ONLINE PHARMACY SYSTEM FOR PRESCRIPTION MEDICATIONS WITH A CHAT SYSTEM USING AUTHENTICATION TECHNOLOGY MECHANISM

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Abstract

The aim of the project is to develop an online pharmacy system that provides a comprehensive and convenient healthcare experience for customers. One of the primary features of the system is the inclusion of an extremely convenient real-time online chat feature that allows for one-on-one communication with certified doctors. This enables customers to obtain professional medical advice and prescriptions without leaving home, which can then be rapidly delivered to their doorstep by a local delivery organization in collaboration with the site. This process ensures the health of customers in the most efficient and modern way possible. The system also includes functionalities for medication management, prescription printing, and database management system. The system is realized using a combination of web technologies including HTML, CSS, JavaScript, PHP, and MySQL. Currently, the project is at a very mature stage, with software performance tests and customer satisfaction surveys being conducted as planned, demonstrating that the system effectively resolves the problems stated.

Keywords: Online Pharmacy System; Real-time Online Chat; Certified Doctors; Home Delivery; Database Management System.

Introduction

Venturing into a digital era, where convenience is paramount, healthcare is progressively shifting its paradigm towards online platforms. Amidst this transformation, this study introduces an innovative solution to a pertinent issue within online pharmacies - balancing convenience, medication authenticity, and user data security. Emphasizing a robust Authentication Technology Mechanism, we aim to redefine the integrity and safety of obtaining prescription medications online.

Background: The rapid digitalization of many industries has not left the healthcare sector untouched. One of the emerging trends is the use of online pharmacies for the procurement of prescription medications. Despite their convenience, these platforms have raised concerns regarding the authenticity of medications and user privacy. This report addresses these issues by proposing an Online Pharmacy System for Prescription Medications with a Chat System using Authentication Technology Mechanism.

Objective: The primary objective of this project is to design and implement an online pharmacy system that not only enhances the convenience of obtaining prescription medications but also ensures the authenticity of the medications and protects user data. The proposed system includes an integrated chat system that uses advanced authentication technology.

Scope: The scope of this project includes the design and development of the online pharmacy system, incorporating a secure chat system. It explores the application of authentication technologies to safeguard user data and ensure the authenticity of the medications. However, the project does not delve into the manufacturing process of medications or the operational aspects of physical pharmacies.

Justification and Importance: The advent of online pharmacies has revolutionized the pharmaceutical industry. However, the concerns of counterfeit drugs and data privacy necessitate a system that can assure users of both the authenticity of drugs and the security of their personal

information. This project contributes to the broader efforts to improve the safety and reliability of online pharmacies, which can significantly enhance public health outcomes and trust in digital health services.

Literature Review: The report thoroughly compared the developed system with existing online pharmacy systems including BigPharmacy, MyParma, 800Pharm, and DoctorOnCall. BigPharmacy, an online pharmacy based in Malaysia, offered a wide range of medications. However, it required prescriptions to be provided via WhatsApp, lacking an integrated communication system with doctors. MyParma, a Philippine online medication shopping website, sold a variety of medications, but also lacked an online communication system with doctors. 800Pharm, an online pharmacy website in China, provided a variety of traditional Chinese medications, over-the-counter, and prescription medications, but required manual intervention from administrators to process prescription requests. DoctorOnCall, a Malaysian telemedicine platform, was the most similar to the developed system, offering online medical consultation services, allowing patients to consult with licensed doctors and healthcare professionals, and receive prescriptions where necessary. Despite their functionalities, these systems each had limitations that the developed system aimed to address. Unlike these existing systems, the developed system integrates telemedicine and online prescriptions, providing a direct link to healthcare providers and enabling customers to obtain prescription medications through online consultations with doctors. The COVID-19 pandemic underscored the importance and convenience of such a system. This comparison with existing systems provided essential insights into the design and implementation of the new online pharmacy system, contributing to the current literature on online pharmacies and telemedicine.Explanation: The project developed a new system tailored to address identified problems, demonstrating a practical application of problem-solving in system design. It enhanced the accessibility and convenience of professional medical advice and prescription medications for patients.

Table 1 Main Features Comparison

Features	Existing System				Developed System
	BigPharmacy	**MyPharma**	**800Pharm**	**DoctorOnCall**	
Platform	Web App/ Mobile App	Web App	Web App/ Mobile App	Web App/ Mobile App	Web App
Provide Prescription Medication	Yes	Yes	Yes	Yes	Yes
Online Consultation	Customer Service Only	Customer Service Only	Customer Service Only	Actual doctors online	Actual doctors online
Chat Feature	Powered by Messenger	Unavailable	No	Appointment Only	Live Chat
Prescribe	No	No	No	Yes	Yes
Medication Delivery	Yes	Yes	Yes	Yes	Yes
Complexity (Min 1,Max 5)	4	3	4	4.5	5

Report Organization: This technical report is structured into six key sections. The "Introduction" sets the stage, outlining the background, objective, scope, justification of the project, and literature review. This is followed by the "Research Methodology" section, which details the strategies, techniques, and tools used in the development of the online pharmacy system. The next section, "Results and Discussion", presents the outcomes of the project, alongside a comprehensive analysis and discussion. The fourth section, "Conclusion", encapsulates the key findings of the project, implications, and potential for future development. The " Acknowledgement" section is dedicated to acknowledging the contributions of individuals and institutions that supported the project. Lastly, the "References" section cites all the sources and resources that have been referenced throughout the report.

Research Methodology

The "Research Methodology" section of this technical report explores the systematic processes employed in the creation and refinement of the "PharmChat" system—an online pharmacy with a real-time chat feature. The methodology illustrates the iterative development process model, data collection methods, data analysis strategies, and the tools used for measuring project effectiveness. This thorough approach ensures that the system is designed and modified according to user needs, and it undergoes rigorous testing to guarantee optimal performance. It also provides a structured framework to tackle any challenges or issues that arise, consequently aiding in the delivery of a secure, reliable, and user-friendly product.

Development Process Model: The report presents a detailed description of the development of an online pharmacy system, called "PharmChat". The development model appears to be iterative, with consistent improvements and modifications made based on identified problems and testing results. The iterative model is suitable for this project as it allows for ongoing refinement and optimization, crucial for the development of a robust, user-friendly platform.
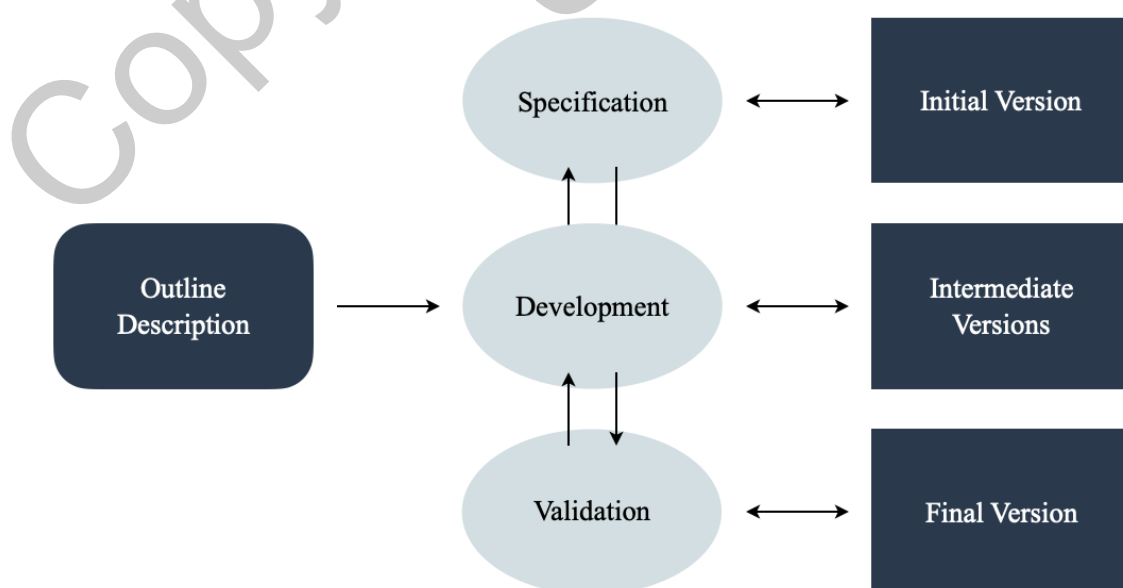

Figure 1 Incremental Software Development Cycle

Methodology: For this project, the author employed the Incremental Model as the primary developmental process model. This model was especially beneficial during the early stages, as it required only a general understanding of software requirements. Detailed descriptions were added progressively at each incremental stage. This approach not only facilitated a clearer understanding of user needs but also adeptly accommodated any changes in these needs. The risk of project failure was significantly mitigated with the incremental model. While some incremental components might have encountered issues, others were successfully delivered. A key advantage of this model is its ability to provide stakeholders with immediate results upon the release of the first increment. Any dissatisfaction from stakeholders could be swiftly identified and rectified. Consequently, this model proved to be both efficient and effective, enabling the author to focus on critical aspects and ensuring that bugs were addressed promptly as they emerged.

Data Collection Method: The data collection method, centralized in the MySQL database, is a finely orchestrated interaction between users and the system, supplemented by the feedback from a diverse demographic. This interaction begins at the user level, starting from sign-ups and sign-ins, extending to profile updates, and encapsulating their experience through the ratings of support channels. Moreover, the data acquisition also takes shape through more nuanced avenues such as doctor-patient consultations, doctor certification uploads, prescription authorizations, and the addition of new medications to the system by administrators. To evaluate the system's ease of use, Usability Tests are conducted involving face-to-face and online interviews with various participants. The participant group, carefully selected, spans across family members, friends, classmates, medical professionals like doctors from nearby clinics, and medical students. This blend of direct and indirect users of the system provides holistic feedback, enhancing the data collection process and helping fine-tune the user experience, drawing from their valuable suggestions and feedback for system improvement.
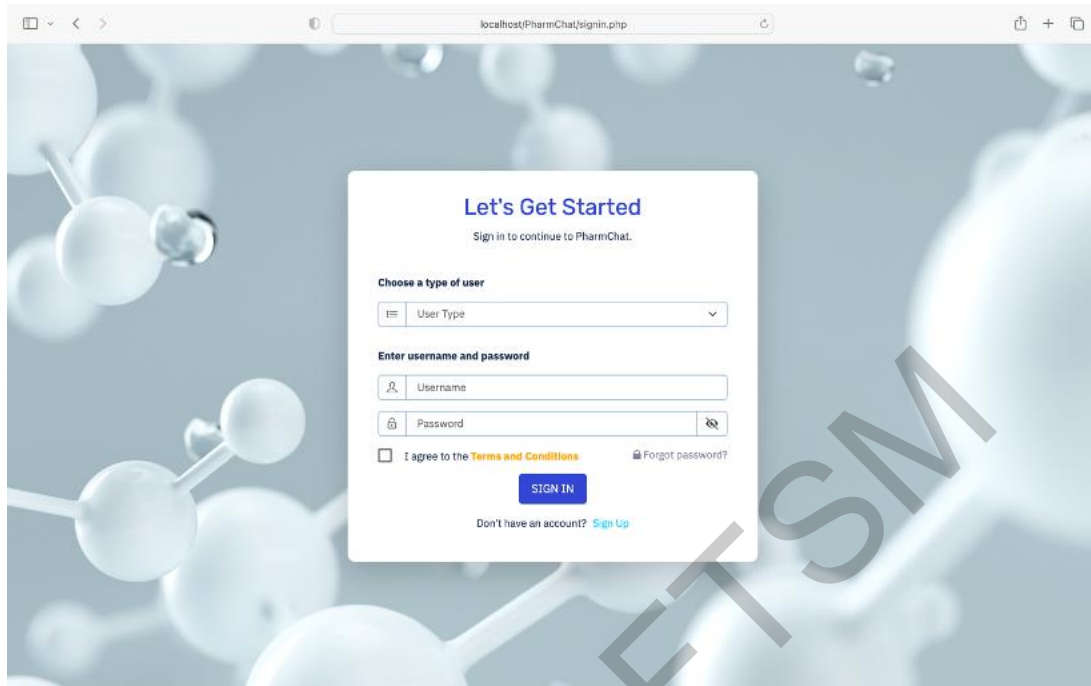
Figure 2 Sign-In Page

Data Analysis Method: The analysis method isn't explicitly mentioned, but it appears that the system's performance is analyzed based on user feedback and testing results. The testing process is woven into the development process, allowing many issues to be identified and addressed during development itself. Additionally, usability testing results are analyzed to assess the system's ease of use from the perspective of different users.

Measurement and Measuring Tools: The effectiveness of the development of project results is measured using several tests, including functional, compatibility, security, stability, and usability tests. These tests help ensure that the system operates reliably under a variety of expected and unexpected conditions and that it provides a high-quality user experience.

The research methodology is crucial for guiding the development and testing of the "PharmChat" system. It ensures that the system is developed according to user needs and that it is thoroughly tested and optimized for the best performance. It also provides a framework for systematically addressing any issues or challenges that arise during development and testing.

Results and Discussions

This study developed an online pharmacy system for prescription medications with a chat system using authentication technology mechanism. The project involved an in-depth analysis of existing systems, resulting in a comprehensive summary of their respective strengths and weaknesses. A novel system was developed specifically tailored to address the identified problem, demonstrating a practical application of problem-solving in system design. The development process involved close collaboration with users during system testing to ensure the solution accurately aligns with its intended purpose and target objectives.
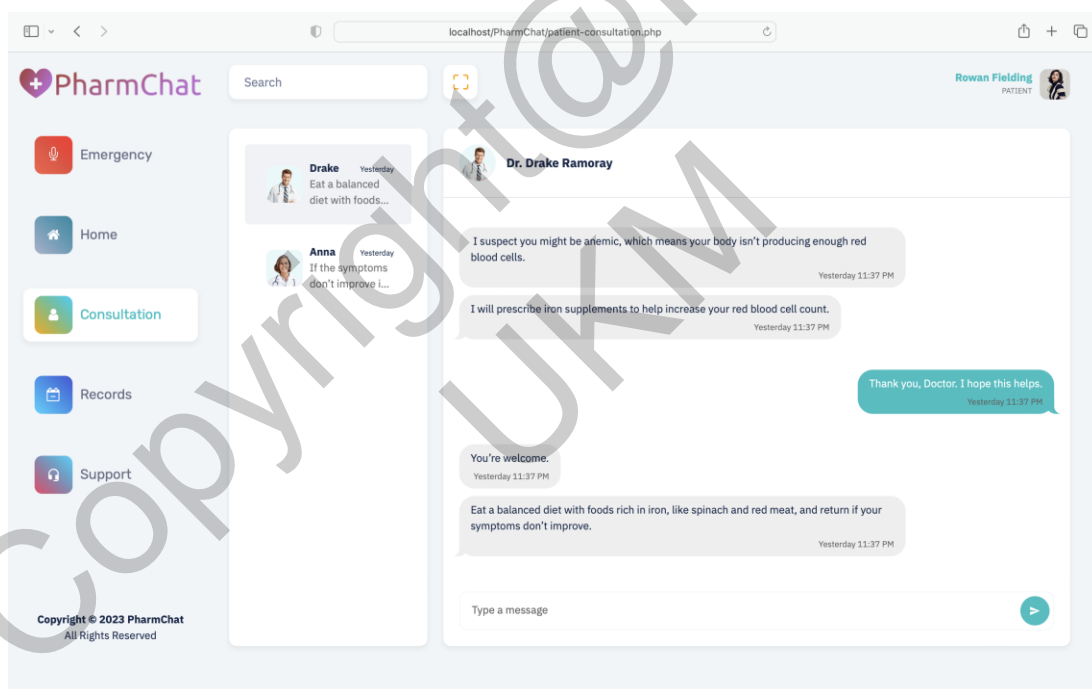

Figure 3 Consultation Page

Analysis of Results: The strength of the project lies in its ability to enhance the accessibility and convenience of professional medical advice and prescription medications for patients through one-on-one real-time online chat within the website. This feature enables patients to receive substantial medical assistance without having to leave their homes. Given that existing similar

platforms often rely on third-party chat applications or impose restrictions on obtaining prescription medications, the uniqueness and advantage of this project are highlighted. However, certain limitations persist. A server with sufficient capacity is needed to accommodate a large user base, and as of now, the project is only available as a website without a mobile app counterpart. This restriction could potentially limit the accessibility and convenience for users who primarily rely on mobile devices for online activities.

Implications and Conclusions: The project proposes a prototype for an online pharmacy system. Its functionalities are relatively rudimentary at this stage, and there is ample room for further refinement and expansion. The project can serve as an inspiration for the development of a full-scale, operational online medical system that could be deployed in real-world scenarios, thereby delivering increased convenience and value for both patients and healthcare providers.

Future Suggestions: Several suggestions were made for future improvements. These include incorporating a payment feature and a community volunteer function within the system to expand its capabilities and user engagement. Also, acquiring a robust server that can effectively support a large volume of user traffic was recommended. It was suggested that launching a mobile app version of the platform could enhance the convenience of user access and interaction. Finally, the implementation of multi-language support could increase accessibility and broaden the global reach.

Completing the Results and Discussion section is important because it displays the results of the study and the information obtained and gives meaning and conclusions to the study that has been conducted.

Conclusion

Summary of Study Results: The project successfully developed an Online Pharmacy System for Prescription Medications with a Chat System Using Authentication Technology Mechanism. The system effectively addressed the identified problem of enhancing the accessibility and convenience of professional medical advice and prescription medications for patients through one-on-one real-time online chat within the website.

Objectives: The primary objective of the project was to address the need for a secure and convenient online pharmacy system, which was successfully achieved. The developed system demonstrated robustness and usability across various testing scenarios and user groups.

Impact and Implications: The impact of this project is significant in the healthcare sector, particularly in the realm of online pharmaceutical services. By providing a user-friendly and secure platform for patients to receive professional medical advice and prescription medications, the system contributes to enhanced healthcare accessibility and convenience. It sets a foundation for future advancements in this domain.

Weaknesses and Recommendations: Despite the successes, the project has its limitations. Currently, the system is only available as a website, limiting its accessibility to users who primarily rely on mobile devices. To address this, future work could consider developing a mobile application counterpart. Additionally, acquiring a robust server to effectively support a large volume of user traffic and ensuring smooth operation is suggested.

Overall Summary: In conclusion, this project presents a prototype for an online pharmacy system that addresses the need for a secure, convenient, and user-friendly platform for online medical consultations and prescription services. Though the functionalities are relatively rudimentary at this stage, the project opens doors for further refinement and expansion. It serves as a stepping stone

towards the development of a full-scale, operational online medical system that could potentially transform the way healthcare services are delivered, making them more accessible and efficient.

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