

HOSPITAL MANAGEMENT SYSTEM

**A PROJECT REPORT
for
Mini Project (KCA353)
Session (2023-24)**

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**Under the Supervision of
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Submitted to

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CERTIFICATE

It is to Certified that **DEEPAKASH GAUTAM, HARISH KUMAR SHARMA** has/ have carried out the project work having “**HOSPITAL MANAGEMENT SYSTEM**” (**Mini Project-KCA353**) for **Master of Computer Application** from Dr. A.P.J. Abdul Kalam Technical University (AKTU) (formerly UPTU), Lucknow under my supervision. The project report embodies original work, and studies are carried out by the student himself/herself and the contents of the project report do not form the basis for the award of any other degree to the candidate or to anybody else from this or any other University/Institution.

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This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

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ABSTRACT

Our Project Hospital Management System stores the details of patients, doctors and give them their unique id Our software has the facility to give a unique id for every patient and stores the details of every patient and the staff automatically. User can search availability of a doctor and the details of a patient using the id. the Hospital Management System can be entered using a username and password.

It is accessible either by an administrator or receptionist. only they can add data into the database. The data can be retrieved easily. The interface is very user-friendly. The data are well protected for personal use and makes the data processing very fast.

Mrs. SHALIKA ARORA
Associate Professor

Signature

Date:

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CHAPTER 1

PROJECT AND BACKGROUND

1.1 INTRODUCTION

A HOSPITAL MANAGEMENT SYSTEM is a computerized management system. This management system has been developed to form whole management system including Doctors (consultants), Patients , and Diagnosis etc. This system also keeps the records of hardware assets besides software of this organization.

The proposed system will keep a track of Doctor, Patients, and generation of report regarding the present status. This project has based software that will help in storing, updating and retrieving the information through various user-friendly menu-driven modules .With the advent of 21st century, Health care has become an Industry having tremendous potential. This century witnessed a giant leap in information technology Computers are not only used to diagnose the illness or for doing surgery with one hundred percent accuracy , but also they are used to increase the efficiency in all fields ranging from fixing the appointment with the Doctor to keeping the record of the Patient. Software application can provide solution and services for the global health care Industry By using the cutting edge technologies, Hospital Management can be improved with efficient work flow and communication. Any time anywhere facilities of the **INTERNET** have helped the Medical fields to integrate into a single unit .

Since, here we are trying to recommend books to users based on their past purchases or ratings the user gave previously, we are basically trying different models like Popularity based recommender system, Collaborative Filtering based recommender system (user-item or item-item) etc. We will be using the Popularity based recommender system to deal with the cold start problem, where we do not have history of past purchases of a particular

user or where the user is totally new. Various Hospitals across the globe can be connected together. They can share information and even services.

1.2 LITERATURE REVIEW

Due to digital INDIA, we have to connect every field with the digital India, we have to provide an online platform in the field of finding a trainer. It will provide the searching facilities based on various factors such as trainers. Different trainers who provide such facilities can also be the part of the portal. It will provide a better user experience with responsive design, it's a lot easier and cheaper to make a system user friendly across multiple platforms and various screen sizes. The application is reduced as much as possible to avoid errors while entering the data. It also provides an error message while entering invalid data. It also restricts unauthorized access because while a trainer is registering, they need to provide a certificate which later on an admin will verify then only a trainer can login into this portal. This by this all it provides it is user friendly.

This is basically a Web portal where a user can search Trainers for any hobby very easily. On this portal different trainers who provide these kinds of services will get registered to post their details along with the certificate and a user can see the details and can avail the services according to his/ her needs.

1.3 ADVANTAGES AND DISADVANTAGES

Advantages:

- The system automates the manual procedure of managing hospital activities.

- Doctors can view their patients' treatment records and details easily.
- The system is convenient and flexible to be used.
- It saves their time, efforts, money and resources.

Disadvantages:

- Requires large database.

- The admin has to manually keep updating the information by entering the details in the system.
- Need Internet connection.

1.4 RESULTS AND DISCUSSION

The IT system has revolutionized the field of medicine. In this fast-paced world of medicine, it is a daunting task to manage a multi-specialty hospital. A hospital management system (HMS) is a computer or based system that facilitates managing the functioning of the hospital or any medical set up. the HMS takes care of all the requirements of the hospitals and can provide easy and effective storage of information related to patients who come to the hospital for better patient care service. It is a complete hospital suite serving all functional areas of the hospital. It covers the cycle of hospital workflow from appointment.

1.5 OBJECTIVE

Hospital information systems provide a common source of information about a patient's health history and doctors schedule timing The system has to keep data in a secure place and controls who can reach the data in certain circumstances.

The main objectives of the best hospital management system are:

- Computerize all the details of the patient and hospital
- Appointment scheduling of patients with doctors for mutual convenience
- To perform automation of workflows
- Secure hospital data and enhance retrievability as it contains sensitive information related to patients, staff, and hospital
- Design a system to improve patient experience
- Reduce operational costs of hospitals
- Provide reports and analytics for management anytime for better decision making
- Connect all departments on a single platform and bring in better coordination across.
- Provide the administration with a single point to retrieve any data
- Handle activities of all departments in a hospital like a pro:
 - Reception desk
 - Front Office/OPD Management
 - Patient management (scheduling, registration, and IPD management)
 - Patient care management (pathology labs)
 - Labs and radiology department
 - Billing department

- Pharmacy/ Medical stores
- Financial Accounting (billing, accounts payable/receivable, payroll, and general ledger)
- Insurance processing
- Inventory management
- Facility management
- Payroll

1.6 SCOPE

The scope of a hospital management system (HMS) is extensive, covering various aspects of hospital operations. An HMS typically includes functionalities like patient registration, appointment scheduling, electronic medical records (EMR), billing, inventory management, pharmacy management, and laboratory management. It may also incorporate features for medical imaging, telemedicine, reporting and analytics, and integration with external systems like insurance providers and laboratories. The scope of an HMS is to automate and streamline administrative and clinical processes, improve patient care coordination, enhance data security and accuracy, optimize resource utilization, and provide valuable insights for decision-making. The scope of an HMS can be customized based on the specific needs and requirements of the hospital implementing it.

CHAPTER – 2

CONTENT, TECHNIQUE AND

SOFTWARE REQUIREMENT SPECIFICATIONS

2.1 RESEARCH METHODOLOGY

The hospital management system will be created in two stages: first, a database will be created; next, the interface will be customized; finally, the interface will be programmed, and certain codes will be written. Learn from current systems and adapt from them for a better result. After thoroughly researching the current system, the development team were able to determine its benefits and shortcomings and find ways to address the latter. The five primary modules of the solution system were released. These include managing appointments, managing pharmacies, managing healthcare programs, and managing doctors development team used several react packages like material UI , React Bootstrap , tailwind CSS and anti designs. Backend is developed using node is. While implementing the backend developers focused on security, authorization, validation, authentication, and performance. To achieve those developers, use several packages like package validator, crypted etc. All the inserted data are stored and managed by a non-relational database. Data administration team have chosen Mongo DB With a scale-out design, manage massive amounts of data quickly. Allow for simple field and schema modifications and the storage of unstructured, semi structured, and structured data. All the inserted data are stored and managed by a nonrelational database. Administration team have chosen Mongo DB With a scale-out design, manage massive amounts of data quickly. Allow for simple field and schema modifications and STORAGE OF UNSTRUCTURED, SEMI-STRUCTURED, AND STRUCTURED data. The database was design in an efficient manner to manage patient information, doctors' information, Lab test information, medical program information and drug information. This information is used by the system user when it is necessary. This system has ease of usability and making required appointments quickly.

2.2 FEATURES AND RESEARCH OUTCOMES

- HMS - IMPROVED QUALITY OF CARE
- HMS - INCREASED EFFICIENCY
- HMS - IMPROVED COMMUNICATION
- HMS - COST-EFFECTIVE SOLUTION
- HMS - ENHANCED SECURITY
- HMS - DATA ANALYTICS
- HMS ENABLES TELEHEALTH/TELEMEDICINE
- COMPLIANCE WITH REGULATIONS

For those who adopt HMS solutions whether they are hospitals or any Healthcare Industry like college, clinic or institute. This software helps to increase patient satisfaction, improve outcomes and comply with regulations. HMS provides a platform for Healthcare Industries to manage patient records, Hospital Administration, Ancillary Services, clinical support, Interface, Decision support and Financial Accounting.

2.3 SYSTEM INTERFACES

User Interfaces

- It also gives a description of the hardware, software and communication interfaces and provides basic prototypes of the user interface.

Hardware Interfaces

- **Laptop/Desktop PC**-Purpose of this is to give information when Patients ask information about doctors, medicine available lab tests etc. To perform such Action it need very efficient computer otherwise due to that reason patients have to wait for a long time to get what they ask for.
- **Wi-Fi router** - Wi-Fi router is used to for internetwork operations inside of a hospital and simply data transmission from pc's to sever.

Software Interfaces

- **My-SQL server** - Database connectivity and management
- **OS Windows** - Very user friendly and common OS ▪ JRE 1.8 - JAVA Runtime Environment for run Java Application and System.

System Specifications

❖ **H/W Requirement**

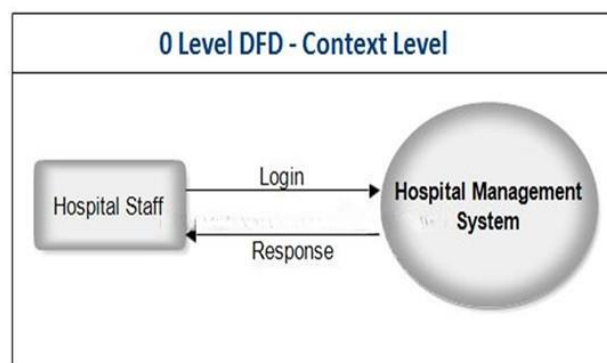
- Core i3 processor
- 2GB Ram.
- 20GB of hard disk space in terminal machines

❖ **S/W Requirement**

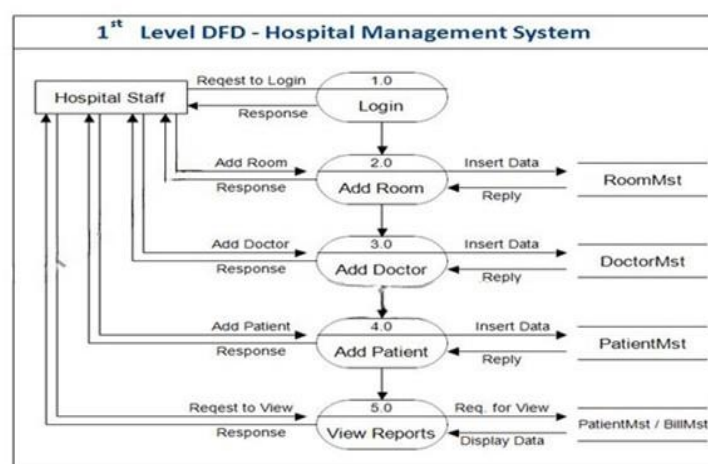
- Windows 11 operating system
- My-SQL Server

2.4_DATA FLOW DIAGRAM(DFD)

- CONTEXT LEVEL DIAGRAM

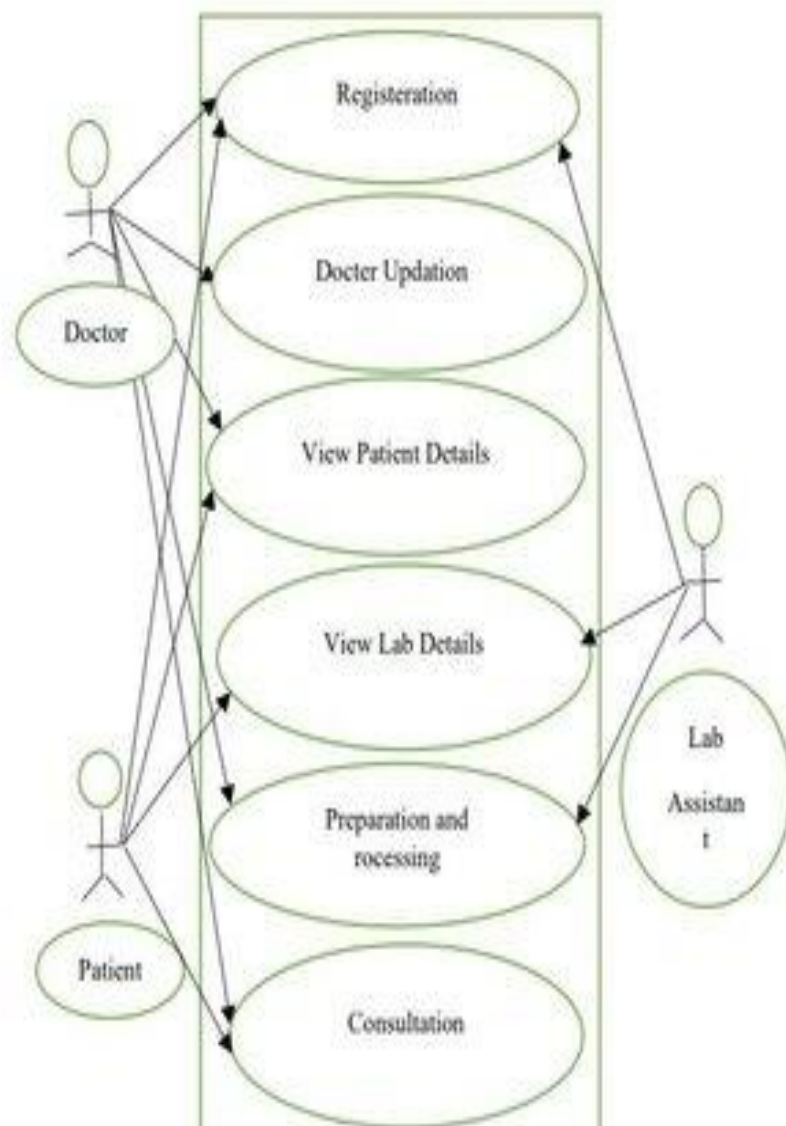


0 LEVEL CONTEXT LEVEL DIAGRAM



1ST LEVEL CONTEXT LEVEL DIAGRAM

2.5_USE CASE DIAGRAM



(USE CASE DIAGRAM OR UML DIAGRAM FOR HOSPITAL MANAGEMENT SYSTEM)

CHAPTER-3

SYSTEM REQUIREMENTS AND SPECIFICATION

3.1 System Requirement Specification:

System Requirement Specification (SRS) is a fundamental document, which forms the foundation of the software development process. The System Requirements Specification (SRS) document describes all data, functional and behavioral requirements of the software under production or development. An SRS is basically an organization's understanding (in writing) of a customer or potential client's system requirements and dependencies at a particular point in time (usually) prior to any actual design or development work. It's a two- way insurance policy that assures that both the client and the organization understand the other's requirements from that perspective at a given point in time. The SRS also functions as a blueprint for completing a project with as little cost growth as possible. The SRS is often referred to as the "parent" document because all subsequent project management documents, such as design specifications, statements of work, software architecture specifications, testing and validation plans, and documentation plans, are related to it. It is important to note that an SRS contains functional and non-functional requirements only. It doesn't offer design suggestions, possible solutions to technology or business issues, or any other information other than what the development team understands the customer's system requirements.

3.2 Hardware specification

- RAM: 4GB and Higher
- Processor: intel i3 and above
- Hard Disk: 500GB Minimum

3.3 Software System Attributes

- **Usability:** Software can be used again and again without distortion.
- **Availability:** The system shall be available all the time.
- **Correctness:** Bug free software which fulfills the correct need/requirements of the client.
- **Maintainability:** The ability to maintain, modify information and update fix problems of the system.
- **Accessibility:** Administrator and many other users can access the system but the access level is controlled for each user according to their work scope.

3.4 Functional Requirements:

❖ LOGIN:

- **PATIENT:** Can login using unique Id and Password.
- **DOCTOR:** Can login using unique Id and Password and can view his/her profile.

3.5 Non-Functional Requirements

Scalability: The system should be designed to handle an increasing number of users and books without compromising performance. Scalability is crucial for accommodating growth and ensuring a consistently responsive user experience.

Performance: Quick response times and low latency are paramount for user satisfaction. The system should efficiently process requests and deliver recommendations in real-time to provide a seamless and enjoyable experience.

Reliability: High system reliability is essential to minimize downtime and ensure continuous availability. Users should be able to access the system reliably, without disruptions.

Security: The security of user data and system infrastructure is of utmost importance. Measures should be in place to protect against unauthorized access, data breaches, and other security threats.

3.6 Performance Requirement:

- **Response time-** The system will give responses within 1 second after checking the patient information and other information.
- **Capacity-** The system must support 1000 people at a time
- **User interface-** User interface screen will response within 5 seconds

3.7 Security Requirements

- Want take the responsibility of failures due to hardware malfunctioning.
- Warranty period of maintaining the software would be one year.
- Additional payments will be analyzed and charged for further maintenance.
- If any error occur due to a user's improper use. Warranty will not be allocated to it. 5. No money back returns for the software.

3.8 FUNCTIONAL REQUIREMENTS

❖ LOGIN:

- **PATIENT:** Can login using unique Id and Password.
- **DOCTOR:** Can login using unique Id and Password and can view his/her profile.

❖ DOCTOR MODULE:

- Can add a new doctor by filling all the details after this system shall show a confirmation message. Can Remove a doctor by just one click after this system shall show confirmation message.

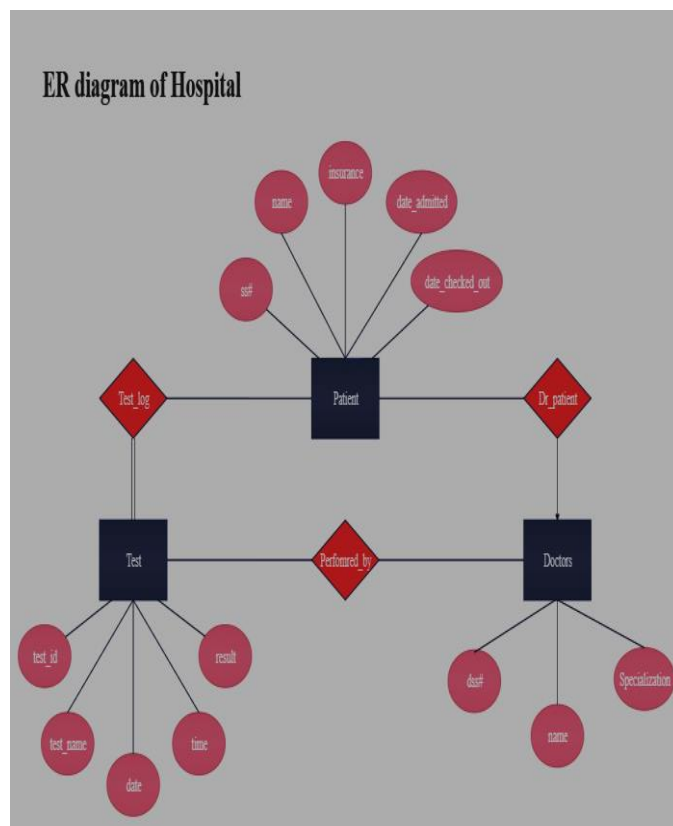
❖ PATIENT MODULE

- Can also update details after this system shall ask for re-enter password and after verifying password shall update details.

CHAPTER-4

DESIGN RELATED WORK

4.1 ER DIAGRAM



4.2 DATA DESIGN

Hospital Management System

c) Date/Time:-

Date/Time data type is used for representing data or time.

Patient Table:

Fields	Data Type	Relationships
pid	Varchar(5)	Primary Key
Name	Varchar(20)	Not Null
Age	int	Not Null
weight	int	Not Null
gender	Varchar(10)	Not null
address	Varchar(50)	Not Null
phonenum	int	Not Null
disease	Varchar(20)	Not Null
doctorid	Varchar(5)	Not Null

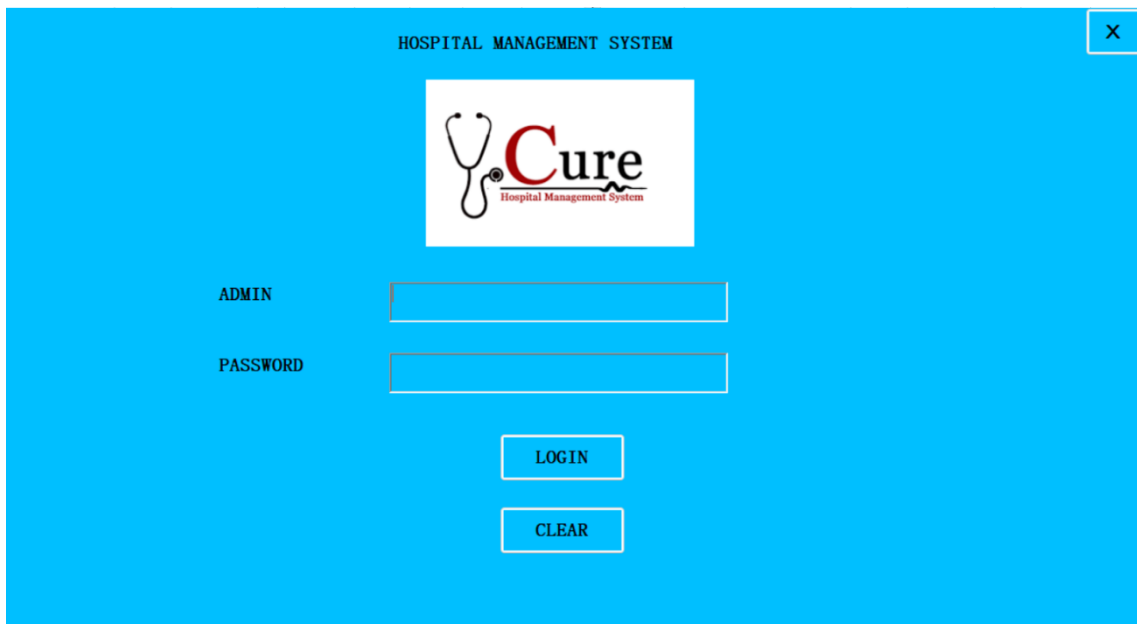
Doctor Table:

Fields	Data Type	Relationships
doctorid	Varchar(5)	Primary Key
doctorname	Varchar(15)	Not Null
dept	Varchar(15)	Not Null

CHAPTER-5

RESULT

5.1 This is the page where Admin can Login



The screenshot displays the Admin Login interface for the Hospital Management System. The page has a solid blue background. At the top center, the text "HOSPITAL MANAGEMENT SYSTEM" is displayed in a small, black, sans-serif font. In the top right corner, there is a small blue square button with a white "X" icon. Centered below the header is a white rectangular box containing the system's logo. The logo features a black stethoscope icon to the left of the word "Cure" in a large, red, serif font. Below "Cure", the words "Hospital Management System" are written in a smaller, red, sans-serif font. Below the logo box, there are two input fields. The first is labeled "ADMIN" in a small, black, sans-serif font to its left. The second is labeled "PASSWORD" in a small, black, sans-serif font to its left. Both input fields are white with a thin blue border. Below the password field, there are two buttons: a "LOGIN" button and a "CLEAR" button, both with a blue border and a light blue background.

Fig 5.1 ADMIN LOGIN

5.2 This is our Home page where when a new Patients and doctors can be edit and Add

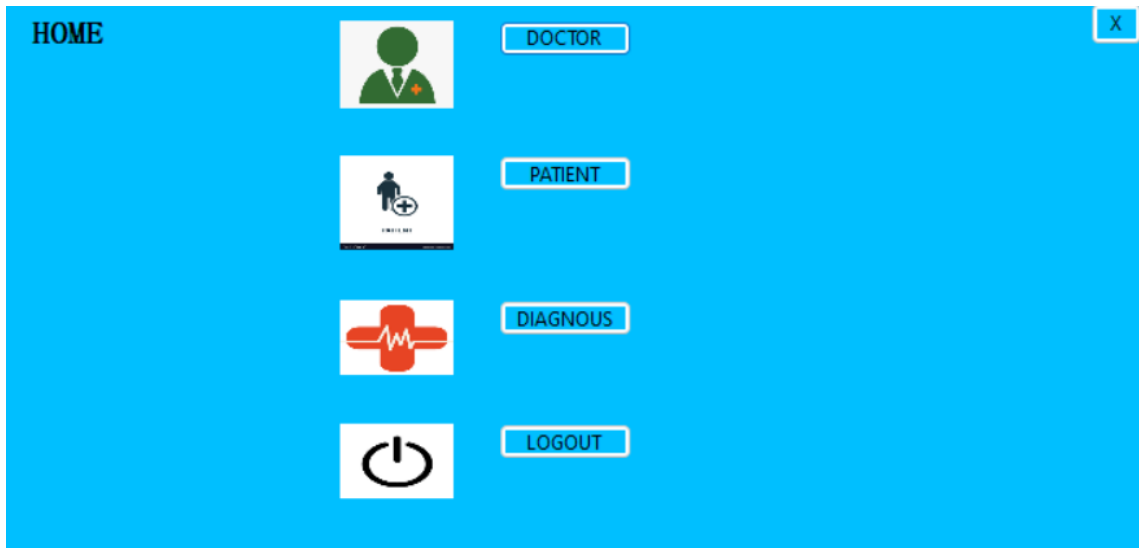


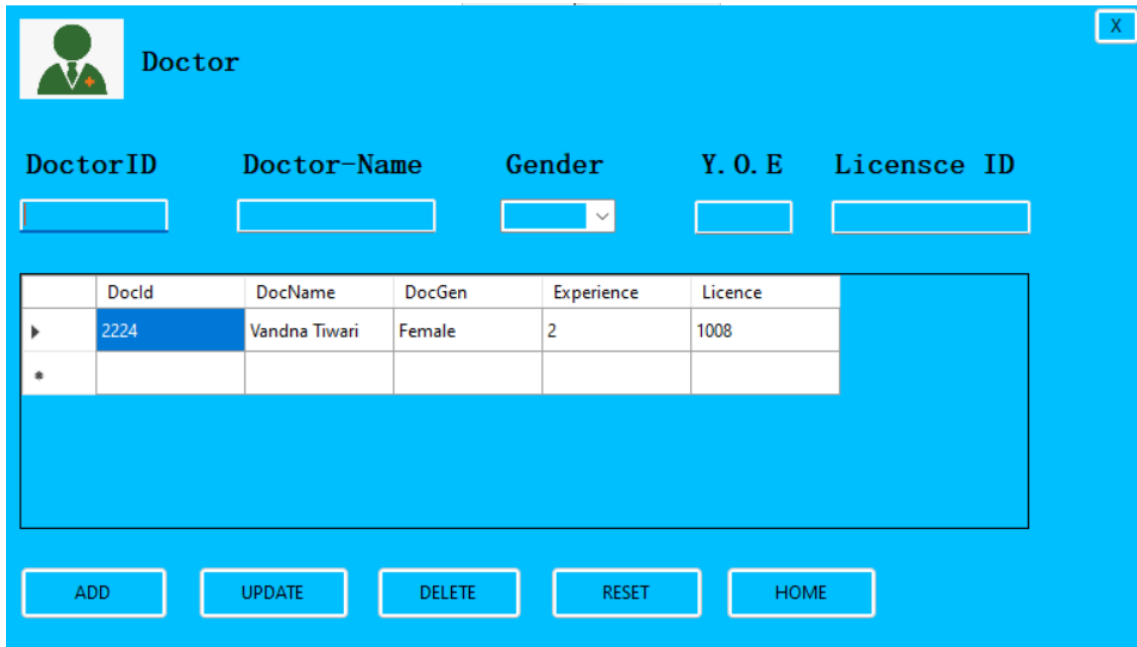
Fig 5.2 Login Page

5.3 This is our Patient page, The details of patient will be fill here and can be recognize by its Patient ID.

Pid	PName	PAddress	PAge	PPhone	PGen	BloodGroup	Disease
54244	Akash	Sanjay Nagar	26	Male	A+	9458248245	Piles
89076	Sneha	Hydrabad	22	781245412	Female	O+	COLD
*							

Fig 5.3 PATIENT

5.4 This is page of Doctor Detail doctor ID and the Licence No, will be added here.



Doctor

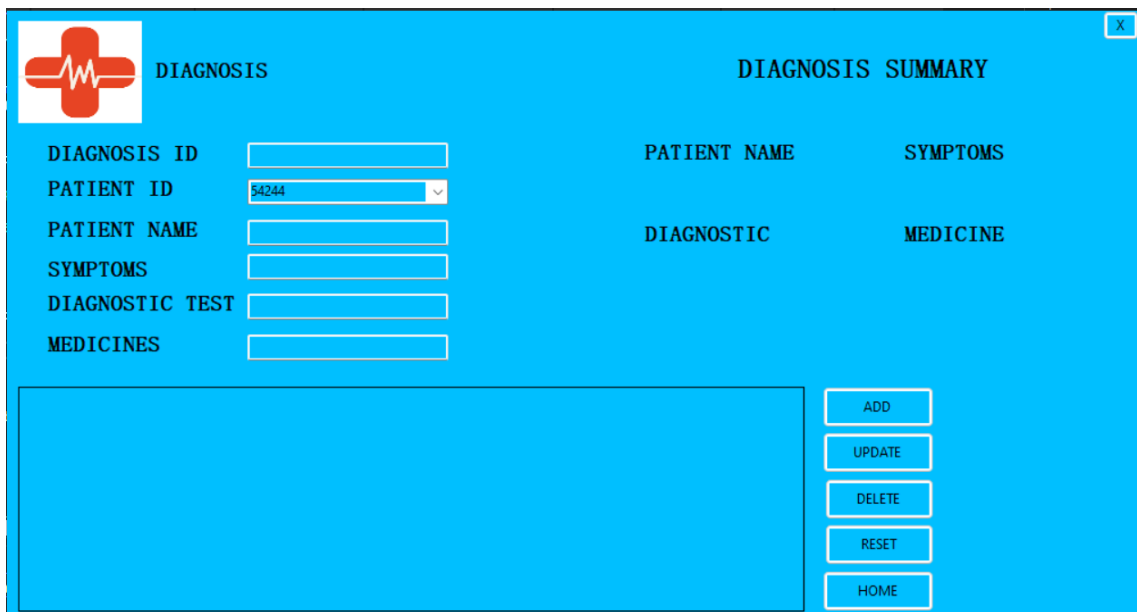
DoctorID Doctor-Name Gender Y. O. E Licensce ID

	DocId	DocName	DocGen	Experience	Licence
▶	2224	Vandna Tiwari	Female	2	1008
*					

ADD UPDATE DELETE RESET HOME

Fig 5.4 DOCTOR

5.5 This is page of DIAGNOSIS in which admin can Find Both of the details where the patient is being Diagnose and what problem patient is suffering from.



DIAGNOSIS

DIAGNOSIS ID PATIENT ID PATIENT NAME SYMPTOMS DIAGNOSTIC TEST MEDICINES

DIAGNOSIS SUMMARY

PATIENT NAME SYMPTOMS

DIAGNOSTIC MEDICINE

ADD UPDATE DELETE RESET HOME

Fig 5.5 DOCTOR

CHAPTER 6

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