

## Medical Guide System

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### ABSTRACT

Currently, getting access to emergency services and consumer health services requires calling a knowledgeable person on the regular phone or using different self-care techniques for illnesses without consulting a doctor. We are improving and expanding new channels of personal communication to facilitate interaction between emergency users and the emergency service system. Given the widespread use of smart devices in our society, we are developing a web application called "Quick Health" for emergency management, with the main feature of answering a question asked by another party or evaluating a given answer, as well as posting a problem and exchanging ideas with others. Our goal is to define a platform that is totally usable by everyone, regardless of their technological or linguistic proficiency. This paper's main goal is to clarify how to adapt traditional applications to modern web applications by taking into account not only web technologies but also social networking behavior.

**Keywords--** Healthcare Emergency System, Medical Guidance, User Interaction, Web Applications

### I. INTRODUCTION

Despite the fact that the healthcare sector has seen substantial development, little has been done to understand how to use innovation in healthcare to overcome these inefficiencies [8]. One of the most serious issues in healthcare today is the lack of organization records about patients' medical chains. The solution is to place medical record transactions on the blockchain in order to create a smart healthcare ecosystem medical chain. A smart contract is launched to provide patients with time-limited access to their electronic health records. Doctors make notes, add scans and lab reports, and the results are all recorded as transactions. The pharmacy not only dispenses medication but also logs the transaction on the blockchain. The patient grants their insurer time-limited access to treatment verification and payment settlement via smart contracts. Smart contracts are used by patients to reward doctors.

Patients appreciate doctors who review medical cases remotely and provide advice or a second opinion. One of the most serious issues in healthcare today is the lack of organization records. Patients grant health insurers access to their health records in order for them to track their fitness progress and be rewarded with tokens or lower insurance premiums. Patients are also rewarded for granting time-limited access to their medical records to research institutions for medical trials. However, our team aspires to present the research study to address the gap between patients and doctors as well as societal health issues.

#### **A. Disadvantages of Health Apps**

Although many health applications have been highly beneficial to society, we have been able to compile information on a number of widespread issues. Let's examine them in more detail and discuss the benefits and drawbacks of receiving professional addiction therapy. The greatest strategy to manage addiction, according to many specialists, is to involve the patient's family in the therapeutic process. This strategy has a history of success, despite the fact that it can be difficult and time-consuming. Experts claim that this may result in cost savings during treatment and subsequent recovery. However, since technology has been incorporated into healthcare, it has been feasible to save a significant amount of time and money. In general, let's look at some common issues with all these health applications.

- **Data security** - The health apps continuously gather and examine the user's health information. The risk of a hacker disclosing personal information and sharing it with third parties is a serious concern. The reported app manufacturers have reported news and updates about the leakage of health data in a number of contexts over the past few years.
- **Accuracy of Data** - Another major issue with healthcare apps is the accuracy of the information and guidance they offer. Different apps analyze health data using various techniques and tools. When compared to MedTech devices, the data

obtained using the apps have occasionally been found to vary.

## II. RELATED WORK/LITERATURE REVIEW

### A. Related Research Introduction

Our research project's main goals are to use information technology to close the communication gaps that exist between patients and doctors and to increase the accessibility of health knowledge sharing across diverse societies. There, we crossed paths in a number of research projects, and the crucial details are provided below in detail.

### B. Related Research

The smartphone, a mobile device with computing power, connectivity, and "apps" that can be downloaded, has emerged over the past ten years and has become a common tool for both personal and professional use in the medical industry. Despite never having been quantified, the popularity of apps with a medical theme suggests that doctors use mobile technology to aid in clinical decision making. All ACGME training programs received an email containing a digital survey about smartphone use and related apps. We gathered and analyzed information on respondent specialties, levels of training, smartphone usage, smartphone app usage, desired apps, and frequently used apps. A smartphone was used by more than 85% of the respondents, with the iPhone being the most popular model (56%). In their clinical practice, more than half of the respondents said they used apps; the most popular app categories were drug guides (79%), medical calculators (18%), coding and billing apps (4%), and pregnancy wheels (4%). Classification/treatment algorithms (average response: 46%), general medical knowledge (43%), and textbooks/reference materials (average response: 55%) were the most frequently requested app types. We have shown that there are no high-quality and well-liked apps, despite a strong desire among doctors and trainees, despite the fact that the clinical use of smartphones and apps will probably continue to rise. The expanded app functionality is almost a given, but dependability and ease of use will probably continue to be crucial determinants of how successfully apps are integrated into clinical practice. This information should be used to guide the development of future healthcare delivery systems.[6]

Emergency services and consumer health services can only currently be accessed in Spain by dialing the traditional telephone number 061. We enhance and expand private new channels to help emergency users communicate with the emergency service system. Communications. Smart mobile device usage is a given. We are creating a mobile application that will be widely used in our society. Support emergency management with a similar approach. calls are now included, along with some modern features. we have

created functional specifications and requirements plans. Improved user interaction with traditional emergency systems is the goal of our brand-new mobile app. The capability of the direct web application communication service, complete and efficient, quick space, and proper emergency service intervention are the main points of emphasis [7].

### C. Literature Summary

In II part of this research study, a literature review was conducted to assess the effectiveness of various conflict resolution techniques that can be used by managers of design teams. In this study, an in-depth review of the literature including journal articles, previous research papers, and books was conducted to discover various conflict resolution approaches and models.

## III. METHODOLOGY

### A. System Overview

In our system, we've made an effort to connect people from all over the world and to give them the chance to share the knowledge that exists in various societies. Our study's main objectives are to use information technology to bridge the communication gaps that exist between patients and physicians and to make it easier for people in various societies to share health knowledge. We met there while working on several research projects, and the key specifics are given below in full. This project was inspired by research that we conducted to better understand how people use technology and the Internet to support their basic health needs and how social groups can use the Internet to communicate about their health. The project's overarching objective is to promote public involvement in healthcare issues by utilizing information technology for cooperative knowledge sharing and problem solving across various cultural contexts.

### B. Tools and Technologies

React.js has some benefits over other earlier frameworks, including a quicker learning curve, support, and upcoming development initiatives from the company (Facebook), as well as strong documentation that has made it an accessible and practical service framework.[3]

Due to a lack of artistic ability, user types and clips will neatly fit in the SQL format when formatting data in a database. When it comes to categories and catalogs, however, the integrated structure will let everything fit into a single item in MongoDB, but depending on the design, it might need two or three SQL tables to emphasize specifics. The SQL form will also ask you to choose two or three JOIN tasks in order to download one category. The data must then mesh, be converted to JSON, and be sent to the final client for processing. Therefore, it is evidently simple to use the straightforward JSON format for this kind of data. [4]

For the application, we have opted for the White color scheme. When promoting medical products, you can use white to suggest safety because it is connected to hospitals, doctors, and sterility. White is frequently linked to dairy products, low-fat foods, and people who are overweight. Most of the world associates this color with safety in bright light (things go bump in the night, not the bright sunshine!) and purity (wedding gowns), cleanliness (doctors in white coats), and bright light. It can also be used to convey neutrality or the absence of color. White is often associated with mourning in eastern parts of the world. White is associated with imagination (white boards, blank slates). It is a compression of the entire spectrum of colors [5].

Cloudinary is a tool we use in our application. The management of an app's video and image requirements is handled by Cloudinary, which is used by mobile and web app developers worldwide. With a collection of media management tools, it can accomplish all of this quickly. With Cloudinary, uploading videos and images to the cloud is simple, and since it includes built-in editing tools, there is no need for additional editing software. With its API capabilities, Cloudinary can easily be integrated with other web applications. Thanks to Cloudinary's Content Delivery Networks, content delivery is quick and easy. Additionally, Cloudinary offers comprehensive solutions for all of an organization's multimedia requirements, doing away with the need for potentially difficult and pricey graphics management software. Along with supporting integrations with mobile and web applications, Cloudinary also allows for image uploading, editing, and optimization for delivery and cloud storage in addition to the web. Users of Cloudinary are able to upload and store an infinite number of images in confidence and security. The storage also contains historical revisions and automatic backups. The images can be altered using effects, watermarks, resizing, face detection, and cropping, to name a few. Images are delivered quickly and are optimized for any device thanks to Akamai's global CDN. The RESTful APIs and SDKs used by Cloudinary's media library also make image management simple. Using advanced analytics and reports, image performance can be examined and improved.

#### IV. PROPOSED SYSTEM

We incorporate a new communication channel that makes use of Internet access to enhance user participation and knowledge sharing regarding medical treatments. Our suggested remedy is a cross-platform web application that is simple to modify to any mobile device and is usable by everyone, regardless of technical proficiency.

The website's questions and answers are available to anybody without a login or registration. There is a form to fill out with a few fields if you wish to ask your own

question or respond to one that has been asked of you. After providing your name, and email address, and completing the registration process, you will have the option to access more website features by signing in. Depending on the user's job, different activities are available on the website. There are two different sorts of special roles: doctor and pharmacist.

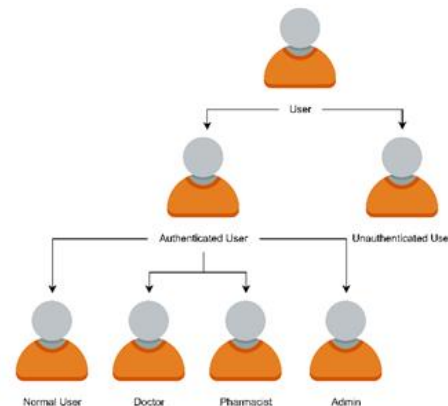


Figure 1: (User Flow)

Technically, a mobile web application is created in two primary components: a server module and a graphical user interface (GUI) module.

##### A. GUI Module

React framework has been used to construct user interaction in the Web Application GUI. React's main goal is to make it possible for developers to construct user interfaces entirely in JavaScript. To make the visual portion more appealing, HTML5 and Cascading Style Sheets (CSS) are added. The setup of visualization, event, and data model files is structured in accordance with JSON (JavaScript Object Notation) [2] syntax, one might add. There are no file dependencies, and the Architect generates standard JavaScript files that can be modified with any IDE, so developers are free to use their own IDE. React also has hooks, which are used to reuse stateful code. Sharing Hooks amongst several components or with the community is now simple as a result.

The GUI module maintains data that users enter and retrieve from web pages and incorporates React hooks. The Health Guide Web App is broken up into numerous panels in Views Information. When a user scrolls through a selected question in the main Tab Panel, it shows the question's description and the response. Users may examine all the questions that users have asked since logging in to the program.

Logins in the Tab Panel are either enabled or disabled depending on the role of the user that is signed into the website. All users have the ability to ask questions, respond to questions, amend or remove their questions, respond to answers, report questions, and indicate if the information is accurate or inaccurate. Additionally, you may

look for a pharmacy to learn more about the drugs they carry, the doctors who work there, and the places where you might get them.

One question at a time is processed and tagged. The user Admin is the one who creates the labels. The user may choose from a variety of labels when creating a query thanks to the predefined labels. For the admin to manage queries, there is a dedicated Tab Panel. Users may monitor, analyze, and control all website activity, including question and answer management, as a component of it.

If the user is a doctor or a pharmacist, they can each access their own distinct Tab Panels. Through the internet, he may display his service stations and update or remove any that are already there.

### B. Server Module

Based on the JavaScript runtime environment Node.js, this Server Module was created. The server port, database connection, and connection files are all included in this Server Module's input file (routes). A controller is linked to each Routes file. In order to respond to requests made by the GUI Module, this controller serves as a bridge between the database.

Model files and route files. As linker files, these controllers contain auxiliary files. This file structure makes it simple to update and easy to identify the flow of linked functions.

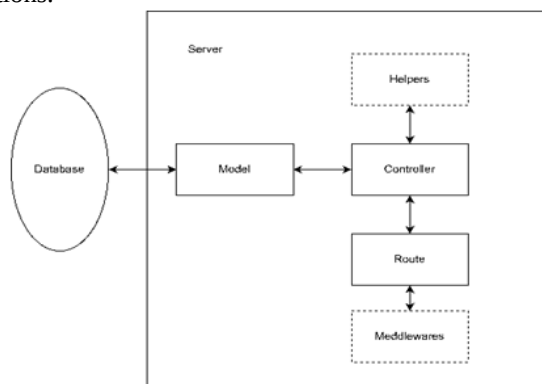


Figure 3: (Server module architecture)

Similar to the GUI Module, middleware is restricted to providing or storing the desired data based on the user's location [figure 5]. This stops unauthorized swipes and uses JWT to confirm the user's identity (JSON Web Tokens).

### C. Relationship between GUI Module and Server Module

The data required by users of this health guide web application is retrieved from a database, therefore this client-server web application maintains communication between the GUI Module and the Server Module via HTTP/HTTPS requests.

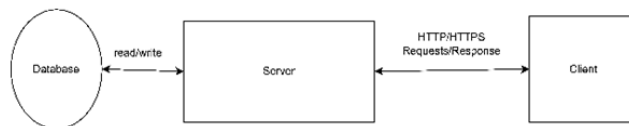


Figure 5: (Client Server architecture)

Each request has a distinct URL and is uniquely recognized by the Server Module through the proxy from the GUI Module. This address was created with the REST API (Representational state transfer).

The writers of this essay do not intend to discuss the Service created for the Health Guide web application. As a result, the health guide web application's interoperability of both blocks is ensured independent of language, platform, or configuration.

### D. System Functionality

Our team concentrates on building the software in such a manner that it provides the most benefits to the users and ensures the greatest user experience.

#### D.1: Home Screen



Figure 2: (Home Screen)

Basically, we employ a minimal interface and concentrate on the major project preparers for our researchers. utilizing light colors and utilizing various colors for various buttons and text sections. We will have a prototype like this at the conclusion of the phase [figure 1].

#### D.2: Add Question Screen

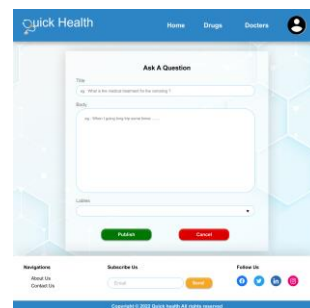
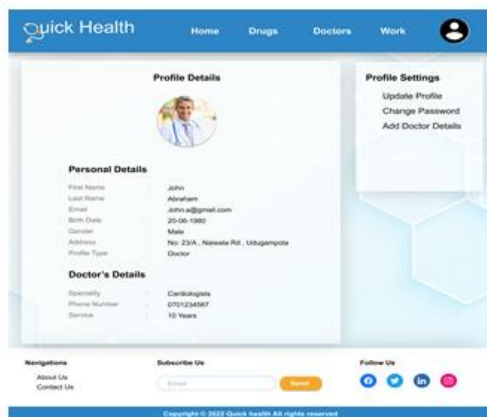


Figure 4: (Add question screen)

We added a question screen, integrated easy inputs, and used light and different colors for different buttons and text areas. [figure 2]

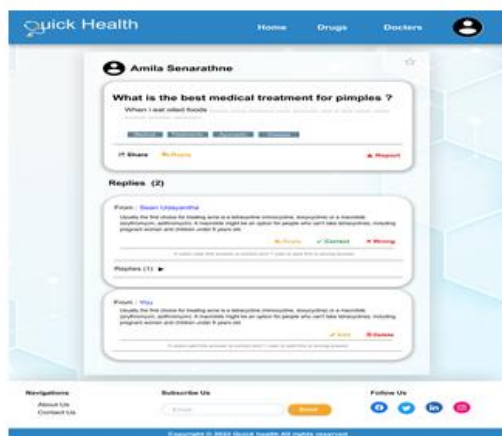


**D.3: Doctor Profile Screen****Figure 6:** (Doctor profile screen)

Users can examine the specifics of this user profile. Additionally, user activity can be redirected.

**D.4: View question**

The user may view comments and cutting-edge technology.

**Figure 7:** (View question screen)

Additionally, discover new things and acquire disease-related information. The user may discover new things, acquire disease-related information, and view comments. [figure 4]

**V. DISCUSSION**

We expect that by utilizing ReactJS, applications will be developed quickly and with high quality. Additionally, we anticipate that our program will operate more effectively when data changes in order to improve user experience over time. By granting access to user content and data after login, the application is anticipated to run more quickly since we are leveraging context for our authentication.

The program would likely utilize MongoDB to maintain user data securely and retrieve data quickly, which

would be perfect for the objectives of the application. One of MongoDB's benefits is its capacity to grow both vertically across servers and horizontally across data centers. On behalf of the application, MongoDB will securely maintain user data.

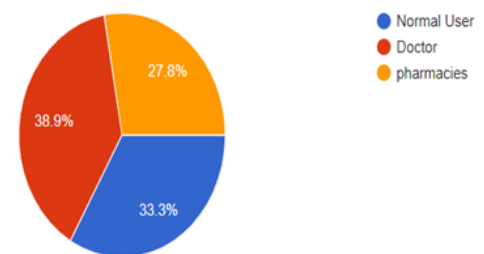
Our team uses customer experience evaluation and function testing for our system. The testing outcomes of the application are shown in Figure 7.

**A. Customer Experience Evaluation**

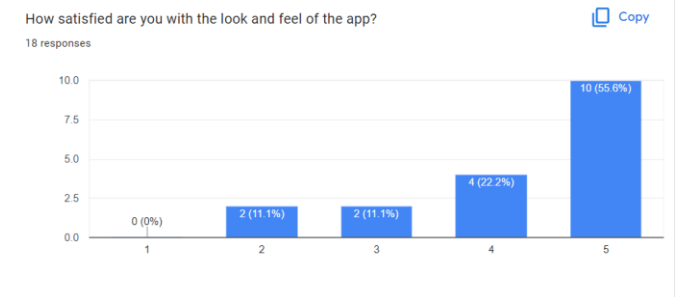
In order to gather consumer feedback and provide succinct information about our application, we are utilizing Google Frame.

What kinds of users have you registered to the app ?

18 responses

**Figure 8:** (customer feedback result 01)

Although we discover that a respectable number of doctors have used the program, we can see that the majority of general people are utilizing it.

**Figure 9:** (Customer feedback result 2)

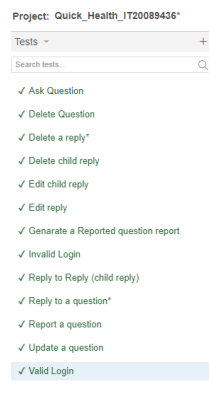
We receive nice client feedback for our software, and we seek out excellent positive feedback.

**B. Function Testing**

Our team use testing tools for test functionality and code quality

**B.1: Application Function Testing**

Our team uses selenium ide. An open-source test automation tool called Selenium IDE can record and replay your online activities. You may use it to automate web application testing. The tool is useful for manual testers who must repeat their test scenarios because of its practical capabilities.

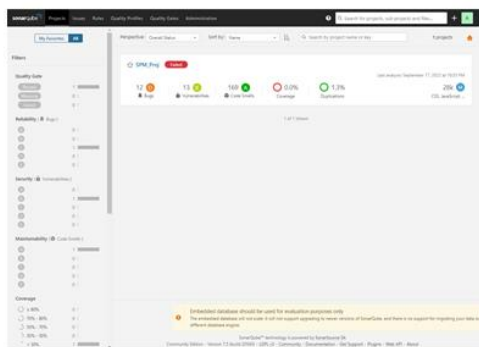


**Figure 10:** (Selenium test case example)

Positive outcomes for application functions might be sought after.

### B.2: Code Quality Testing

For verifying the quality of our application's code, our team employs SonarQube. To do automatic reviews with static code analysis to discover errors and code smells across programming languages, SonarQube developed the open-source platform SonarQube.



**Figure 11:** (Sonar Qube Dashboard)

After testing, we can examine the same code section and observe a successful result, but we can also see that the end outcome is failed.

## VI. CONCLUSION AND FUTURE WORK

Considering the roundtable's findings, "Quick Health, Are We Ready?" According to [1], during the next two years, both the number of mobile medical Apps and the number of people who utilize them are anticipated to grow dramatically. These findings emphasized the need of providing innovative solutions tailored to user demands since patients are prepared to pay for apps that are "useful and effective" for their health. Accordingly, it is predicted that over 500 million individuals would be utilizing medical apps for mobile and the web in two years.

The poor quality of a question or answer asked or given can result in reduced user engagement due to the potential for mistakes due to nervousness or panic and the reluctance of users to disclose personal information. Therefore, there should be an ability to exchange personal questions and answers. In consideration of these matters, user identity should be protected by using a third party such as high quality WSO2 Identity Server [9].

Future wireless networks will provide ubiquitous communication services to a large number of mobile users [10]. Considering these reasons, a mobile application should be introduced to the users

In this paper, we briefly described the development project of the Quick Health web application not only for new product-based business needs but also for the convenience of users to get comprehensive knowledge about medical care. In healthcare emergencies and medical emergencies Downtime performance, reliability, and safety are critical.

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