

Qadaa / قضاء



SOFTWARE PROJECT

PRESENTED

BY

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Disclaimer Statement

This report was written by Amr J. Eshtiwi and Ahmed A. Al-Qerem, students at the Computer Engineering Department, Faculty of Engineering, An-Najah National University. It has not been altered or corrected, other than editorial corrections, as a result of the assessment and it may contain language as well as content errors. The views expressed in it together with any outcomes and recommendations are solely those of the students. An-Najah National University accepts no responsibility or liability for the consequences of this report being used for a purpose other than the purpose for which it was commissioned.

Abstart

Mobile applications have become an integral part of people's lives, offering convenient solutions to various challenges. They save time, money, and provide effortless access to a wide range of services. However, in Palestine, accessing legal services and connecting with lawyers can be cumbersome and time-consuming.

To address this issue, we propose the development of a mobile application that streamlines legal transactions and facilitates connections with lawyers. Our application allows users to initiate legal procedures, such as document processing, directly from their mobile phones. Additionally, users can engage in chat and phone conversations with lawyers, obtain directions to their offices, and even schedule appointments seamlessly.

Moreover, the application features a comprehensive map displaying all courts in the West Bank and identifies the nearest available lawyer, simplifying the process of finding legal representation. By providing these services, our application aims to significantly enhance the efficiency of searching for legal assistance.

One notable feature of our application is the inclusion of a forum page that allows both individuals and lawyers to engage in discussions about legal issues. By providing a platform where only licensed lawyers can address users' concerns, we foster an environment of trust and credibility.

Through our application, we aim to revolutionize the accessibility and convenience of legal services in Palestine, enabling users to navigate legal procedures effortlessly and connect with professional lawyers efficiently.

Chapter 1: Introduction

In today's digital era, mobile applications have become indispensable tools that shape various aspects of our lives. They offer convenience, efficiency, and accessibility, revolutionizing the way we approach everyday tasks and challenges. Legal transactions and seeking professional legal assistance are no exceptions to this trend. However, in Palestine, accessing legal services and connecting with lawyers often proves to be a cumbersome and time-consuming process. This introduces the need for a more streamlined approach to legal procedures and lawyer-client interactions.

1.1 Statement of the problem

In Palestine, the services related to legal transactions and establishing connections with lawyers present significant challenges for individuals. The traditional methods of accessing legal assistance often involve extensive time investment and considerable financial costs. Moreover, the lack of a centralized platform for individuals to conveniently engage with legal professionals further compounds the problem. Consequently, there is a pressing need for a solution that can overcome these hurdles, simplify legal procedures, and enhance the accessibility of legal services for individuals in Palestine.

1.2 Objectives

The primary objective of our software project is to develop a mobile application that addresses the challenges faced by individuals in accessing legal services and connecting with lawyers in Palestine. The application will offer a user-friendly interface and a comprehensive set of features to streamline legal transactions and simplify the process of engaging with legal professionals. Key objectives of the project include:

- Facilitating legal transactions through mobile devices: The application will enable individuals to initiate and process legal procedures conveniently, saving time and reducing the need for physical visits to legal institutions.
- Establishing seamless communication channels: The application will provide chat and call functionalities, ensuring efficient and direct communication between individuals and lawyers. This feature will enable users to seek legal advice, discuss concerns, and obtain prompt responses.
- Providing accurate directions to lawyers' offices and facilitating the booking of appointments.
- Developing a map feature that displays all courts in the West Bank and identifies the nearest available lawyer, simplifying the process of finding legal representation.
- Creating a forum page where licensed lawyers can engage with individuals, providing reliable answers and guidance to legal issues.

In addition to the mobile application, our project aims to develop a web application that complements the mobile platform. The web application will allow users to browse news, access legal circulars, and participate in discussions through the forum page. Furthermore, an admin web page will be created for

court administrators in the West Bank. This page will enable administrators to verify users (individuals and lawyers), add new news articles, and include legal circulars for public access.

1.3 Significance of the work

The proposed mobile application holds significant potential to transform the landscape of legal services in Palestine. By offering a centralized platform that integrates essential functionalities and connects individuals with professional lawyers, the application aims to save time, reduce costs, and enhance access to legal services. The convenience and efficiency offered by the application can empower individuals to navigate legal procedures with ease, obtain accurate legal advice, and ultimately make informed decisions. Additionally, the application's forum page fosters trust and credibility by ensuring that only licensed lawyers provide reliable answers to legal inquiries, establishing an environment conducive to knowledge sharing and legal empowerment.

While there are existing applications in Palestine and other regions that provide legal services, our application, called "Qadaa," sets itself apart by offering additional valuable features. Unlike other applications, Qadaa allows individuals to make legal transactions directly through their mobile phones. This distinct feature provides a convenient and efficient solution for individuals seeking to initiate and process legal procedures.

Comparatively, an existing government application in Palestine, called "Al-Mezan," offers valuable legal services. However, Al-Mezan only allows lawyers to perform legal transactions, while Qadaa empowers individuals to undertake these transactions themselves. Furthermore, in Saudi Arabia, there are applications that enable individuals to make transactions but lack features such as a map to courts, connections with lawyers, and a forum platform.

In summary, the proposed mobile application, Qadaa, has the potential to revolutionize the legal services landscape in Palestine. By enhancing access, saving time and costs, and providing a comprehensive set of features, Qadaa empowers individuals, promotes informed decision-making, and differentiates itself from existing applications. Through Qadaa, individuals can conveniently navigate legal procedures, obtain reliable legal advice, and access the necessary resources to address their legal needs.

1.4 Organization of the report:

This report is structured as follows:

- Introduction: Provides an overview of the problem, objectives, and significance of the software project.
- Constraints, Standards, and Technologies: Outlines the challenges faced, standards employed, and technologies utilized.
- Background and Special Features: Discusses the project's background and highlights its unique features.
- Methodology: Explains the development approach and process in detail.
- Results and Findings: Presents the outcomes and key findings from the implementation.

- **Conclusion and Future Vision:** Summarizes the project's achievements and outlines future enhancements.

Chapter 2: Constraints, Standards/ Codes and Earlier course work

2.1 Constraints

The software project faced several constraints that influenced its development and implementation:

1. **Lack of Legal Knowledge:** The absence of legal expertise among individuals necessitated the involvement of specialized lawyers to assist in legal transactions. This constraint required the application to provide accessible legal information and guidance.
2. **Verification of User Authenticity:** Due to the absence of access to reliable data sources, ensuring the authenticity of users became a challenge. As a result, an administrative detection system was implemented to verify the legitimacy of individuals.
3. **Working in a New Domain and Adopting New Technologies:** Developing the application from scratch for both the front-end and back-end presented the challenge of operating in an unfamiliar domain and utilizing unfamiliar technologies. This constraint necessitated the exploration of different approaches and solutions, leading to the discovery of unforeseen obstacles throughout the development process.
4. **Effective Time Management:** Efficient time management played a crucial role in the project's overall success. The project encompassed various essential aspects, including research, testing, development, requirement gathering, and planning. Optimal time allocation was necessary to ensure smooth progress. The learning curve and time spent on tasks due to inexperience accumulated rapidly, underscoring the significance of effective time management for the project's timely completion.

2.2 Standards and codes

This software project implemented various standards and tools to ensure efficient development and functionality:

- **Mobile Application Front-end:** The mobile application front-end was built using Expo React Native library. This framework facilitated the development of a responsive and user-friendly mobile interface.
- **Web Application Front-end:** The web application front-end was developed using React JS, enabling the creation of a dynamic and interactive website.

- **Back-end:** The project utilized Node.js and Express.js for the back-end development. These technologies provided a robust and scalable infrastructure for handling server-side operations.
- **Standards:** The project adhered to industry-standard practices, including REST API for designing web services, HTTP for communication protocols, GIT for version control, and Microservices architecture for modular and scalable application design.
- **Chat Functionality:** The chat functionality was implemented using Firebase, a cloud-based platform that offered real-time communication features, enabling seamless and secure messaging within the application.
- **Map Integration:** Google Maps and the Direction API were incorporated to provide mapping functionality within the application. This integration allowed users to access accurate directions, locate nearby courts, and identify the closest available lawyers.
- **Database:** The project utilized PostgreSQL as the database management system. PostgreSQL provided a reliable and efficient solution for storing and managing application data, ensuring data integrity and security.

2.3 Earlier course work

The project team drew upon knowledge and skills acquired from various earlier coursework, enabling them to tackle the software project effectively. The relevant coursework includes:

1. **Object-Oriented Programming Course:** This course provided a foundation in object-oriented programming principles and practices. The concepts learned helped in designing and implementing modular and reusable code components.
2. **Web Course:** The web course equipped the team with the necessary skills to develop interactive and user-friendly web applications. The understanding of web development technologies and best practices facilitated the creation of the project's web application front-end and back-end.
3. **Database Course:** The database course offered insights into database management systems and data modeling techniques. This knowledge was applied to design and implement the project's PostgreSQL database, ensuring efficient data storage and retrieval.
4. **Critical Thinking Course:** The critical thinking course played a vital role in the research and writing of this report. It emphasized the importance of presenting ideas effectively in a professional context. Through this course, the team honed their skills in organizing thoughts, articulating arguments, and conveying information in a clear, concise, and persuasive manner.
5. **Distributed Operating System Course:** The course on distributed operating systems provided an understanding of distributed computing principles and techniques. This knowledge influenced the design and development of the project's back-end system, facilitating efficient communication and coordination among different components.

Additionally, the team participated in various workshops and courses to enhance their skills and broaden their knowledge:

1. React Workshop: The React workshop focused on developing proficiency in the React JavaScript library. This workshop enabled the team to leverage React's capabilities for building dynamic and responsive user interfaces.
2. Node.js Workshop: The Node.js workshop equipped the team with the skills to develop server-side applications using Node.js. This knowledge was instrumental in implementing the project's back-end functionality.

Chapter 3: Literature Review

In the realm of legal services and mobile applications, there exists a growing body of literature that explores the benefits and challenges associated with integrating technology into the legal sector. This literature review aims to provide a comprehensive overview of relevant studies and research findings in the field.

Several studies have highlighted the increasing demand for mobile applications that facilitate legal transactions and connect individuals with lawyers. The convenience and accessibility offered by mobile platforms have the potential to revolutionize the way legal services are accessed and delivered.

Furthermore, studies have shown that mobile applications can significantly enhance the efficiency and effectiveness of legal services.

In terms of trust and credibility, the inclusion of forums moderated by licensed lawyers has been identified as a valuable feature. Users can engage in discussions and seek legal advice from verified professionals, promoting transparency and building trust within the platform.

When comparing "Qadaa" to existing applications, such as "Al-Mezan," several key differences arise. While both applications aim to facilitate legal transactions, "Qadaa" offers additional features that go beyond the scope of "Al-Mezan." For instance, "Qadaa" allows individuals to directly initiate and process legal procedures through their mobile phones, providing users with convenience and flexibility. Additionally, "Qadaa" provides a map feature displaying all courts in the West Bank, helping users locate courts easily and identify the nearest available lawyer for their specific legal needs. The inclusion of a forum platform in "Qadaa" allows users to engage with licensed lawyers, further promoting trust and credibility within the application.

However, it is important to acknowledge the challenges that may arise in the development and implementation of mobile applications for legal services. Issues related to data security, privacy, and verification of user identities have been identified as potential concerns.

In summary, the literature review highlights the growing interest and potential of mobile applications in the legal sector. By addressing the challenges faced by individuals in accessing legal services and connecting with lawyers, these applications have the ability to revolutionize the way legal transactions are conducted. The inclusion of features such as chat functionalities, appointment booking, mapping services, and moderated forums enhances user experiences, promotes trust, and improves accessibility. However, it is crucial to address security and privacy concerns to build a reliable and secure platform.

Chapter 4: Methodology

4.1 Choosing the idea

The idea for our software project, "Qadaa," was chosen based on several factors. We identified the need for a mobile application that addresses the challenges faced by individuals in accessing legal services and connecting with lawyers in Palestine. Extensive market research indicated a favorable demand for such a solution. We assessed the feasibility of implementation and evaluated available resources. To set our project apart, we incorporated unique features like a map for locating courts and nearby lawyers, a moderated forum platform, and the ability to initiate legal transactions. User feedback and stakeholder input played a vital role in shaping the idea. The chosen idea aligned with our project goals and objectives, ensuring a focused and cohesive approach. "Qadaa" aims to provide a valuable resource and make a meaningful impact in the legal sector.

4.2 Choosing the Architecture

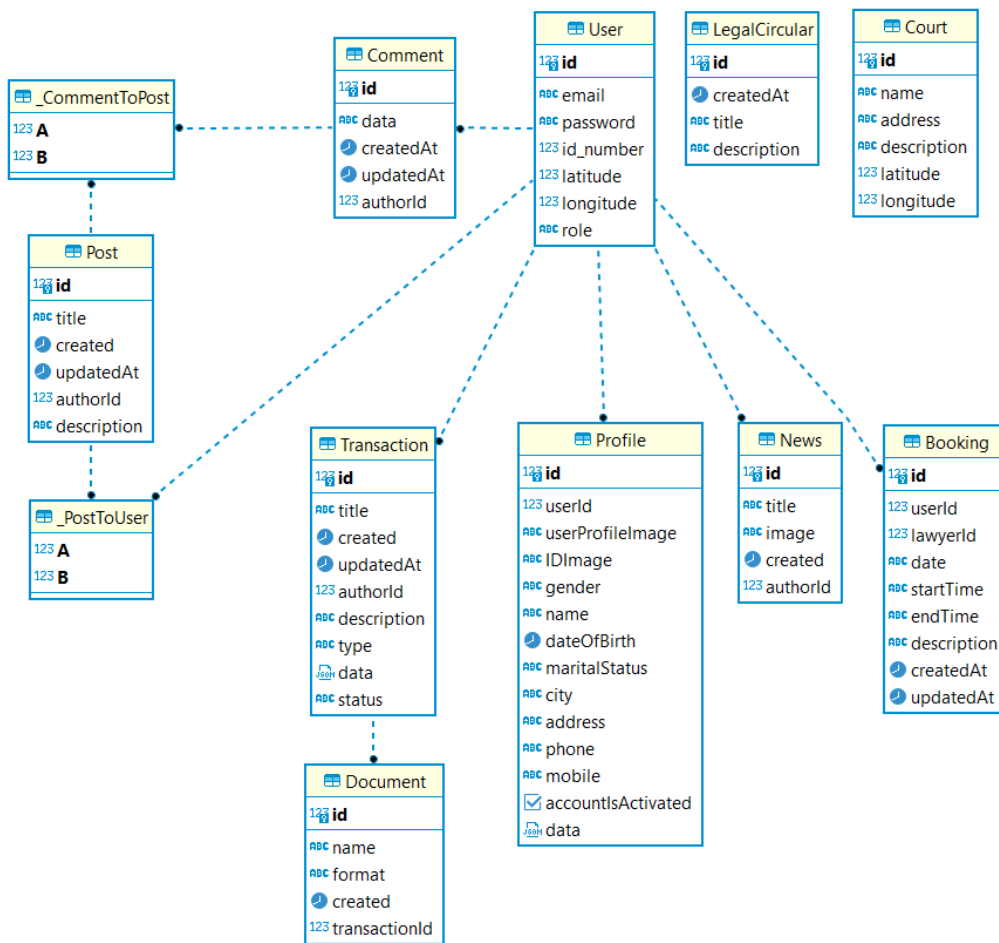
4.2.1 Backend architecture

In the backend development of our software project, we adopted the Model-View-Controller (MVC) architecture. By implementing the MVC architecture, we achieved a modular and organized structure for our backend codebase. The model component encapsulates the data and business logic, ensuring proper data handling and manipulation.

4.2.2 Frontend architecture

In the front-end development of our software project, we embraced a component-based architecture. By adopting a component-based architecture, we divided the user interface into smaller, self-contained components. Each component encapsulates its own logic, styles, and functionality, making it easier to develop, maintain, and test. These components can be reused across different parts of the application, leading to improved efficiency and consistency in design and development.

4.3 Database Design



The design and structure of a database system based on the provided schema.

The schema consists of several tables and data types representing various entities and their relationships. The proposed database will efficiently store and manage data related to courts, legal circulars, posts, users, bookings, comments, news, profiles, transactions, and documents.

4.4 Security Measures

To ensure secure authentication and authorization, the application utilizes JSON Web Tokens (JWT). JWT provides a stateless and secure method for user authentication by securely transmitting information between the client and server. By using JWT, the application ensures the integrity and confidentiality of user data, enhancing the overall security of the system.

4.5 Features

The "Qadaa" application offers a range of features designed to enhance access to legal services and facilitate seamless communication with lawyers. Some of the key features of our application include:

1. **Legal Transactions:** Users can initiate and process legal transactions conveniently from their mobile phones. This feature eliminates the need for in-person visits and allows individuals to handle legal procedures efficiently.
2. **Lawyer Connections:** The application provides a platform for individuals to connect with lawyers. Users can access lawyer profiles, view their specialties and credentials, and choose the most suitable legal professional for their needs.
3. **Chat and Calling Functionality:** Users can communicate directly with lawyers through in-app chat and calling features. This enables real-time discussions, consultations, and the exchange of necessary legal information.
4. **Directions to Lawyer Offices:** The application includes a map feature that offers accurate directions to lawyer offices. Users can easily navigate to their chosen lawyer's location, ensuring seamless in-person appointments when needed.
5. **Appointment Booking:** Users can schedule appointments with lawyers through the application. This feature allows for efficient scheduling, eliminates the need for phone calls or physical visits, and helps users manage their legal consultations effectively.
6. **Forum Page:** The application includes a forum page where individuals can engage in discussions and seek guidance on legal issues. Only licensed lawyers can respond to queries, ensuring reliable and trustworthy information for users.
7. **News and Legal Circulars:** The application provides a dedicated section for browsing news related to legal matters and accessing legal circulars. This feature keeps users informed about the latest developments in the legal field.
8. **Web Application:** In addition to the mobile application, we have developed a web application that allows users to browse news, access the forum page, and engage in discussions. The web application offers a seamless experience for users across different platforms.
9. **Administrator Panel:** We have developed an admin panel specifically for court administrators. This panel allows administrators to verify users, add news and legal circulars, and manage the application's content.
10. **Integration with External Services:** The application integrates with external services such as Firebase for chat functionality and Google Maps for accurate directions, ensuring a seamless and reliable user experience.

These features collectively aim to revolutionize the way individuals access legal services, streamline legal transactions, and foster a trusted and efficient platform for communication with legal professionals.

4.6 Implementation

4.6.1 Mobile Application

- login page: it's the entry page that can let to user to enter and access all the feature in the application.

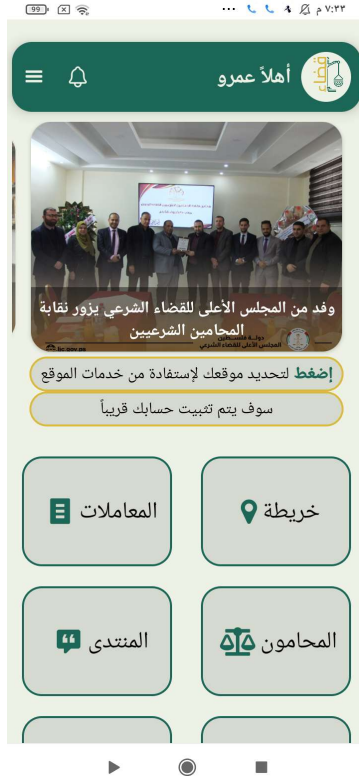


- sign up pages: the sign up flow page contain three pages to that can let to user to register in the application , and if the user is lawyer then we store his Licensed number



in addition we store his ID image and we force the user to take an image for his ID not choosing an image from library

- home Page: this the page that appear to individuals user but if the user was lawyer cannot access to all features as images bellow. The home page shows the news in the top of page that can be added by admin.



and we encourage user to turn on the location to get benefit from map feature.

- profile page: in this page the user can show his information and can edit some data
- Transactions page: it will show a list of trans action and let individual uses to make a trans actions by fill the require values



Example of create a transaction “معاملة طلب تنفيذ”:

The screenshot shows a mobile application interface for creating a transaction. The title is "طلب تنفيذ" (Request for Execution). The form contains the following fields:

- الشك** (Request): A dropdown menu.
- المنفذ له** (Requested by): A field with a plus icon and the text "إضافة منفذ له". Below it, "منفذ له رقم 1" (Requested by ID 1) and the name "عمرو جمال خالد شتيوي".
- رقم هوية المنفذ له** (ID of the requested by): A field containing "741147147".
- المنفذ عليه** (Requested to): A field with a plus icon and the text "إضافة منفذ عليه". Below it, "منفذ عليه رقم 1" (Requested to ID 1) and the name "حسن سعيد كريم حسن".
- رقم هوية المنفذ عليه** (ID of the requested to): A field containing "123456789".
- مبلغ الإستحقاق** (Due amount): A field containing "٥٠٠٠ شيكل".
- تاريخ الاستحقاق** (Due date): A field containing "2023-05-05".

At the bottom, there is a green button labeled "إنشاء معاملة" (Create Transaction).

after creating a transaction a pdf will shown to user and can download it,firstly the transaction is not approved and the administration can approve it.

The screenshot shows a mobile application interface displaying a PDF document. The title is "طلب تنفيذ" (Request for Execution). The PDF content is as follows:

المنفذ له: عمرو جمال خالد شتيوي / 741147147

المنفذ عليه: حسن سعيد كريم حسن / 123456789

المبلغ: ٥٠٠٠ شيكل

تاريخ الاستحقاق: 2023-05-05

رقم الطلب: 00-05-2023

ملاحظة: هذا الطلب يتطلب موافقة الإدارة ويمكن مراجعتها في حالة الحاجة إلى تعديلها.

الرقم الداخلي: 0000000000

in the bottom of the page of transaction there is button that show the transaction the user create and can edit or delete it.
and there is three status for the transactions (Refused, Waiting and Approved), the status is changed by admin.



and if the transaction was approved then the user cannot delete the transaction



- map page: the map page will show two type of markers (courts , lawyers)



the map take the user current location and when clicking on any marker will give an information for the maker and user can get the direction.

- lawyers page: this will show a list of the closest lawyers to user and users can search for lawyer

by choosing any lawyer will open the profile page of the lawyer and can make a chat or booking or see his location

- forum page : by this page can asking a question and lawyers can comment on there questions and users can search for questions



every question contain a title and description and if the user click on more “التفاصيل” will show comments that lawyer just can comment



- chatting page : in this page any chat that user make with lawyer will appear here

- booking page : this page as calendar, so it will show all the booking that the user make or have

4.6.2 Web Application

- home page: this is the entry point in the web application
- login page:
- sign up page :
- when the user logging in the page will show the forum feature in addition to news and legal circuler and map to show the courts locations
- while the admin page will show table of individuals users and can make operation on it approve / not approve , show his transaction, accept transactions, refuse it
- and make search and filtration on it
- table of lawyers
- page to add news, edit, and delete
- page to add legal circular , edit and delete
- page for support

4.7 Testing

For testing the backend functionality and APIs, the widely used tool Postman was employed. Postman allowed for comprehensive testing of different endpoints, data validation, and ensuring proper functioning of the backend services.

Additionally, for testing the mobile application, Expo Go was utilized, enabling real-time testing on multiple devices and platforms, ensuring a smooth user experience and identifying any potential issues.

4.8 project technology stack

4.8.1 Frontend



4.8.2 backend



Chapter 5: Result and Discussion

The functionality of the "Qadaa" application was thoroughly tested to ensure that all intended features were working as intended. The results showed that the application successfully provided services such as legal transaction initiation, lawyer connections, chat and call functionalities, map directions, and appointment booking. The forum page facilitated meaningful discussions between users and licensed lawyers, enhancing the overall value of the application.

Throughout the development process, we encountered various challenges, including the lack of legal knowledge within the team. However, through collaboration with legal advisors and subject matter experts, we were able to bridge the gap and ensure the application's compliance with legal requirements.

Chapter 6: Conclusion

In conclusion, the development of the "Qadaa" mobile application has been a significant endeavor aimed at addressing the challenges faced by individuals in accessing legal services and connecting with lawyers in Palestine. Through this project, we have successfully developed a user-friendly and comprehensive application that streamlines legal transactions, facilitates communication with lawyers, and provides valuable resources to users.

The "Qadaa" application offers several key features, including convenient mobile access to legal services, chat and calling functionalities with lawyers, directions to lawyer offices, booking appointments, a map of courts in the West Bank, and a forum page for legal discussions. These features aim to enhance accessibility, efficiency, and transparency in the legal domain, ultimately empowering individuals to navigate legal procedures with ease and make informed decisions.

Overall, the "Qadaa" application has the potential to revolutionize the way legal services are accessed and delivered in Palestine. By leveraging technology and providing a user-friendly platform, we aim to empower individuals, save time, reduce costs, and promote trust and transparency in the legal sector. We believe that the "Qadaa" application will make a significant impact and contribute to the advancement of legal services in Palestine.

6.1 Future work

- Collaboration with Legal Institutions
- Integration of E-Payment Systems: Integrating secure electronic payment systems within the application can facilitate financial transactions related to legal services, such as lawyer fees, document processing, and court fees.
- Integration of AI and automation, including chatbots, automated document generation, and intelligent search algorithms, can enhance the application's efficiency, user experience, and streamline legal processes.

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- React: <https://react.dev/>
- Postgres: <https://www.postgresql.org/docs/>
- Docker: <https://docs.docker.com/>
- Express JS: <https://expressjs.com/>
- JWT: <https://jwt.io/>
- Postman : <https://www.postman.com/api-documentation-tool>
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- Node js : <https://nodejs.org/en/docs>
- NVM: <https://github.com/nvm-sh/nvm>
- MUI: <https://mui.com/material-ui/getting-started/overview>
- React Router: <https://reactrouter.com/en/main/start/overview>