Study and Solution to Promote Smart Healthcare Solutions to Promote Longevity of Omani Citizen

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ABSTRACT

The proposed Research is a study of the mechanism that patients adopt to save their personal information, time, and effort. The study also focuses on improving healthcare sectors and imbibing smart initiatives to promote longevity of Omani citizens. The study reveals that though there is lot of technical advancements in healthcare sectors, patients reachability of those initiatives are not upto the mark and hence a smarter e-solution is suggested that will include all services, which in turn will make it easier for both parties, clinics, and patients, to meet their needs, especially patients, due to the presence of many obstacles, which are poor management of patients' appointments, selection of inappropriate doctors, lack of information for doctors, and others. Among the benefits that the application will address is the speed in booking appointments, reduce waiting, and paying via the Internet. In addition, this application will include all plastic surgery clinics in the Sultanate of Oman. The suggested application is going to deployed in one sector of healthcare initially and based on the pilot study, it shall be extended to many more sectors. Hence Plastic surgery sector is chosen initially as a pilot and an application to provide management of clinic appointments, organization of its data, and provision of all services to patients. The application also provides a dashboard which contains information on hospital and patient analytics with respect to each hospital and its specialization so that patients can choose from the best. In conclusion, the application will be public to all members of the community and extend healthcare tools and technologies to various users and increase the usage of such technologies. The application will enable the patients to choose the best clinic and doctor based on the analytics of the service he wants, know the prices, and choose the time and day he wants. This research and proposed solution will increase the reach of Omani healthcare solutions to general public and in line with Oman vision 2040.

Introduction

The clinics of plastic surgery are an important element of human medicine. The major goal of plastic surgery clinics is to improve the appearance and function of patients' tissues and skin. It is necessary for the plastic surgery doctor to have sufficient experience and necessary skills to obtain the best results that satisfy patients. One of the plastic surgeries that the doctor must practice is reconstructive surgery such as hands, feet, facial surgeries and non-surgical cosmetic procedures. In addition, modern technologies have spread in plastic surgery, including laser technology and other technologies that will help the medical staff develop their skills and help patients. In the present era, plastic surgery has witnessed a global demand. In addition, plastic surgery has become one of the most widespread surgeries in the world. In the Sultanate of Oman, the clinics of plastic surgery have become widespread, which is an important and positive step which will help all members of the society. Khawla Hospital, which was established in 1974, was the first surgical hospital in the Sultanate. (Prasanna & Thomas, 1998) There are many reasons and goals for the designing of the "Express Booking" application, such as although there are many plastic surgery in the Sultanate of Oman. there is no single application that covers all of them, in which any patients can find all the clinics in one place to save their time and book easily. Moreover, by creating the application, it will allow all patients to book and easily access the plastic surgery clinic which they want, as the application facilitates choosing the clinic, doctor, time and

day specified by the patient. This application also aims to provide the best services which is the patient can read the doctors' files, comments and see their works to reassure the patient of his or her choice of the doctor. In addition, the application will be created to solve the problem of crowding, not arranging appointments for patients and staff, and wasting time when waiting to get the treatment. This application will save the patients' health problems and appointments and send a reminder to them to remind them about their appointment. It will be challenging for me to design this application due to my lack of knowledge with new programming tools, but via this project, I will refine and develop my skills in this area using programming languages to create an application, which is an opportunity to improve my skills and learn new programming languages.

Study Design and Purpose

The literature was reviewed based on the software and programming languages that will help me create the application to meet the needs of patients. The paper was created based on literature reviews with the aim of supporting developers who want to develop and create an application to serve the community and meet their needs. The results from the study are presented as follows.

Reviewing Literature

- Jayaweera et al.,(2006) discusses about Clinical Management System (CMS) on the basis of patient-centered "ontology". It talks about creating low-cost and easy-to-deploy technology for one particular reason, which is to improve services for the patient. Where they found a process known as the ontology process. Patient-centered and focused on covering all healthcare services for the patient.
- Lubis, Sutoyo, Handayani and Azuddin, (2019) this article discusses Clinic Management System and Business Process Reengineering based on User Experience (UX). This article discusses business operations that help reduce the spread of disease on a large scale. In addition to creating an application that helps staff to record and maintain patient data instead of writing data in books and records, which slows the performance of clinics, as this application will help clinics that facilitate the search for patient data.
- Al sarheed & Al momani (2016) discusses outpatient management software (CMS) as it proposes solutions to the problems of long waiting patients, and by reducing the waiting time the software used to manage outpatient services should be improved. In this article, two types of qualitative and quantitative methods were used to understand (CMS) and examine the level of patient satisfaction, where 5 problems were identified and defects in electronic health care programs were identified. In order to address these shortcomings, several programs and programming languages were used to improve this program, including methods of data collection and fishbone analysis, and using the Oracle database, real data was collected from one of the clinics management programs. Information, consultant and salary SQL were obtained.
- Loshin & Sirkin (2022) discusses about SQL and its uses Structured Query Language is a programming language used to manage relational databases and perform various operations. In addition, it helps to modify database tables, update and delete rows of data, and import a subset of information where this information can be used to process transactions and applications. Structured Query Language is designed to access, modify and extract information from the database. This language is divided into several types, including: DLL, DML, DQL, DCL and TCL.
- J van Rossum (2007) discusses about pythons, its foundation and use, where Python is defined as a high-level, general-purpose language. Python is written dynamically as it collects garbage. In addition, Python supports multiple programming paradigms. Python was designed as a background to the ABC programming language created in the late 1980s in the Netherlands by Guido van Rossum

Benefits

Any benefits will be available through the application for patients, as they will be able to pay the full fees through the application, and they will also be able to register complaints and write comments about doctors. In addition, the application will include all plastic surgery clinics, services and discounts on services and others, in addition to enabling them to choose the time and day to meet the doctor.

Challenges

Plastic surgery clinics suffer from problems such as the lack of an application that includes all clinics, which leads to consequences and pressures, whether for the Doctors or the patient, which is a waste of time and effort, such as booking an appointment, which will be manual, which results in the accumulation of data on the clinic, as well as the long wait and crowding, which negatively affects them and places an additional burden on their burdens. And the lack of a way to help patients to remind about their appointment, which leads to the cancellation of his appointment, the patient's lack of knowledge of the doctor's experiences or reading his file and patients' comments about him. And the patient's lack of knowledge of the services or working hours of the clinic, not knowing the prices.

Features

First, plastic surgery clinics are widely spread in our country, as there is no platform that brings clinics together. This leads to a lack of patient attendance. Wasting time and effort to reach the clinic and book because it will be annoying for patients, so the express booking application is the best option for clinics, as it is an integrated platform. Patients forget about their appointment or not remind them of the appointment, but this platform will send notifications to the patient to remind him of his appointment. Not knowing the patient about the doctor's experiences but the app will provide his profile, patient experiences and comments, which will comfort the patient. Not inspiring the patient about the services provided by the clinic but through the application will provide the services provided by the clinic. The patient does not know about the prices, but this application will provide the offers, discounts and prices offered by the clinic. Finally, the "Express Booking" application will be ideal, providing convenience and effort for both parties.

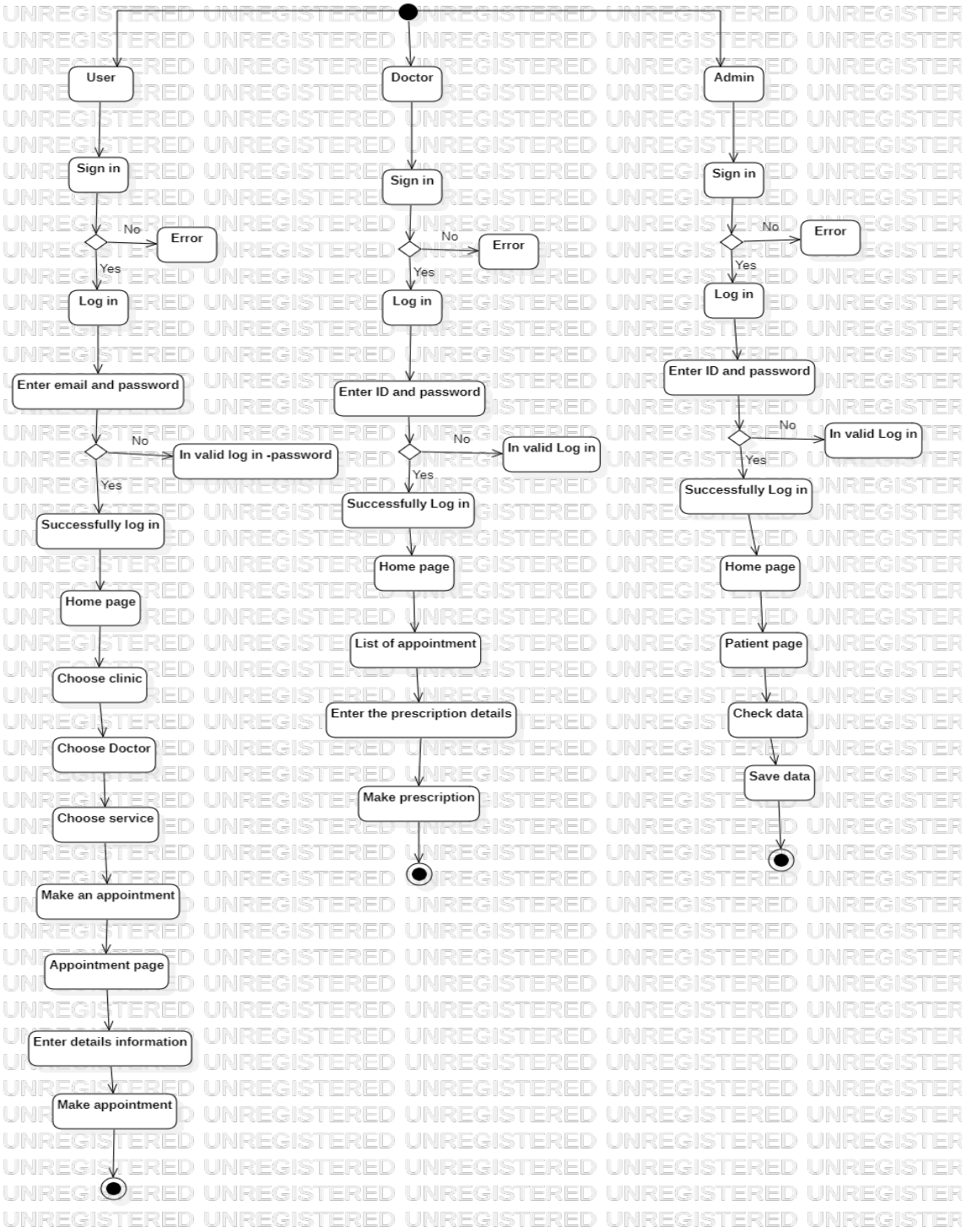


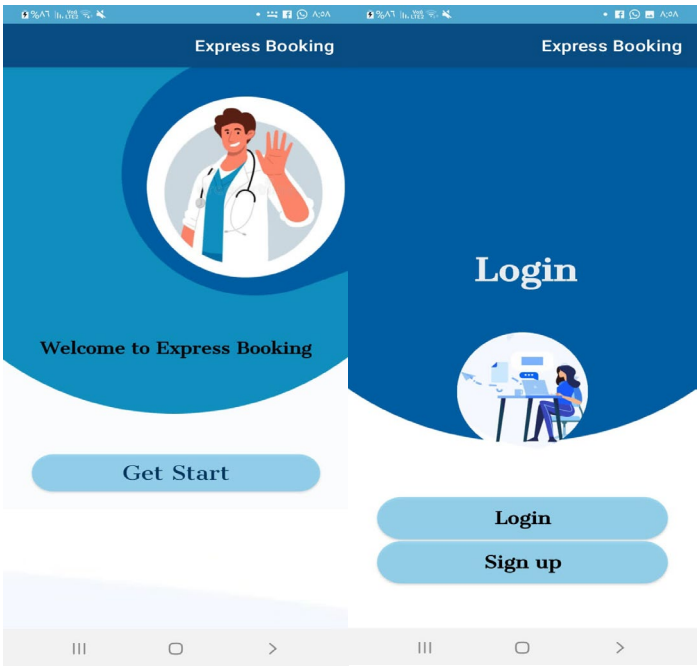
Figure 1.

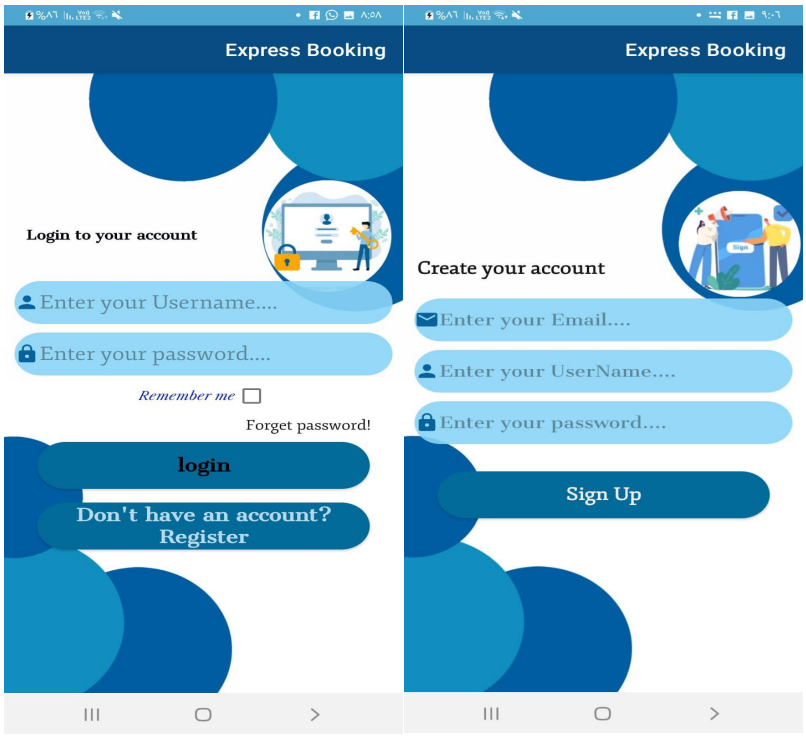
In figure 1**,** An activity diagram is similar to the idea of a flow diagram. Where the diagram shows the activity below about the "Express Booking" application that is turned on from the beginning and turned off at the end. Where all operations were explained smoothly.

Methodology

I did research about plastic surgery clinic systems and what programming languages might help me in developing and creating the application. The methods used are from various sources, such as : books, articles, and research on various internet sites.

Implementation and Testing





- I used the Android Studio program to create the application, which is a platform for writing and creating applications to make it easier for developers to create the application. Also, the programming language that I used is the Java language. I created this application to help patients book an appointment with the doctor, and in addition to helping the clinic to preserve their data and the patients' personal data from damage.

Limitations

There must be several limitations in my project, which are: The application must be tested to meet the user's need and ensure its usefulness and efficiency.

Conclusion

My project aims to create an application that helps both parties, doctors, and especially patients. Where the "Express Booking" application will fully meet the needs of clinics and patients, as it will help reduce the effort and time of patients during reservation and not wait for long periods, which causes them boredom. Where the patient will have the freedom to choose the clinic he wants and the doctor he wants, and in addition to that, the patient will be able to know the payment bills, and it will also make it easier for the doctor and the admin not to lose the patient's personal information, as the application will organize all the patient information.

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