

Outpatient Monitoring System Using Cloud Computing

Kavitha.V¹ and V. Sumalatha²

PG Student, Department of Computer Applications¹

Associate Professor, Department of Computer Applications²

Vels Institute of Science Technology & Advanced Studies, Pallavaram, Chennai, India

kavitha122515@gmail.com and sumalathav.research@gmail.com

Abstract: *Successful adoption of Electronic Health Records increases patient safety and quality of treatment, but it requires interoperability across Health Information Exchanges at various institutions. The HL7 document format is a key document standard that ensures such compatibility, and its spread is crucial for interoperability. Except in a few countries, hospitals are hesitant to use interoperability due to the high cost of adoption.*

Even when more hospitals begin to employ the CDA document format, an issue occurs since the data is distributed over several pages and is difficult to manage. In this article, we discuss our CDA document creation and integration Open API service, which is based on cloud computing and allows hospitals to produce CDA documents without purchasing proprietary software.

Our CDA document integration technology combines numerous CDA documents per patient into a single CDA document, allowing clinicians and patients to explore clinical data chronologically. Our CDA document production and integration solution is cloud-based, and the service is available through an Open API. Developers utilizing various platforms may thus utilize our technology to improve interoperability.

Keywords: CDA, API, Patients records, Developed by HL7 Core Document

I. INTRODUCTION

It is critical in healthcare to ensure that patients can access medical treatment swiftly and securely. Out-patient services are medical facilities where patients can receive treatment without having to remain in a hospital. Effective management of these services is critical for keeping things running smoothly, safeguarding patient privacy, and ensuring data security. Real-time access control solutions can help significantly with this. They immediately offer clearance to persons who want medical assistance.

The previous method of determining who may get medical treatments was sluggish and complex. It resulted in delays, issues, and, in some cases, the disclosure of private information. Real-time access control systems are an innovative solution. They employ technology to determine who may go where in healthcare buildings and what services they can get. They do this based on factors like whether someone has an appointment, their medical requirements, and if they're permitted to come there.

These systems make use of cutting-edge technology and data tools to assist healthcare personnel in better utilizing resources, improving patient experiences, and protecting sensitive information. They employ several methods to verify who people are, such as fingerprints, unique cards, and phone applications. This allows them to ensure that only the appropriate people get access to healthcare services at the appropriate time.

Real-time access control also assists healthcare organizations in complying with data privacy and security regulations. Healthcare providers can reduce the likelihood of unauthorized individuals obtaining confidential data by using effective access control measures. This increases patients' faith in their medical information's safety.

In this article, we'll discuss why real-time access control is important for outpatient services. We'll look at how it helps, what drawbacks it may have, and how it may improve healthcare. Our objective is to demonstrate the importance of real-time access control in making healthcare safer, more efficient, and patient-centered.

II. LITERATURE SURVEY

[1].Margaret Holtz.MarkDovey, "Improving Access to Comprehensive Care for Pediatric Sickle Cell Patients through the Creation of Multi-specialty clinics" There are many barriers to healthcare for those in underserved populations such as the pediatric sickle cell population. Due to limitations of transportation, clinical availability, and lack of care coordination, pediatric sickle cell patients are at an increased risk of not receiving the extensive multi-specialty health care recommended to prevent potential sickle cell related complications that affect every organ system. A multispecialty clinic model is proposed to enhance pediatric sickle cell patient care. The model involves a needs assessment, resource analysis, and collaboration among specialists. It can be established within a hospital or independently, and offers streamlined referrals, centralized electronic health record systems, educational resources, and support groups. The approach aims to improve patient outcomes and overall well-being.

[2].David R Sullivan,NaviraSamad.,(2023) "Usefulness of functional thyroid stimulating and blocking immunoglobulin bioassays in an atypical presentation of Graves' disease"Thyroid-stimulating hormone (TSH) receptor antibody (TRAb) is well recognized as the pathogenic antibody that causes the clinical manifestation of Graves' disease (GD). Although the majority of TRAb measured in GD is due to thyroid-stimulating immunoglobulin (TSI), there are other functional classes of TRAb, ie, thyroid-blocking immunoglobulin (TBI) and neutral antibodies, which can alter the clinical course of the disease. The study aims to evaluate the effectiveness of functional bioassays for thyroid stimulating and blocking immunoglobulins in Graves' disease. It will involve adult patients and healthy controls, comparing bioassay results and symptom severity.. These tests give doctors a clear idea of what's happening in the thyroid Testing for thyroid stimulating and blocking antibodies has become really important in diagnosing unusual cases of Graves' disease.

[3]. Jonathan Shakesprere.,ShreyasShirodkar.,Adnan Haider.,RamshaShafiq. (2023) "Pellagra post-Roux- en- Y gastric bypass surgery" Micronutrient deficiencies such as pellagra are rarely seen after bariatric surgery and can be challenging to diagnose and manage. Alcohol use can precipitate nutritional deficiencies. Case report : A 51-year-old woman with a history of Roux-en-Y gastric bypass surgery who later developed an alcohol-use disorder after her diagnosis of breast cancer. A two-step approach is proposed to investigate pellagra after Roux-en-Y gastric bypass surgery. A retrospective analysis will examine electronic medical records, comparing patients with and without pellagra, and identifying risk factors. A prospective cohort study will collect baseline data and monitor patients post-surgery. The goal is to inform preventive strategies for better patient care.

[4].Michael John Marino, DO, Sara Markley Webster.(2023) "Adrenocortical Carcinoma with Cushing's Syndrome and Hyperandrogenism in a 28-Year-Old Pregnant Female" To describe a case highlighting a rare malignancy that can be camouflaged by the hormonal milieu of pregnancy. Case Report: We present the case of a 28-year-old pregnant female who was diagnosed with stage IV metastatic adrenocortical carcinoma at 15-week gestation. The patient declined palliative chemotherapy at first with the hope of continuing her pregnancy. She had elevated dehydroepiandrosterone sulfate, testosterone, and cortisol levels consistent with Cushing's syndrome and hyperandrogenism. A two-step approach is proposed to investigate pellagra after Roux-en-Y gastric bypass surgery.. Finding the issue early, doing lots of tests, and treating it fast are super important to prevent any troubles. Also, this case tells us we need more research to understand these situations better and find the best ways to help pregnant women with similar problems.

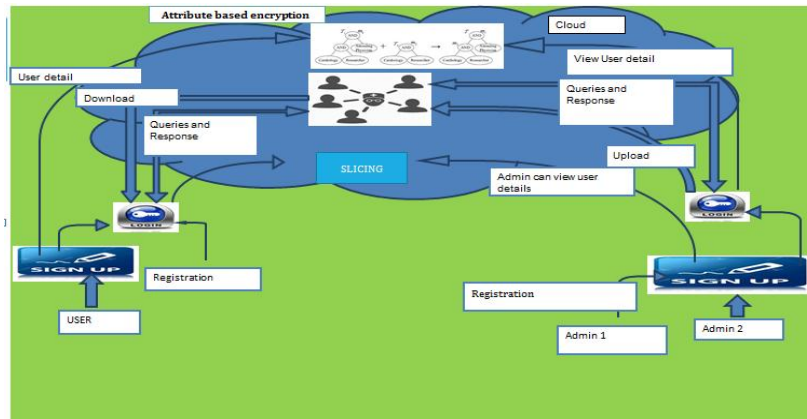
[5]. Muhammad AbulKalam,RamanathanUdayakumar(2022)"Real-Time Patient Monitoring System and Security Using Internet Protocols for Medical Industry" The objective of the project was to develop a remote health monitoring system, with local sensors available to make it affordable if mass production was to be carried out. The PMS is dependent on new bus connectivity, in particular, by using the protocol as an interior bus rather than on a standard configuration Patient control and monitoring is a vital test framework for physiological signals like electrocardiographs (ECGs), breathing rates, invasive and non-invasive circulatory strain, human blood oxygen saturation (SpO2), and body temperature .A secure real-time patient monitoring system using wearable sensors can improve healthcare by securely transmitting vital signs via HTTPS and SSH. The system uses AES-256 encryption and a central server for anonymized data stor

III. METHODOLOGY SECTION

Traditional outpatient clinics frequently encounter high wait times and poor patient flow. Real-time access control provides a solution by utilizing technology to automate the procedure. Patients are given unique appointment IDs that enable them to check in using self-service kiosks or a mobile app. The technology automatically updates their status and offers real-time wait times, increasing transparency and lowering patient dissatisfaction. Furthermore, real-time access control streamlines clinic operations. Automated room assignment based on arrival time or appointment type ensures that examination rooms are used efficiently. Electronic displays keep patients updated on their wait status, and security staff access management ensures that only authorized people contact with patients. This not only increases security, but it also frees up staff time to focus on direct patient care.

Finally, real-time access control helps both patients and clinics. Patients have reduced wait times and a more simplified experience. Clinics report better efficiency, improved security, and important data for performance analysis, resulting in a more enjoyable experience for all parties involved.

SYSTEM ARCHITECTURE



IV. EXPERIMENTAL RESULTS

Outpatient clinics frequently experience difficulties regulating patient flow, resulting in long wait times and irritation. A real-time access control system is a viable alternative for simplifying processes and improving the overall experience for both patients and employees.

This system uses technology to produce a more efficient environment. Patients can pre-register online and prove their identification upon arrival using kiosks or a smartphone app. An automated triage system assigns a preliminary urgency level, prioritising individuals that require immediate treatment. A central real-time queue management system examines wait durations, urgency, and personnel availability before dynamically altering the line order to guarantee optimal patient flow. Secure login credentials and role-based access control guarantee that only authorized personnel may access patient data, further increasing security.



Fig.1 Home Page

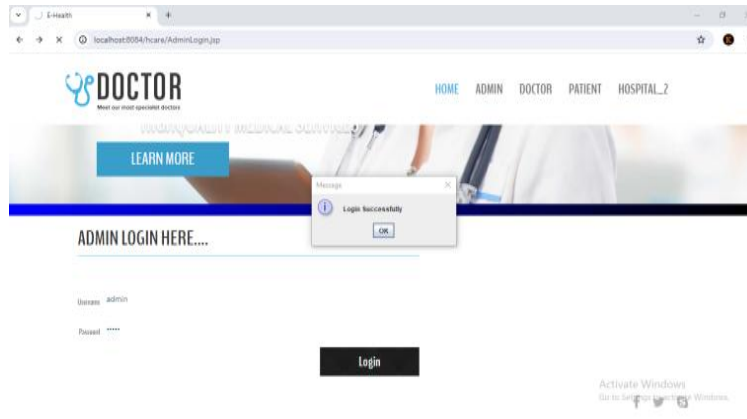


Fig.2 Admin Login

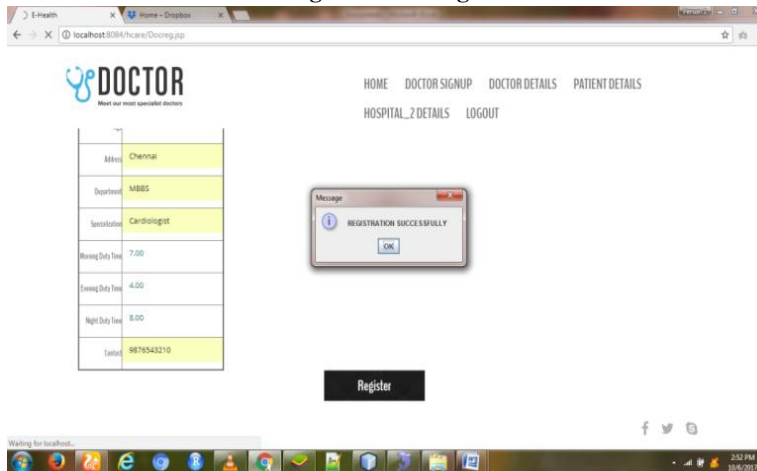


Fig. 3 Doctor Registration Page

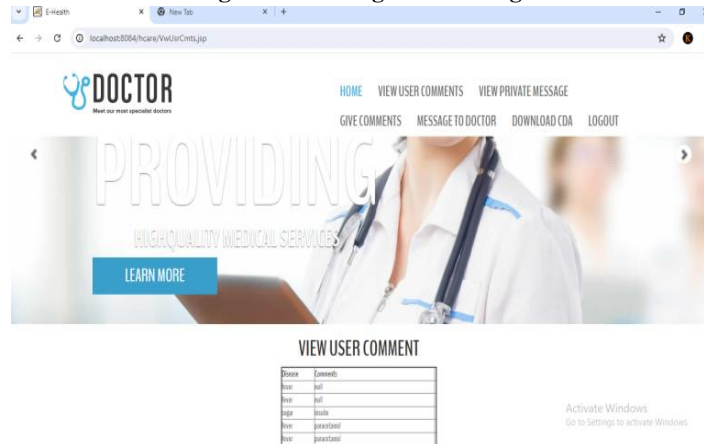


Fig.4 Patient Public Chatting

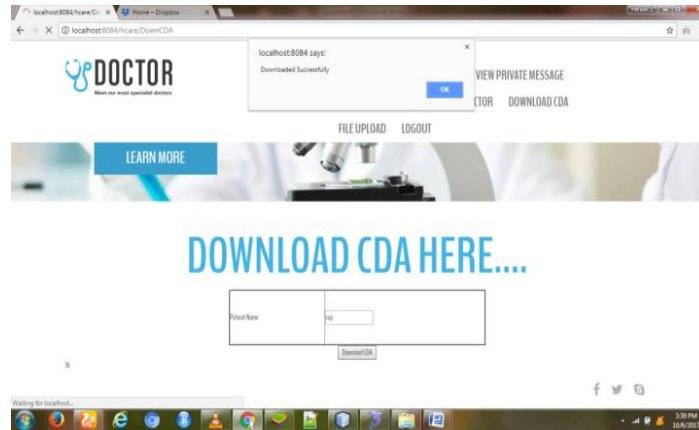


Fig.5 Download cda

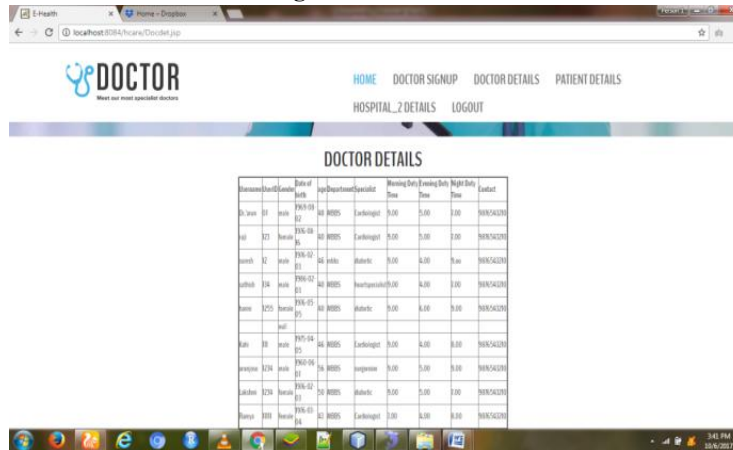


Fig.6 Admin view Doctor Details

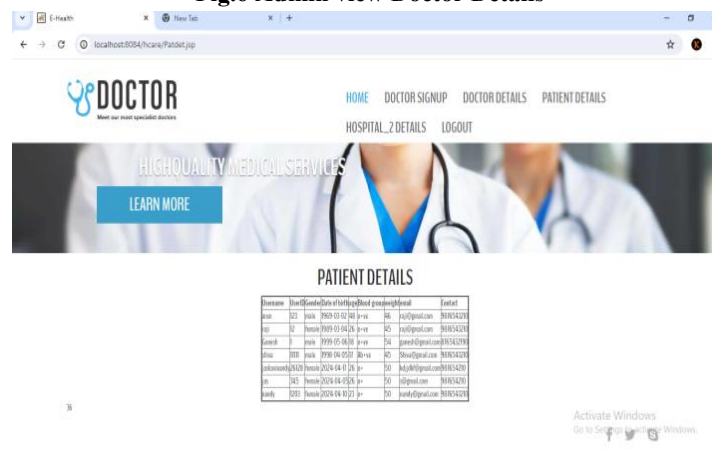


Fig.7 Admin View Patient Details

V. CONCLUSION

Finally, adopting a real-time access control system in the outpatient clinic provides tremendous benefits to both patients and healthcare staff. It streamlines patient movement, increases efficiency, and improves security. Patients appreciate shorter wait times and a better overall clinic experience. Staff can better manage patient flow, prioritise important situations, and guarantee authorized access to patient data. Additionally, real-time data enables better

resource allocation and decision-making. However, successful deployment requires addressing possible privacy concerns and providing user-friendly interfaces for both staff and patients. Overall, a real-time access control system is an important step towards creating a more efficient and secure outpatient clinic setting.

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