iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** VII **Month of publication:** July 2022

DOI: https://doi.org/10.22214/ijraset.2022.46095

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue VII July 2022- Available at www.ijraset.com

Unicare – A Electronic Health Record Platform

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Abstract: ***Ever since the advent of the internet i.e interconnected computer technology, nearly every sector has joined the bandwagon and has shifted towards a centralized, robust and a highly organized database. Furthermore, the advancements in newly emerging fields like big data, data mining and warehousing has made it possible to obtain crucial and valuable insights from the enormous amounts of data being saved in various databases. As a result, several sectors have invested in having their own data analysis systems to gain better understanding of their works and possible improvements they can make in their current workings. Healthcare however seems to have been a bit behind in making optimum use of these tools and methodologies. Electronic health records carry significant potential in improving the quality of healthcare through easy access to information, precisely by helping to make prudent prognoses and thus saving the patient's time and finances.***
Unicare is a seamless electronic health records platform designed to address this issue with an aim of having a centralized health care portal, accessible to both the medical experts and patients. Medical professionals can access the patient's history and make informed decisions regarding their ailments.
Keywords: computer technology, big data, Healthcare, seamless electronic health records platform, Unicare

I. INTRODUCTION

The sector of healthcare has seen tremendous progress in the modern era. Modern medicine, well-structured and established medical institutions and principles, as well as the aid from the biomedical engineering equipment have propelled the sector into a robust mechanism, improving both the quality and life expectancy of a human being. Nevertheless, even with all these advancements, certain issues prevail. The human body is a complex entity which works according to an intricate mechanism influenced by genetics, environment and lifestyle factors with each having varying effects on its fitness and health. As a result, in case of an ailment, prognosis becomes an arduous task. It is at these moments that the patients' previous medical history plays an important role in buttressing the prognosis. Hence, it is important to have a well-built health records system. Moreover, the advancements in big data and data mining have made it possible to derive meaningful conclusions out of large amounts of data. Hence, having a centralized electronic health records system could be a significant boost to the medical field, wherein researchers, doctors as well as the masses could have access to a reliable source of data serving the cause of enhanced modern medicine. Hence, with an aim to build such a platform, we developed Unicare - a universal health database. The platform is designed to provide both the doctors as well as the patients, a user-friendly interface allowing seamless access to the desired data.

II. LITERATURE SURVEY

The notion of a health records system has been in existence ever since the dawn of the Internet, progressively replacing cumbersome handwritten medical records and becoming an essential element of the hospital. The availability however was limited to the private sector with each entity having its own database and records system. Hence, the data remains scattered across these databases and inaccessible to the patients, providing them with minimum control over its usage, further impacting the research studies with no reliable data available which can be generalized. The consequence of this condition is the unavailability of local data and hence the obtained results being unable to serve their cause. A centralized electronic medical record system not only assists hospitals and physicians in storing and unifying medical information, but it also assists them in achieving management when a patient is admitted to the hospital again. Furthermore, the electronic medical record is more than just a medical record file; it has a positive impact on the treatment process. Hospital information construction has evolved into a critical tool for improving the medical environment and administration.

III.PROPOSED SYSTEM

The proposed system will work to store health records digitally. The system is divided into two modules: a patient module and doctor module. The patient module deal with accumulating and storing the health records of patients while the doctor module will help healthcare professionals to retrieve a patient's medical history and give appropriate treatment. Overall, the proposed system aims to digitize the system of health record storage for easy and quick retrieval.

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Volume 10 Issue VII July 2022- Available at www.ijraset.com

IV. DESIGN AND IMPLEMENTATION

The platform was developed using the Flask framework while SQLite was used as a database. Flask is a python based microweb framework used for creating web applications. The front end of the website was made using Jinja2 templating language which incorporates the principles of standard HTML along with some concepts of python.

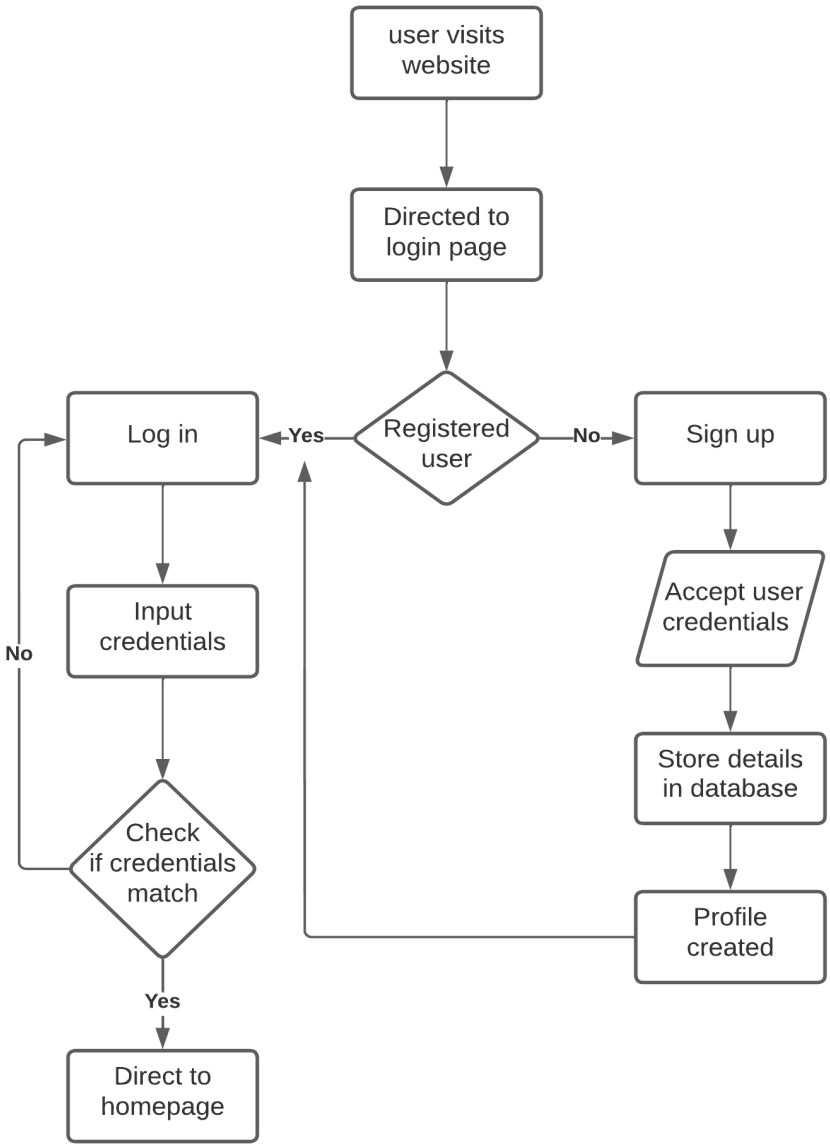


Fig. 1 Flowchart for login/registration module

Each new user to the website can sign up as a doctor or a user (patient). Once password and email id are entered by a new user it is saved in the database and through the login page user can then login. To enhance privacy and data security passwords are hashed and then stored in the database.

The patient module enables the user to store details regarding all the basic health data like blood group, chronic illnesses if any by filling up a basic form. Once the details are entered, they are saved in the database and can be retrieved when required. Another facility available in the patient module is to get a self-assessment test for Covid 19. Based on the answers provided in the questionnaire, it is decided whether the user requires further medical attention or not.

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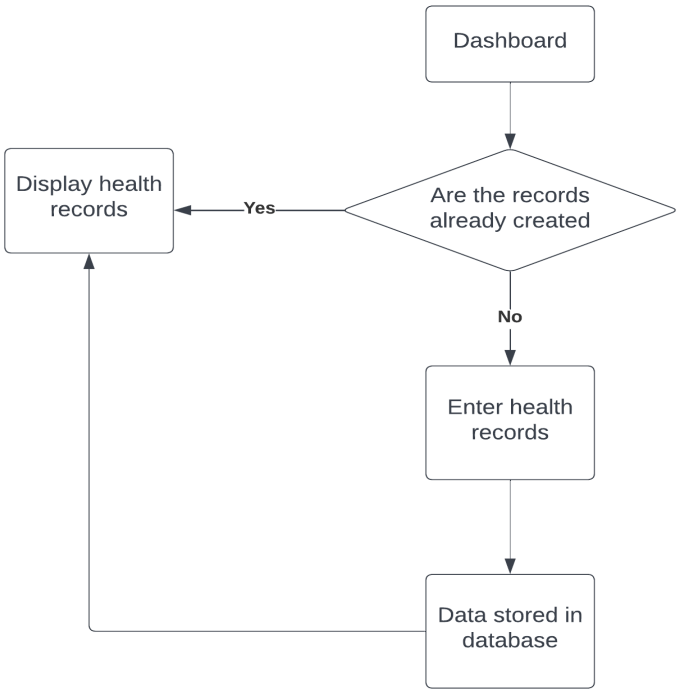


Fig. 2 Flowchart for storing user health records

The doctor module enables healthcare professionals to view the data of patients coming to them for diagnosis of various illnesses. A unique feature of our system is that it allows a healthcare professional to view the number of patients diagnosed per month for a particular disease in the form of a graph. The module also enables a healthcare professional to add the diagnosis they made for a particular patient based upon symptoms.

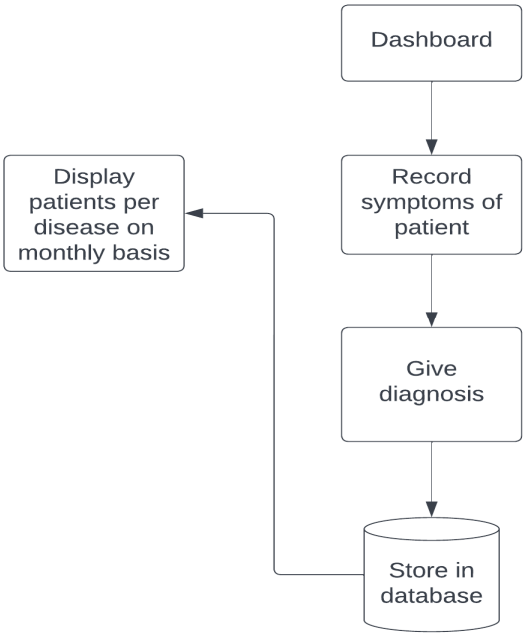


Fig. 3 Flowchart to store and display diagnosis records

V. CONCLUSIONS

Unicare may be a viable solution to a comprehensive health records system. A simple, end-user friendly platform wherein both the physicians as well as the patients can access the desired information i.e., the health records, at one place, thus making it possible for the patients to maintain their health records without any hassles and for the doctors to have the entirety of the data available to them and thus make informed decisions. Future work for the platform includes addition of several other services like an annual health report and forums for lifestyle choices as well as primitive tests for certain cases like Mental Health etc.

VI. ACKNOWLEDGMENT

On the successful completion of this project, we would like to convey our appreciation to everyone who assisted us in the advancement of this project. We want to thank the developers of every website, programme, and feature that inspired or referred us to construct this platform. We hope that this effort will be successful and shall be executed as a viable solution someday.

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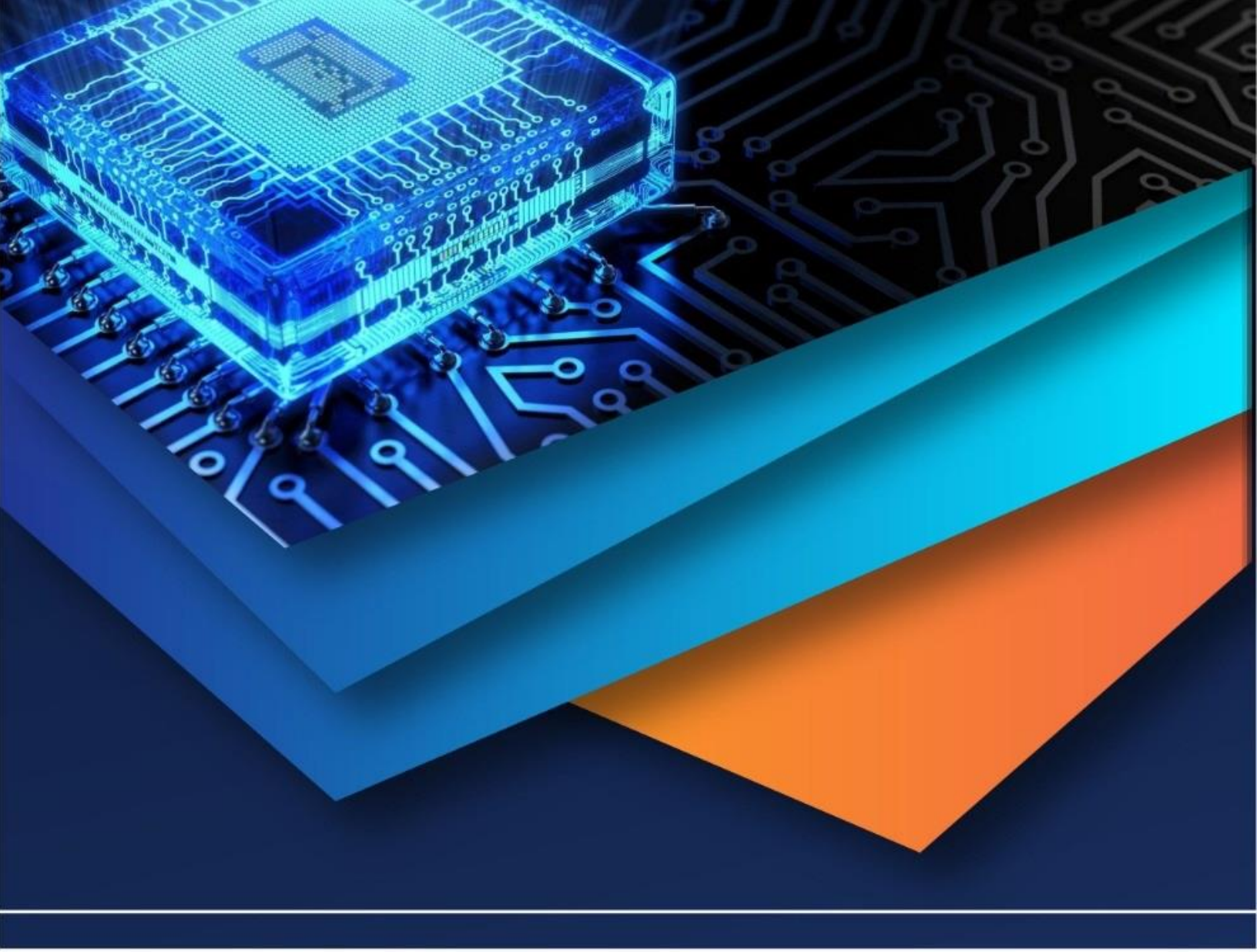
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