commonly used as a container to organize the UI components in a defined manner (vertically or horizontally).
- **UI Elements:**
  - **EditText:** A field where users can input data (like a search query for an advocate's name or specialization). The user types in the search criteria, and this input will be used for querying the database.
  - **Button:** A clickable UI element that initiates an action. For example, a button labeled "Search" is used to trigger the search process when clicked by the user.
  - **ListView:** A component that displays a list of items. In this case, it will be used to display the results of the search, i.e., a list of advocates that match the user's search criteria.
- **User Interaction:** The XML layout allows for user interaction by providing fields (input boxes) for data entry, buttons for action, and lists for displaying results. These components are placed on the screen in an organized manner so the user can easily navigate through the app. The frontend is responsible for collecting the input and presenting the results to the user in a readable and intuitive way.
- **XML Structure:** The layout in XML also supports features such as:
  - **Padding and margins** to ensure proper spacing between elements.
  - **Styling** of UI components (such as buttons and text size) to enhance the app's appearance.
  - **View IDs** to associate each UI component with corresponding elements in the Java core.

### 2. Backend Implementation (Java)

Java is used to implement the business logic and functionality of the app. It acts as the controller of the application, bridging the gap between the user interface (XML) and the database (SQLite). The backend is responsible for handling user interactions, processing data, and ensuring that the app functions as intended.

- **SearchActivity:** This is typically the main controller class in your app responsible for managing the interaction between the frontend (UI defined in XML) and backend (database and logic).
  - It receives inputs from the frontend, processes them, and updates the UI accordingly.
  - In the case of the LegalEase app, when the user enters a search query and clicks the "Search" button, this activity handles the event and triggers the necessary actions, such as querying the database.

- **User Input Handling:** Java listens for user actions, such as clicking a button or entering data into an input field (e.g., the search query entered by the user). When the user clicks the "Search" button, the Java code will capture the search term from the EditText field.
- **Database Interaction:** Java is responsible for querying the SQLite database based on the user's input. After the search query is captured, Java will:
  - Formulate an SQL query that searches for matching advocates in the database.
  - Execute the query using the SQLite database helper.
  - Retrieve the search results (e.g., list of advocates).
- **Updating the UI:** Once the database returns the search results, Java updates the ListView in the UI to display the results. Java will create an adapter (e.g., ArrayAdapter) to bind the database results to the ListView. This ensures that the user sees the matching advocates directly on the screen.
- **Business Logic:** The Java controller is responsible for processing the data, ensuring that the application flows smoothly. This includes tasks like validating user input (e.g., checking if the search query is empty), handling errors (e.g., no results found), and displaying appropriate messages to the user.

### 3. Database Implementation (SQLite)

SQLite is used as the local database to store and manage data in the LegalEase app. It is an embedded database that allows the app to store structured data, such as information about advocates (e.g., their name, specialization, contact details). SQLite is a lightweight database, making it ideal for mobile applications that need to store data locally.

- **SQLiteOpenHelper:** The SQLiteOpenHelper class is used to manage the creation, connection, and versioning of the SQLite database. It provides methods to:
  - **Create** the database and tables when the app is first installed.
  - **Upgrade or downgrade** the database schema when the app is updated.
  - **Open** and manage the database connection throughout the app's lifecycle.
- **Database Creation:** During the initial setup of the app, a database is created with necessary tables to store data. For instance, an "advocates" table might be created to store the details of each advocate, including fields like name, specialization, and contact information.
- The **SQLiteOpenHelper** class is used to define the schema for these tables and ensure the database is created when the app is first launched.

**CRUD Operations:** SQLite allows the app to perform CRUD operations:

- **Create:** Add new records (e.g., when a new advocate is added)
- **Read:** Retrieve records (e.g., when searching for an advocate by name or specialization).
- **Update:** Modify existing records (e.g., if an advocate updates their contact information).
- **Delete:** Remove records (e.g., if an advocate is no longer available).
- **Data Querying:** When a user performs a search, the Java controller formulates an SQL query to retrieve matching advocates from the SQLite database. The query will search the database for records that match the user's input (e.g., searching for advocates by name or specialization).
  - Once the results are found, they are returned to the Java controller, which updates the UI (ListView) with the results.
- **Efficient Data Storage:** SQLite provides efficient data storage, which ensures that search queries are executed quickly. Since the app uses a local database, all data is stored directly on the user's device, providing fast access and reducing reliance on external servers.

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## CONCLUSION

The Legal Ease Android application aims to simplify legal assistance by providing users with accessible legal information and services. Through an intuitive XML-based frontend and a Java-powered backend, the app ensures seamless user experience and efficient data management using SQLite. It enhances legal literacy, helping users navigate legal issues without needing immediate professional assistance. The app integrates key features like legal document templates, case tracking, and lawyer consultations. By digitizing legal resources, it bridges the gap between users and the legal system. The system's user-friendly interface and offline capabilities ensure accessibility for a broad audience. Future enhancements may include AI-driven legal advice and multi-language support. The research validates the app's impact on improving legal accessibility. With further development, Legal Ease has the potential to revolutionize digital legal aid. This study highlights the importance of technology-driven legal solutions in promoting justice and awareness.

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