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Android-based Hospital Bed Availability and Management System

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ABSTRACT: One of the most important tasks in a hospital is bed management. To aid this operation, a desktop-based (PC) information technology system has been widely adopted. Because of the fixed location and limited number of available PCs shared among staff for various routine tasks, delays in bed information updating and, as a result, delays in bed management processes can occur. With the widespread use of smartphones, a mobile-based application for bed management has emerged as a viable alternative to the existing system. Smartphones have a number of advantages, including mobility, which allows users to update information from any location and at any time. The goal of this study was to see if a mobile-based application could help with bed management. Ward-based bed information visualisation, bed information updating, and ward information updating modules were included in the application. The required functions of the application were outlined through observation and interviews with expert users. The user and hospitals can both benefit from the Locate Covid Couch App. Hospitals can use the interface to update bed availability, which can then be monitored for maintenance purposes by administrators. They can also change their location using the Android app. Users who want to know if any beds are available can sign up for the app and receive updates on bed availability. They'll be able to see hospital locations within a 10-kilometer radius of their current location.

KEYWORDS: android, covid couch app, hospitals.

I. INTRODUCTION

As the human population grows, hospitals are under more pressure to provide adequate services to accommodate patients. The number of available hospital beds is one of the most important facilities in a hospital. Due to the long wait time for bed assignment to patients, limited or problematic bed capacity can result in overcrowding in outpatient departments. A common problem in hospitals is a lack of beds or ineffective bed management. Family members being unable to accompany patients home upon discharge, patients waiting for family members to collect their medications and documents, and delays in communication to the bed manager on the status of beds are some of the common factors that cause bed shortages or delays in the patient discharge process. [1].

Dealing with the bottleneck of patient allocation and bed availability in a hospital environment is one of the major issues (Ward 2004). With increased public scrutiny, health care professionals are being held to a higher standard of accountability in terms of facility management and information management. Our hospitals are at full capacity, resulting in long lines in the emergency room for available beds and other critical inpatient services (Richardson 2003). Because a bed is considered "one of the most fundamental inputs in the provision of acute health care," its availability is critical (Walsh 1998). "The purpose of this project is to create a web site and android app for hospitals and their users/patients to utilize in order to determine bed availability and allocate beds to patients in hospitals."

This project's goal is to develop a web site and application that will allow hospitals and their users/patients to check bed availability and assign beds to patients. Users can download the Android app and use it effectively anywhere and at any time, and they can easily track using the app's GPS.

A Bed Management System is being developed. Geospatial technology, in general, acquires, integrates, interprets, manages, analyses, maps, displays, and distributes geographic, temporal, and spatial information and knowledge to meet people's and organisations' planning, decision-making, and operational needs. GIS technology isn't typically associated with health-care management, but it has the potential to solve the extremely complex and difficult problems of efficient bed allocation management that adheres to relevant health-care industry protocols.

The data was displayed in a visual real-time layout with the exact location and current and future occupancy rate of each hospital bed within a room, ward, or floor using the geographical format. Attached patient records for any given



bed would be possible, allowing those with the appropriate authorization to examine them. E-Beds is also being designed to be expandable to include maintenance and other administrative information, as well as adaptable to both public and private hospital environments, regional health care organisations, and specific internal units such as mental health, obstetrics, and emergency departments.

This application has three modules: admin, hospitals, and users. A web interface allows administrators to keep track of the entire application. He can add, edit, and delete bed types from the app, as well as add, edit, and delete hospitals. He might be able to use the app to authorise patient registration requests for bed allotment. He also has access to the information about the patients, which he can view and delete. He has access to bed availability reports from all hospitals.

Hospitals can be added and given a login and password by the administrator. After they have the login id, they can log in to the system and enter the entire bed availability details in the hospital. They can also change the information on the patient's discharge. Patients can be placed in a variety of beds, including oxygen beds, intensive care units (ICU) beds, and regular beds. Patients are the application's module, and they sign up with their real names and addresses. After completing the registration process, they will be given a user name and password. They can check the availability of hospital beds using the Android app. They can reserve a hospital bed using the Android app.

II. LITERATURE SURVEY

The patient's vital signs, such as heart rate, SPO 2, NIBP, ECG, temperature, and respiration rate, are monitored using sensors and the readings are sent to the doctor, according to Roy Abizeiddaou et al [1]. The sensors can be turned on or off depending on the situation. The doctor has the option of sending prescriptions to their patients or setting up a meeting with them. When a patient's condition deteriorates, a message is sent to the doctor as well as the patient's relatives, allowing action to be taken. Bluetooth is used in this paper [1] to connect the patient to his Android system. Figure 2 depicts the system's connectivity diagram [1]. In some cases, the current vital signs of a patient are insufficient for diagnosing or treating a disease.

Maradugu Anil Kumar et al [2] proposed a system in which the doctor must know the patient's medical history. This paper describes a system that allows for the storage of patient information and aids in the continuous monitoring of health conditions. Using his smart phone or android device, the doctor can easily monitor the patient's vitals whenever and wherever he wants.

A proposed emergency alarm was proposed by Yuanyuan Du, et al[3]. Emergencies can happen at any time and in any location. Having someone to look after another person all of the time is difficult. In these situations, an emergency alarm and healthcare management system is activated. When a person's health isn't good, the sensors in this system detect abnormalities and send a message to the person's relatives as well as the doctor. In this way, the doctor can prescribe medication or give instructions on how to help the person. In situations where there are fewer emergencies, the patient can request prescriptions directly from the doctor. The life reminder system [3] that works as an alarm can be set to remind the patient about things like time for check-up, time to take regular tests, etc.

A medication reminder was proposed by DeeptiAmeta et al [4]. Patients frequently require clarifications about their disease, necessitating frequent interactions with the doctor. Patients in their later years are more likely to forget to take their medications and have regular health checks. In such cases, an android system with a variety of functions comes in handy [4]. The system in question features an automatic alarm ringing system that aids in dosage scheduling. A message with the time, date, and medicine description will be sent to the patient via email or text message. Users can connect with a doctor based on their disease, as well as read articles about the disease and receive health advice. As a result, the system provides patients with healthcare advice throughout the day.

III. PROPOSED METHOD

It's possible that the user will need to isolate at times, such as during a pandemic like covid-19. The lack of beds in hospitals is a major concern. Because no one knows how many hospital beds are available, people must go to the hospitals to look for them. It is impossible to manually roam every hospital in a pandemic situation in order to find a bed. The Android mobile web application framework was developed with the goal of assisting hospitals in locating beds. The goal of this app is to help people make plans for locating hospital beds in their area. The improved user interface made it easier to use for regular people. Users can quickly determine whether or not beds are available by using our software on their Android phone.

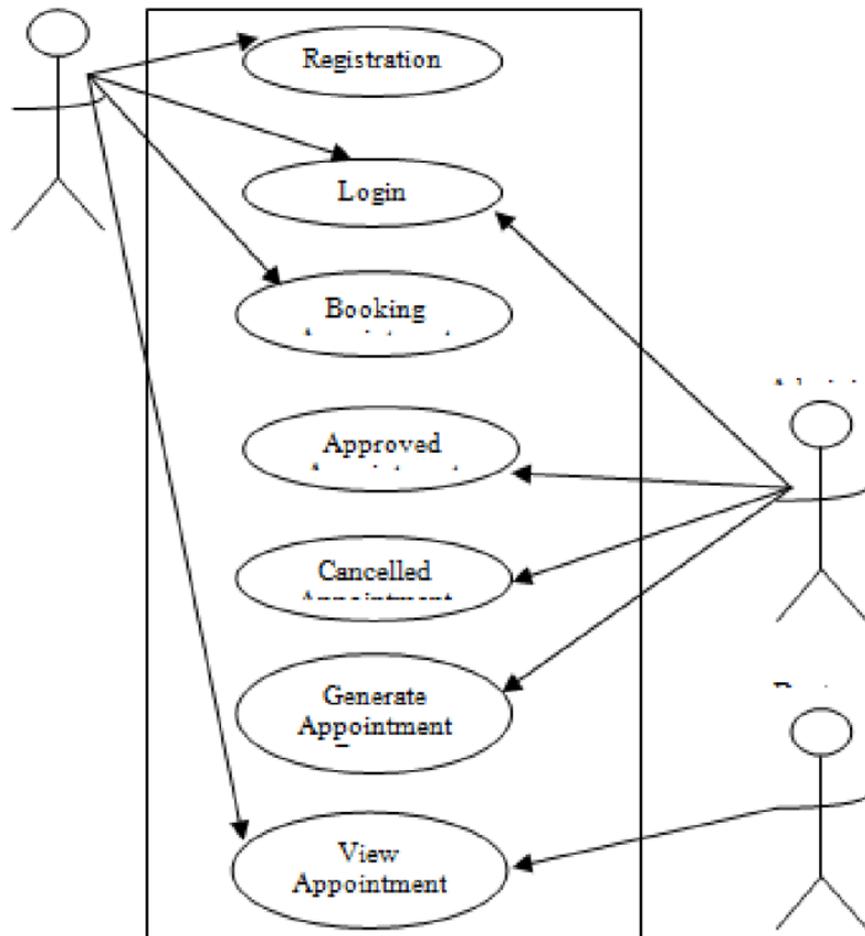


Figure: Flow of the model

V. CONCLUSION

This project will be developed in ASP.NET 2010, Android Studio, and SQL-Server 2008, and it will be implemented as a web-based application and an Android app. Faster execution, user satisfaction, and timely and accurate information have all become essential pre-requisites in today's competitive world. Web-based applications are becoming more common, so this code was written with that in mind.

The goal of this project was to make life easier for people with health issues, especially those who were affected by the COVID-19 epidemic. In this case, the hospital does not have enough bed capacity or availability. It takes time to learn the facts about hospital bed availability. Using their Android phone, users can quickly find the availability of beds at hospitals using the suggested app. ASP.NET, SQL Server, and Android were used to create this application.

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