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A HOSPITAL MANAGEMENT SYSTEM

JESHVEEN
B.Tech(AI&ML)
School of Engineering
Hyderabad, India
2111CS020187@mallareddyuniversity.ac.in

JAYAPRAKASH.M
B.Tech(AI&ML)
School of Engineering
Hyderabad, India
2111CS020188@mallareddyuniversity.ac.in

JAYAPRAKASH.T
B.Tech(AI&ML)
School of Engineering
Hyderabad, India
2111CS020189@mallareddyuniversity.ac.in

JEEVANI.D
B.Tech(AI&ML)
School of Engineering
Hyderabad, India
2111CS020190@mallareddyuniversity.ac.in

JOEL SASTRY.P
B.Tech(AI&ML)
School of Engineering
Hyderabad, India
2111CS020191@mallareddyuniversity.ac.in

JAYASREE.K
B.Tech(AI&ML)
School of Engineering
Hyderabad, India
2111CS020192mallareddyuniversity.ac.in

Guide: R.Karthik
Professor
School of Engineering,
Malla Reddy University.

***Abstract*:** The project aims to develop a web application using Python and Django to manage the work of a hospital. The application will provide an interface to create a doctor's account and add records of all the details of the patient. The primary objective of the system is to provide an easy way to access and search for patient records. The healthcare industry generates a vast amount of data that needs to be managed efficiently. Hospitals need to manage patient records accurately to ensure that they provide high-quality care. The traditional paper-based system can be time-consuming and prone to errors. Therefore, there is a need for a digital system that can store, manage and access patient records. The proposed system will enable hospitals to manage patient records efficiently. The system will store patient details such as name, age, gender, medical history, current medication, and diagnosis. The doctors can access this information from any device with an internet connection, making it easy to view and update patient records remotely. The system will have authentication and authorization features, ensuring that only authorized personnel can access patient records. The proposed system's benefits include the ease of access to patient records, improved accuracy, and reduction of paperwork. The digital system will make it easier for doctors to collaborate and share patient records. The system will ensure that patient records are always up-to-date and accurate, reducing the risk of errors and improving patient safety. In conclusion, the proposed system will provide an efficient and secure way to manage patient records. The digital system will make it easier for doctors to collaborate and share patient records. The system will ensure that patient records are always up-to-date and accurate, reducing the risk of errors and improving patient safety. The proposed system is an essential tool for any hospital that wants to provide high-quality care to their patients.

I. INTRODUCTION

A hospital management system (HMS) is a software application that streamlines the day-to-day operations of a hospital or medical center. The primary goal of an HMS is to simplify administrative tasks, enhance patient care, and increase operational efficiency. With an HMS in place, hospitals can automate many of their manual processes, including appointment scheduling, patient records management, inventory management, billing, and reporting. The development of an HMS is a complex and challenging task, requiring a deep understanding of the healthcare industry, as well as expertise in software development. The system must be designed to meet the specific needs of the hospital, taking into account factors such as the number of patients, the size of the staff, and the types of medical services offered. The benefits of implementing an HMS are numerous. By automating routine tasks, hospital staff can focus on providing better care to patients. The system can also improve the accuracy of patient records, reduce errors, and facilitate communication between staff members. In addition, an HMS can generate valuable insights and reports, helping hospital

administrators make informed decisions about resource allocation and other key areas.

II. PROBLEM STATEMENT

This project is aimed to automate the hospital management system. The purpose of the project entitled as HOSPITAL MANAGEMENT SYSTEM is to computerize the Front Office Management of Hospital to develop software which is user friendly, simple, fast, and cost effective. It deals with the collection of patient s information, diagnosis details, etc. Traditionally, it was done manually. The main function of the system is to register and store patient details and doctor details and retrieve these details as and when required, and also to manipulate these details meaningfully. This function of Hospital Management Information System deals with registering the new Patient by giving unique Identification Number to the Patient. This number is unique throughout the System for identifying the patient. Simultaneous update and changes are made to the databases. Identification number is also provided to doctor to retrieve and to change doctor details. The software is used by administrator or receptionist in the hospital. The software is secured by username and password, accessed by administrator or receptionist of the hospital.

III. LITERATURE REVIEW

One of the major challenges existing hospital management systems face is around operational efficiency and wait times between different processes, departments and persons. This paper highlights such limitations of existing systems and proposes a RFID(Radio Frequency ID) and wireless sensor based , location and information management framework that facilitates real time tracking of hospital assets, personnel and patients as they move through pre-set procedures as part of daily activities of the hospitals. The system covers the visual simulation and providing ability to analyse the ongoing operations so they can be corrected to achieve increased process efficiency and service levels. This paper reviews the HIS (Hospital Information Systems) which are widely used in many hospitals in China mainly to provide easier and faster way for daily medical tasks /activities with a GUI And provides for overcoming some of the limitations of HIS , eg. HIS aims at improving quality of health care services but do not have way of evaluating /measuring those. So this paper proposes HSMS (Hospital Services Management System) which aims at improving quality of services, identifying cost reduction areas , analyses and evaluate /rate heath care services . The ability to evaluate the services facilitates hospital achieve higher Customer satisfaction scores and get a competitive edge against those hospitals which score less or use HIS and do not have ways of promoting the quality of their services.

IV. REQUIRED TOOLS

- Visual Studio Code
- Python
- Html, CSS, Java script

V. METHODOLOGY

In approaching the task of evaluating patient safety indicators based on administrative data, we developed a conceptual framework and standardized definitions of commonly used terms. In the literature, the distinctions between medical error, adverse events, complications of care, and other terms pertinent to patient safety are not well established and are often used interchangeably. In this report, the terms medical error, adverse events or complications, and similar concepts are defined as follows:

- **Quality:** “Quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.” In this definition, “the term *health services* refers to a wide array of services that affect health...(and) applies to many types of health care practitioners (physicians, nurses, and various other health professionals) and to all settings of care...”[4]

- **Quality indicators:** Screening tools for the purpose of identifying potential areas of concern regarding the quality of clinical care. For the purpose of this report, we focus on indicators that reflect the quality of care inside hospitals. Quality indicators may assess any of the four system components of health care quality, including patient safety (see below), effectiveness (i.e., "providing services based on scientific knowledge to all who could benefit, and refraining from providing services to those not likely to benefit), patient centeredness, and timeliness (i.e., “minimizing unnecessary delays”).[4]

- **Patient safety:** “Freedom from accidental injury,” or “avoiding injuries or harm to patients from care that is intended to help them.” Ensuring patient safety “involves the establishment of operational systems and processes that minimize the likelihood of errors and maximizes the likelihood of intercepting them when they occur.” [5]

- **Patient safety indicators:** Specific quality indicators which also reflect the quality of care inside hospitals, but focus on aspects of patient safety. Specifically, PSIs screen for problems that

patients experience as a result of exposure to the healthcare system, and that are likely amenable to prevention by changes at the system or provider level.

- **Medical error:** "The failure of a planned action to be completed as intended (i.e., error of execution) or the use of a wrong plan to achieve an aim (i.e., error of planning)."[1] The definition includes errors committed by any individual, or set of individuals, working in a health care organization.
- **Complication or adverse event:** "An injury caused by medical management rather than by the underlying disease or condition of the patient."[6] In general, adverse events prolong the hospitalization, produce a disability at the time of discharge, or both. Used in this report, complication does not refer to the sequelae of diseases, such as neuropathy as a "complication" of diabetes. Throughout the report, "sequelae" is used to refer to these conditions.
- **Preventable adverse event:** An adverse event attributable to error is a "preventable adverse event."[6] A condition for which reasonable steps may reduce (but not necessarily eliminate) the risk of that complication occurring.
- **Case finding indicators:** Indicators for which the primary purpose is to identify specific cases in which a medical error *may* have occurred, for further investigation.
- **Rate based indicators:** Indicators for which the primary purpose is to identify the rate of a complication rather than to identify specific cases

VI. EXPERIMENT RESULTS

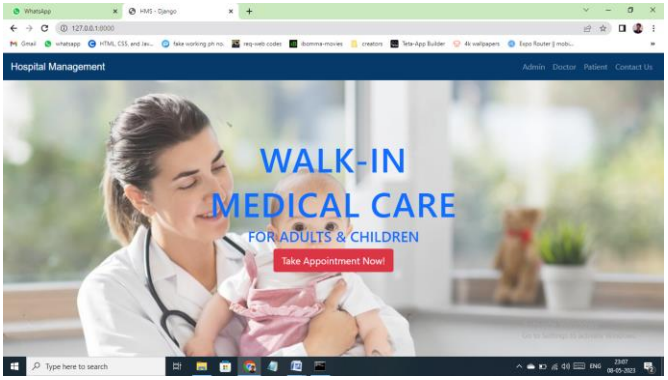

Fig: Home page

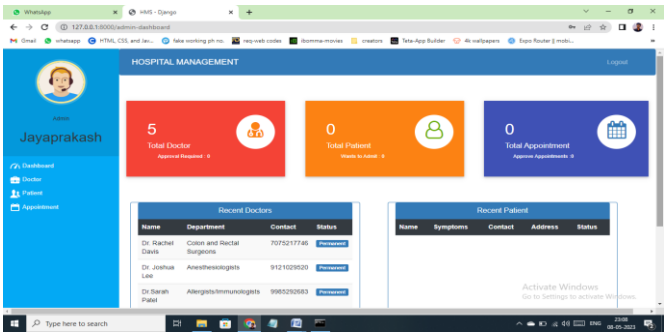

Fig: Dashboard

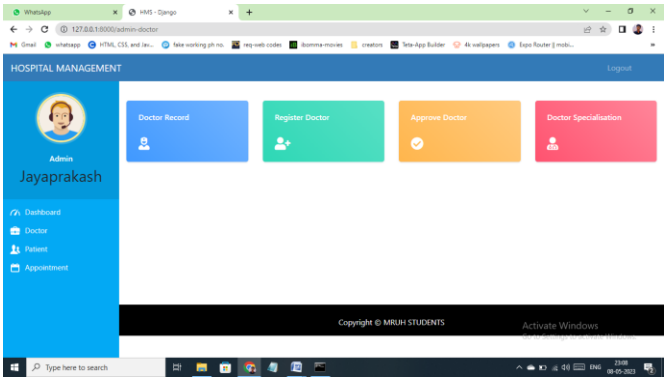

Fig :Doctor's page

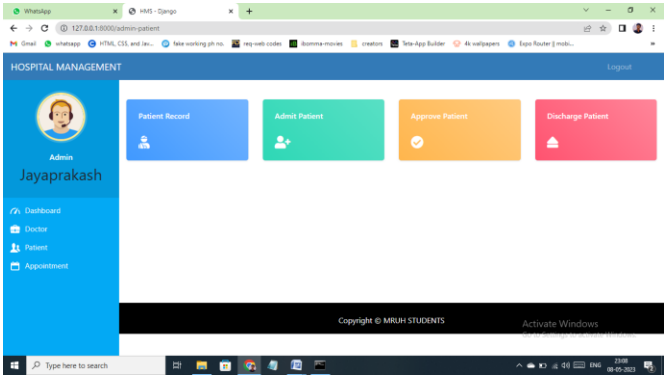

Fig: Patient's page

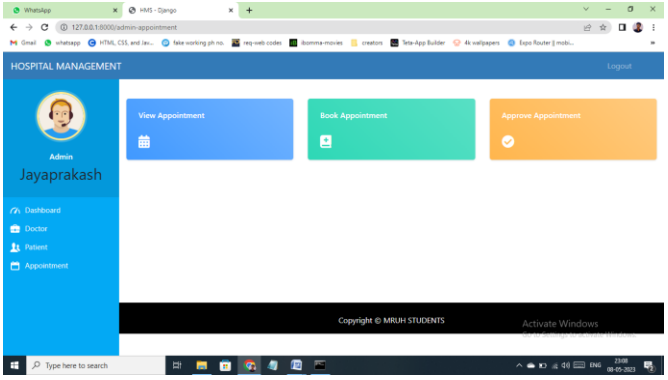

Fig: Appointment page

VII. PROPOSED SYSTEM

This platform allows hospitals to manage patient care, clinical operations, and administrative processes efficiently. It will offer features such as patient management, appointment scheduling, electronic medical records (EMR), billing and payment management, inventory management, doctor management, reporting and analytics, and security and privacy measures. The system will run on a server and be accessible through a web browser, with appropriate security measures in place to protect patient data. It will be designed to be user-friendly, customizable, and easily integrated with other healthcare systems. Overall, the proposed system will provide hospitals with a streamlined and efficient way to manage

VIII. ARCHITECTURE DIAGRAM FOR PROPOSED METHOD

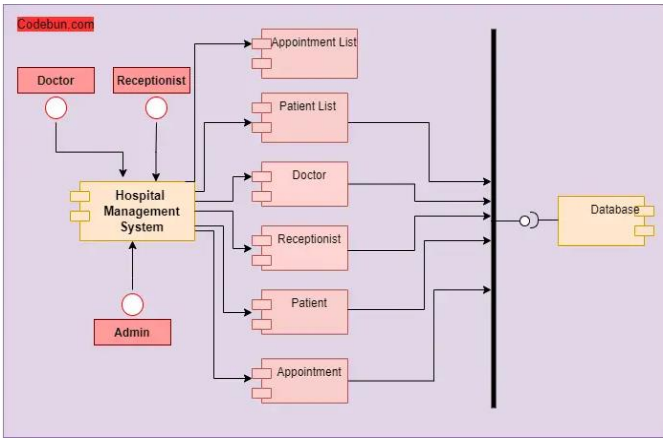

Fig: Architecture

IX. CONCLUSION:

In conclusion, the Hospital Management System (HMS) application is a game-changer in the healthcare industry. By leveraging technology to automate and streamline hospital operations, it brings significant benefits to both patients and healthcare providers. From simplifying administrative tasks to improving communication and collaboration among healthcare professionals, the HMS application enhances the overall efficiency and quality of healthcare delivery. With features like appointment scheduling, electronic medical records, and efficient financial management, hospitals can optimize resources, reduce errors, and provide timely and effective care to patients. As technology continues to advance, the HMS application will play a crucial role in transforming hospitals into more efficient and patient-centric healthcare organizations.

X. FUTURE ENHANCEMENT

This system may yet be able to develop further in the future. The system seems to like that the business can archive a lot of data by supporting IOT devices. For instance, using a QR code for every booking can help patients save a lot of time. Tracking medical consultants digitally. The development of this industry can be aided even more by proper space management employing sensors. The inclusion of a feedback component in the system enables users to submit suggestions for improvement. That improves the system even further. There are just five basic modules in the system as it is now created, but adding more modules like supply management, facility management, billing management, and operating theater management allows the system to be even better.

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