

MEDICE LAB: Custom Hospital Automation In-House Application

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Abstract - The MEDICE LAB application is a web-based application. It deals with the day-to-day operations and management of the hospital. This department is responsible for inpatients, outpatients, records, database treatments, pharmacy billing, and lab billing. It also keeps track of patient information, staff information, room and ward scheduling, and ambulance information and etc.

Key Words Operations, Management, Pharmacy Billing, track.

1. INTRODUCTION

The MEDICE LAB is a computer software system that is used to manage a hospital's operations and activities. I created the MEDICE LAB application for hospital to manage hospital data such as doctors' information, rooms' information, patients' information, bill information, and patient payment information, among other things. The MEDICE LAB project was created to keep track and manage patient records.

MEDICE LAB is intended to replace any hospital's existing manual paper-based system. The MEDICE LAB project contains patient registration, data storage in the system, and computerized billing in the pharmacy and labs. The goal of the "MEDICE LAB" project is to computerize the hospital's front office management and produce software that is user-friendly, rapid, and cost-effective.

The acquisition, management, and timely retrieval of large amounts of data are all important aspects of any hospital's operation. Patient information and medical history, staff details, room and ward scheduling, staff scheduling, operating theatre scheduling, and various facility waiting lists are all examples of this information

2. LITERATURE REVIEW

Hospitals currently use a manual approach to handle and maintain essential data. The existing procedure need number of paper forms. In the hospital, there are multiple copies of the same data, which might lead to data inconsistencies in various data storage.

2.1 Disadvantages or limitations

- Lot of paper work
- Time consuming
- Lack of protection

3. PROPOSED METHOD

Hospital can use MEDICE LAB to replace their present manual paper-based system. This system is used to keep track of patient information, patient invoices, room availability, staff and ward room schedules. These services must be delivered in a timely and cost-effective manner, with the goal of saving time and money.

3.1 Advantages of proposed System

- Low cost
- Reduce human effort
- Maintain accuracy
- Fast and effective

3.2 Front-end Development

HTML and CSS were used to create the front page. The language used to create application web pages is called hypertext tagging language. The page is a static HTML document that is stored on a web server. Cascading Style Sheets were used to accomplish this (CSS). CSS is a style sheet language that describes a document's appearance and format. Class files are related to these CSS files. On web pages, we're employing DJANGO FRAME WORK for this project.

3.3 Back-End Development

For the retrospective procedure in this paper, we employ PYTHON technology. We sometimes need to do many operations while using Python logics. Back-end backup support is provided via the Database Management System. A database management system is software that

allows an administrator to create a website, as well as add, delete, change, and update tables.

Tables can carry a variety of data, such as total numbers, changeable characters, and so on. We choose SQL SERVER to host the site in our application. The main reason is that the SQL SERVER development project has released its source code under the General Public License (GNU), which is an open source web application.

3.4 Database Design

Website design is one of the most significant and difficult undertakings. When a patient or user registers on the site, the information they provide is saved on the site. The website stores the information in database. In addition, patient retrieve his data easily and fast. As a result, the system is inextricably linked to the website.

4. UML DIAGRAMS AND MODULES

UML is an acronym for "Unified Modeling Language." UML is a standardized general-purpose modeling language. The last aim is for UML to come to be a popular for modeling object-oriented laptop software.

UML has two important elements in its modern-day form: a meta-model and a notation. Some kind of approach or system might also be brought to, or associated with, UML in the future. The Unified Modelling Language (UML) is a popular language for describing, visualizing, constructing, and documenting software program device artefacts, as nicely as commercial enterprise modeling and different non-software systems.

The UML is a collection of first-rate engineering practices modelling large and complicated constructions that have been validated to work. A use case format is a shape of behavioral diagram genuine by and derived from a Use-case comparison in the Unified Modelling Language (UML). Its purpose is to grant a graphical illustration of a system's overall performance in phrases of actors, goals (expressed as use cases), and any dependencies between these use cases. A use case diagram's primary cause is to factor out which system elements are carried out for which actor. The roles of the system's actors can be shown.

4.1 Use Case Diagram

A use case diagram's principal aim is to indicate which system functions are performed for which actor. The Use Case diagram is shows in Fig 1.

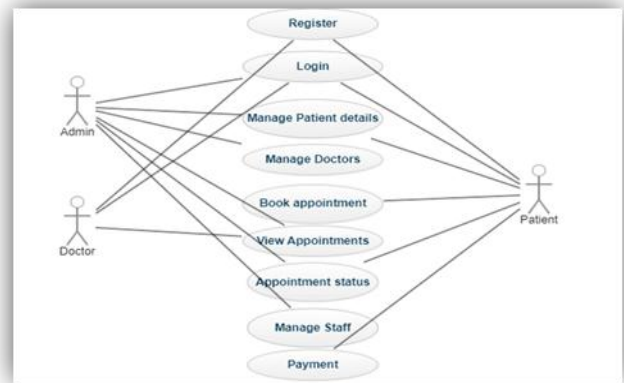


Fig 1- Use Case Diagram

4.2 Sequence Diagram

A sequence format in Unified Modeling Language (UML) is a variety of interplay plan that suggests how procedures function with one some other and in what order. The Sequence Case diagram is shows in Fig 2.

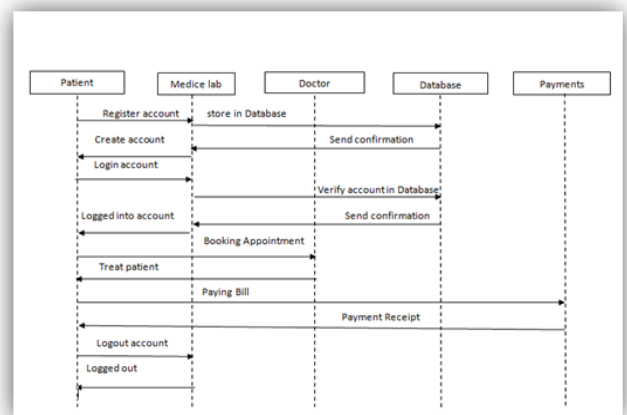


Fig 2- Sequence Diagram

4.3 Activity Diagram

Activity diagrams are graphical representations of workflows of stepwise things to do and actions. The Activity diagram is shows in Fig 3.

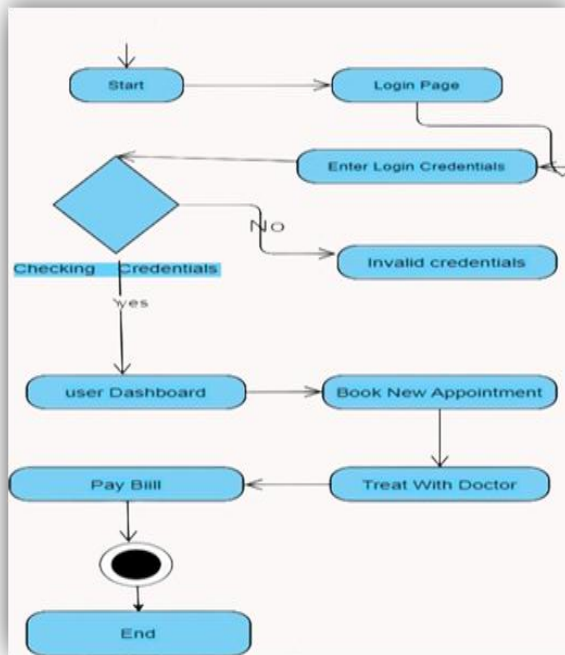


Fig 3- Activity Diagram

The main modules in this project are:

- Admin
 - Patient
 - Doctor
 - Nurse
 - Pharmacy
- **Admin:** Admin can manage hospital departments, users, doctors, and other personnel, as well as keep track of doctor appointments. Bed, ward status, and so on.
 - **Patient:** Check your appointment schedule and status with your providers. Examine the medication prescribed by the doctor. Check out the list of doctors.
 - **Doctor:** Check your appointment schedule and status with doctors. View a list of doctors and their medications.
 - **Nurse:** Manage patients, open and update accounts, assign beds and wards for patients.
 - **Pharmacy:** Maintaining medicine, keeping records of hospital stock medicines and their status

4.4 Class Diagram

The Class Diagram depicts a series of classes, interfaces, and collaborations, as nicely as their connections. Each block consists of the following information: Class Name, Variables, and Methods. The sample Class diagram is shows in Fig 4.

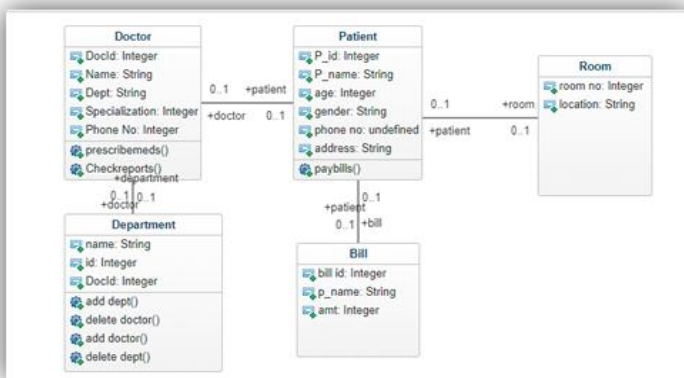


Fig 4 - Class Diagram

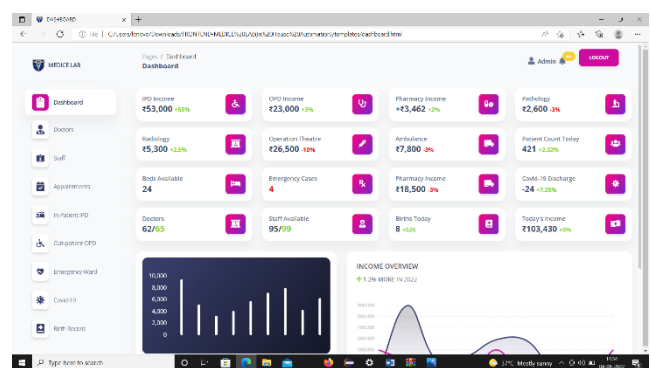
4.5 Module Description

- Module is a logical separation of a functionality within a project.
- Module provides criteria to self-evaluate the development of a project. It includes planning, design and construction.

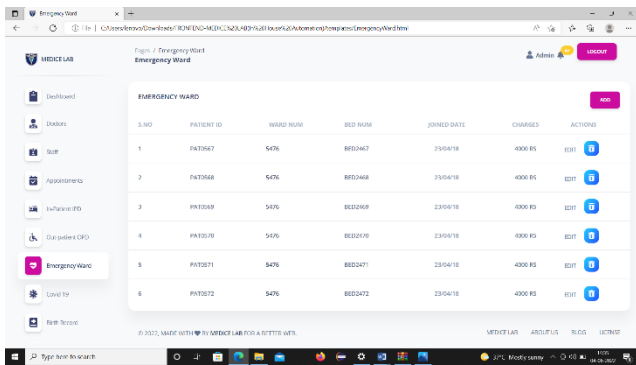
5. IMPLEMENTATION AND RESULTS

Python, HTML, CSS and Java Script are used to implement the MEDICE LAB. Results are showed below.

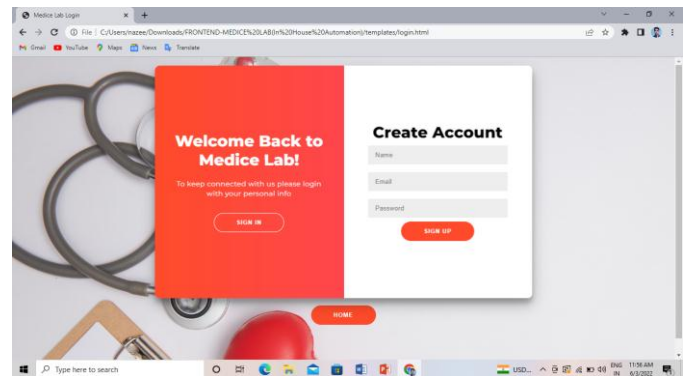
5.1 Results



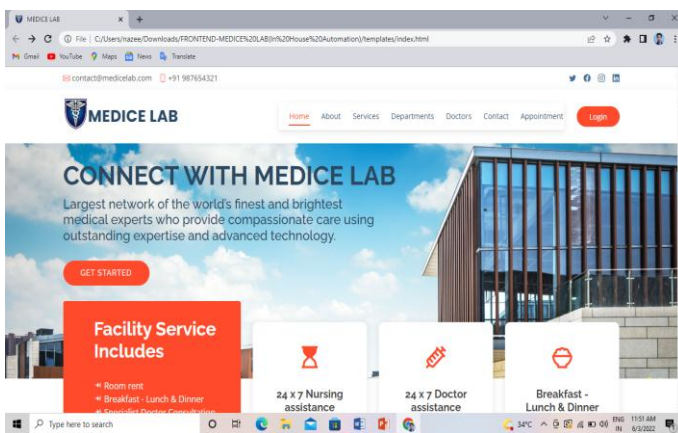
Screenshot 1 - Dashboard



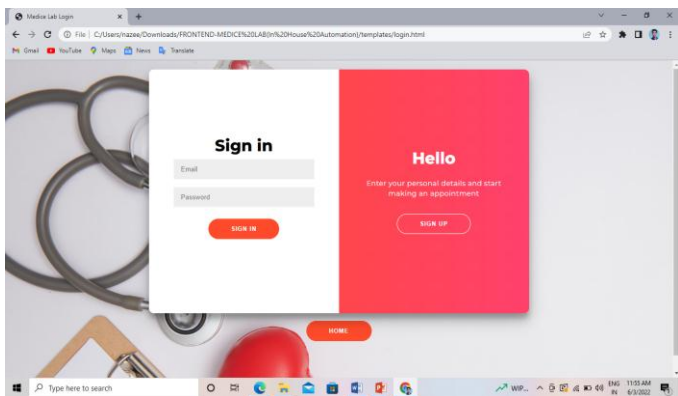
Screenshot 2 – Emergency Ward



Screenshot 5 – Sign Up



Screenshot 3 – Home Page



Screenshot 4 – Sign in Page

6. CONCLUSION

Website design is one of the most significant and difficult undertakings. When a Patient or user registers on the site, the information they provide is saved on the site. In addition, Search option is available, patient can search and see the current state of doctors. Doctor can also check the appointments. As a result, the system is completely linked to the website.

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