Platform for Vacancy Availability and Treatment Check for Hospitals

FINAL PROJECT

Group No: 28

Prepared By

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SECTION **:** A

COURSE**:** CS3002D - DATABASE MANAGEMENT SYSTEMS

DATE: 28th December 2020

NATIONAL INSTITUTE OF TECHNOLOGY CALICUT KERALA, INDIA - 673 601 DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

Certified that this is a bonafide report of the project work titled

PLATFORM FOR VACANCY AVAILABILITY AND TREATMENT CHECK FOR HOSPITALS

done by

Sevakula Jyothi
Billa Amulya
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of Fifth Semester B. Tech, during the Monsoon Semester 2019-'20, in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in Computer Science and Engineering of the National Institute of Technology Calicut.

INSTRUCTORS: Dr. Abdul Nazeer K
Dr. Prabhu M

DATE: 28th December 2020

DECLARATION

We hereby declare that the project titled, **Platform for Vacancy and availability and treatment check for hospitals,** *is our own work and that, to the best of our knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree or diploma of the university or any other institute of higher learning, except where due acknowledgement and reference has been made in the text.*

Done By

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PLACE: Calicut
Date: 28th December 2020

ABSTRACT

The Purpose of this project is to help both the hospitals and patients for easy access of hospital functionalities in their locality. It deals with the Hospital Management System along with the user end for treatment and vacancy check in an easy and efficient manner. It creates a strong and secret database that allows for any connection in a secret way, to prevent any outside or inside attacks. It is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to hospitals. More importantly it is backed by reliable and dependable support.

The System is a web application intended to convey the patients and hospital management about various sectors like availability of vacancy, medical bills and also other important aspects which could enable the management of hospitals for a proper growth and functionality. This application is mainly intended for the social community all well as the public and private hospitals of a particular city. The application is made using SQL, PHP, XAMPP and various tools and has been implemented as a web app.

ACKNOWLEDGEMENT

It is with great respect that we remember the names of all who have been a great help and guidance throughout our project. Firstly, we would like to thank the Almighty for giving us the wisdom and grace for completing and presenting our project. With a profound sense of gratitude, we would like to express our heartfelt thanks to our guide and project coordinator, Dr. K A Abdul Nazeer, Professor, Department of Computer Science and Engineering for his expert guidance, co-operation, and immense encouragement in pursuing this project. We also express our sincere regard to Dr. Prabhu for their valuable coordination . We are very much thankful to Dr. Saleena N, Head of the Department of Computer Science and Engineering, for her sincere cooperation. Our sincere thanks are extended to all the teachers of the Department of Computer Science and Engineering and to all our friends for their help and support.

CONTENTS

1 Introduction

The Software Design Document is a document to provide documentation which will be used to aid in software development by providing the details for how the software should be built. Within the Software Design Document is narrative and graphical documentation of the software design for the project including ER Diagrams, Conceptual Schema, functional dependencies and Normalisation and other supporting requirement information.

1.1 Purpose

The purpose of the Software Design Document for this Hospital Management System (HMS) is to provide a description of the design of a system fully enough to allow for software development to proceed with an understanding of what is to be built and how it is expected to build. The Software Design Document provides information necessary to provide the description of the details for the software and system to be built.

2 Project Objectives

2.1 Document Objective

This document is intended to meet the following objectives:

- To deal with Hospital Management System along with the user end for treatment and vacancy check in an easy and efficient manner.
- To create a strong and secret database that allows for any connection in a secret way, to prevent any outside or inside attacks.

2.2 Scope of Project

The Hospital Management System is a web application intended to convey the patients and hospital management about various sectors like availability of vacancy, medical bills and also other important aspects which could enable the management of hospitals for a proper growth and functionality. This application is mainly intended for the social community all well as the public and private hospitals of a particular city.

1. This project enables all the various departments in the medical area such as ENT, child care, cardiac hospitals, oncology hospitals, etc to post their services in public.

2. This enables the patients to find nearest hospitals immediately and also the hospital to make required arrangements when an emergency case arrives.

3. Patients can easily view the hospital services and register in advance

2.3 Functionalities

- Provides a secure database of the hospitals which register in the management system and containing the login credentials and personal information.
- Facilitates a process of entering, retrieving, modifying and deleting the data of both the ends.
- Provide necessary access to the patients with simple interface documentation.
- Easily update details of hospital functions and the user needs into the database.
- Provide a list of systems of hospitals and their services.
- Provides a query section to the developers such that users can contact the system developers any time.
- Basically, without registration, people are enabled to access the information of nearest hospitals, specialisations and the expected advance amount to pay.
- The system also provides features like vacancy check, the pay of treatment, the availability of doctors, distance measurement between current location and hospitals, working hours.
- Patients can find the hospital details by entering the hospital name and also can search which hospital would solve their health issue by entering it.
- The system enables registered patients to provide reviews who have completed the treatment in the hospital.
- The system helps the users to store prescribed medicines information and help them to edit and make changes, so that they can have an idea of what all medicines they still need to buy.
- The system tells if the specialised doctors corresponding to a health issue are available or not.

- Suggestions given by the doctors for a treatment or common health issues.
- Non register patients can have the access to read-only features which are vacancy check, nearest hospitals check, available doctors check and the pay for the treatment.
- Registered patients can register in advance to consult the doctor.

2.4 Assumptions and Dependencies

The system assumes the following things:

1.The System assumes that the patients who register have mobile phone access to them every time so that they can avail the features of the system.

2. The System depends on the hospital registered and their services.

3. The System assumes that there exists fair play from both the ends and the details or information given by them are solemnly true.

4. The registered hospitals should have a minimum of 100 Kbps to update the information

2.5 Constraints

- Safety and Security: Users are given access to the website so that they can register into the website with the help of any simple OTP.
- The website runs all day long as in 24 X 7.
- Implementation of the database using a centralized database system.
- The challenges in developing the system are the required number of users. The expected number of users once launched will be around 5000 at the first point of implementation

3 Background and Motivation

System Analysis is a separation of a substance into parts for study and their implementation and detailed examination. Before designing any system it is important that the nature of the business and the way it currently operates are clearly understood.

Hospitals are key institutions and there is a need for efficient service delivery in the hospital as good health is paramount to a happy society. As a result of this there is a need for a system that will enable hospital management in making effective and efficient decisions. . Recently, efforts are continuously being made in designing and constructing a user friendly and reliable database system to satisfy hospital or medical management systems.

On the other hand, many hospitals and medical centers are still adopting the manual system of hospital management. These methods of the medical management system have continued to pose a lot of setbacks and problems to medical practitioners, nurses, patients and other staff in both government and private hospitals.

4 Literature Survey

a) "A hospital resource and patient management system based on real-time data capture and intelligent decision making" Author(s): Musa, A. Lancashire Bus. Sch., Univ. of Central Lancashire, Preston, UK Yusuf, Y, Meckel.M. Systems and Informatics (ICSAI), 2012 International Conference

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 provides the ability to analyse the ongoing operations so they can be corrected to achieve increased process efficiency and service levels.

b) "Study on information system of healthcare services management in hospital" Author(s): Daiping Hu, Antai Sch. of Manage., Shanghai Jiaotong Univ., China Weiguo Xu ; Huizhang

Shen ; Mengyu Li. Services Systems and Services Management, 2005. Proceedings of ICSSSM '05. 2005 International Conference

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 the quality of health care services but does not have a 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 health 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

c) "Developing Effective Hospital Management Information Systems: A Technology Ecosystem Perspective". DATE OF SUBMISSION: 5 October 2014 PREPARED BY: Dr Christopher Bain MBBS, Master Info. Tech Student No: 10054499

The author of this paper focuses more on the needs of hospital managers and the ecosystem in which he/she operates. The internal and external Environment shaping factors ESFs that bear an impact or association on daily hospital activities and decision making processes that the hospital manager has to go through in each situation.

Some of the challenges that this ecosystem needs to work on are high demand pressure, greater customer satisfaction level and low profit margins.

This paper more so contributes to Planning, Design and development aspects of any Hospital management system by highlighting ESFs that should be considered.

The external and internal factors the author mentions are: The public at large, Law and policy makers, Funders, Medical suppliers the biggest of which are pharmaceutical companies, the scientific community, the software development community. Internal influencer authors can obviously also be at play in terms of what services are provided by the hospital and how they are provided. These can include: the skills and experience of staff, internal business strategies such as competition and subsidization, Soft factors such as morale and culture, Equipment availability.

5 System Requirements

5.1 Database Software Utilities

The database management system used is my SQL as the name suggests SQL is used for creating and handling database and all required functions and before performing any related functions or queries Xampp's Apache server should be started and we can access the database through Server: 127.0.0.1 via TCP/IP and the related queries should be performed through the server.

5.2 Support Software

The software directly related to the database we are using for storing our database is my S, but it uses a home-brewed lexical analyzer. My SQL is a web server database and all the details regarding it and apache server is the one through which we are going to handle all the files related to the database.

All the details regarding software including name and versions are provided below:
Database Server:

- Server: 127.0.0.1 via TCP/IP
- Server type: MariaDB
- Server connection: SSL is not being used
- Server version: 10.4.14-MariaDB - mariadb.org binary distribution
- Protocol version: 10
- User: root@localhost
- Server charset: UTF-8 Unicode (utf8mb4)

5.3 External Interface Requirements

The new system shall provide a very intuitive and simple interface to the user and the administrator, so that the user can easily navigate through and find the nearer and best hospital. They can also give reviews and ratings to the hospital,so that the users can get to know the quality of the treatment. Users can also check the availability of different services provided by the hospitals with ease

1.A login screen will be provided for entering name,password and role(Administrator and operator)will be provided and access to different options will be based on the selection type of the role.

2.After successful login, the patient should enter the required details.
3.A form will be provided for the new patient which contains few text fields such as patient ID(assumed to be AADHAR NUMBER),and rest of the details have to be filled up.
4.A form for generating test reports
5.A form to produce a bill which contains the doctor's charge,Hospital's charge etc..

5.4 Software Interface

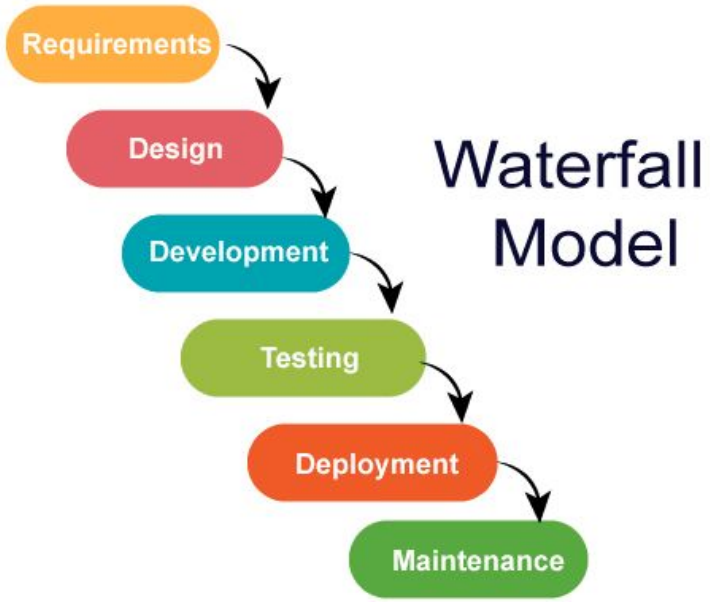
- Front end development requires HTML, CSS
- Back end Interfacing using PHP
- Database Setup using MySQL

5.5 Hardware Interfaces

MySQL	MySQL is an open-source relational database management system
PHP	PHP is a general-purpose programming language originally designed for web development
HTML	HTML is the standard markup language for documents designed to be displayed in a web browser
CSS	CSS defines style rules in separate CSS files.

6 Methodology

We have used an Iterative and Incremental Development model (IID) for our project development. This development approach is also referred to as Iterative Waterfall Development approach. Iterative and Incremental Development is a software development process developed in response to the more traditional waterfall model. This model is designed to take care of such a big project. The large and complicated project chiefly demands better development and testing procedure. The waterfall model is well known for its repeated testing process. Hence I choose the waterfall model for developing my software.



Some advantages of waterfall model:

- o Simple and easy to understand and use.
- o Easy to manage due to the rigidity of the model.
- o Phases are processed and completed one at a time
- o Works well for smaller projects where requirements are very well understood.

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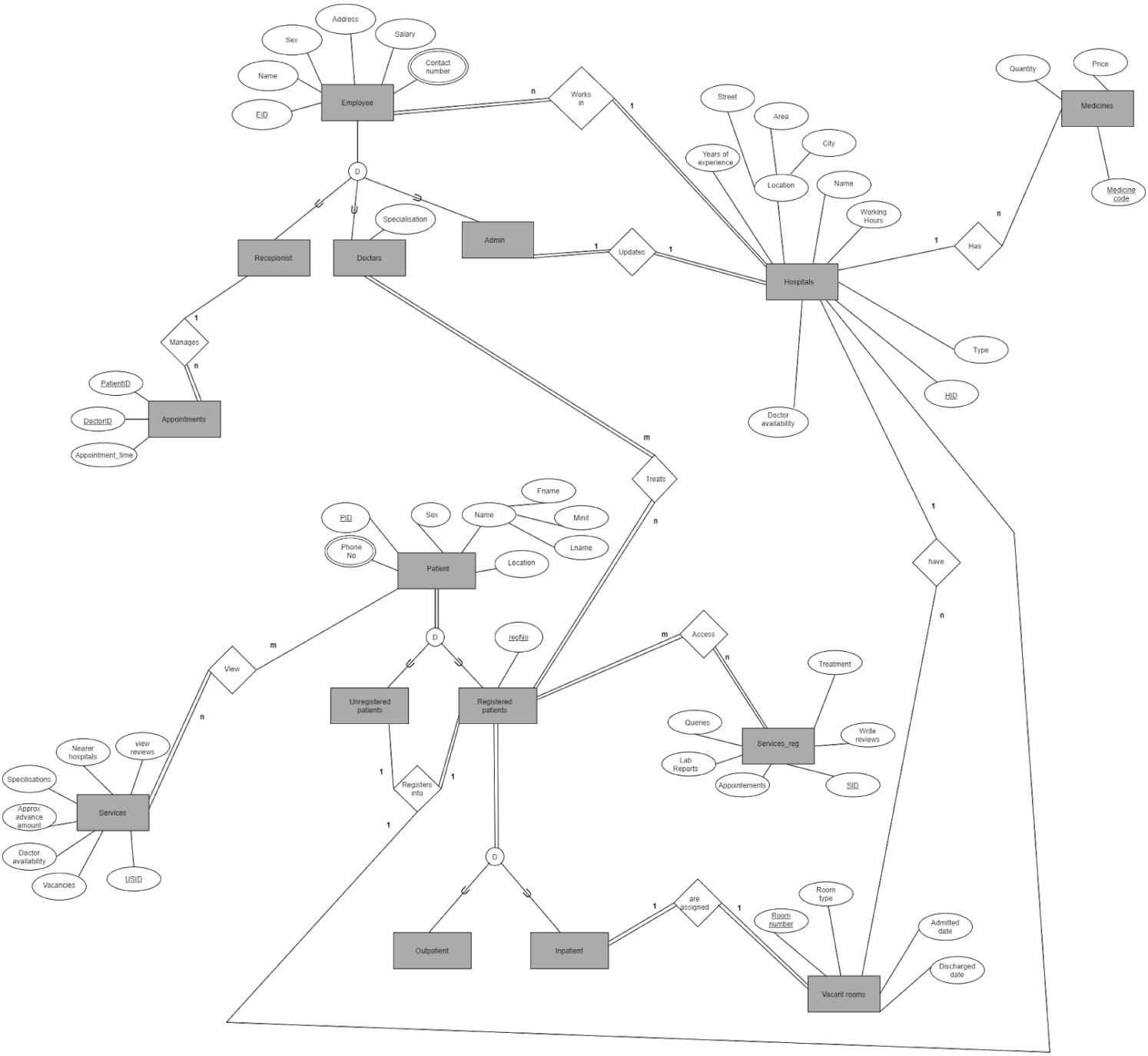
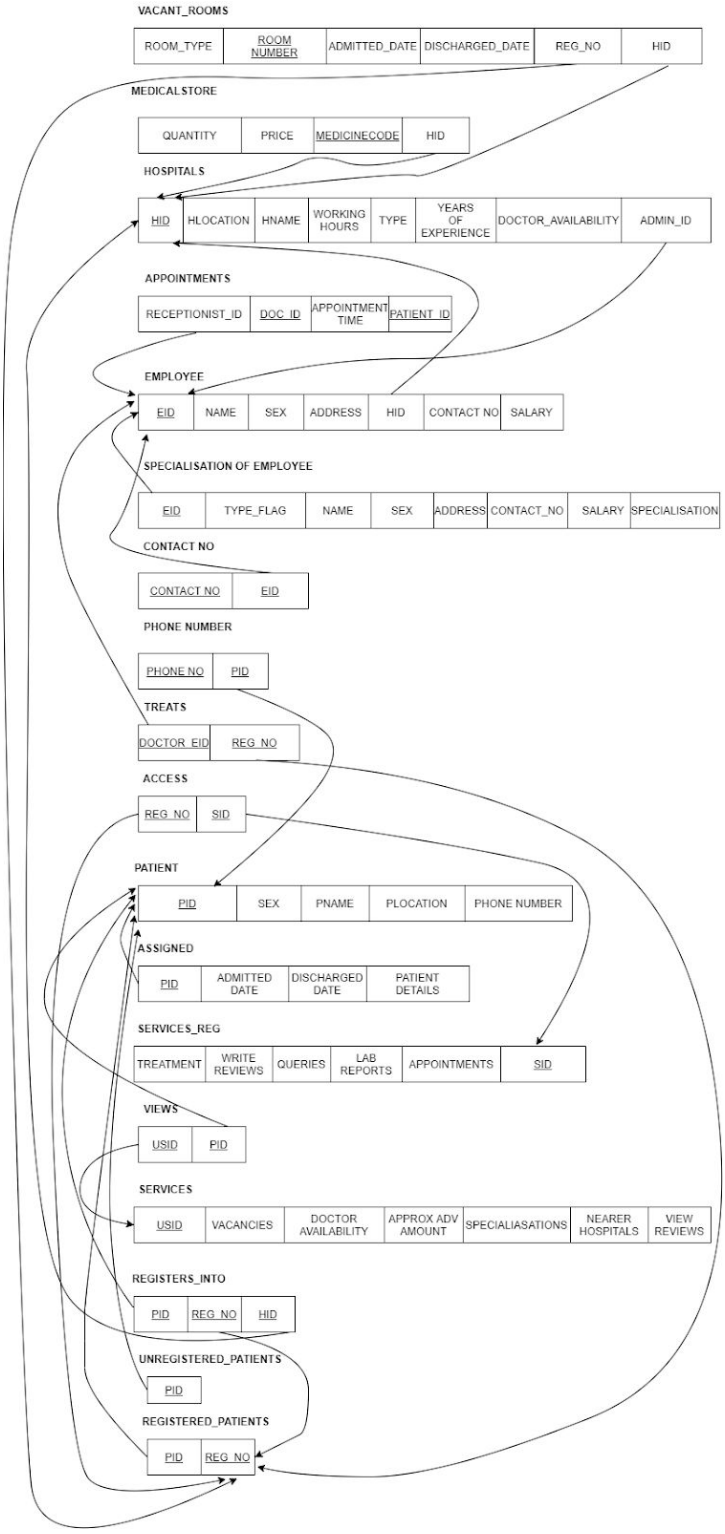
7 ER Diagram

The image given below is the ER diagram:



The following link is the ER Diagram we uploaded in our drive for a better and large view: https://drive.google.com/file/d/1H5F_yu4HOuiarkrYRjaRuldZOf5t5i6m/view?usp=sharing

8 Relational Database design


VACANT_ROOMS
ROOM_TYPE
ROOM NUMBER
ADMITTED_DATE
DISCHARGED_DATE
REG_NO
HID
MEDICALSTORE
QUANTITY
PRICE
MEDICINECODE
HID
HOSPITALS
HID
HLOCATION
HNAME
WORKING HOURS
TYPE
YEARS OF EXPERIENCE
DOCTOR_AVAILABILITY
ADMIN_ID
APPOINTMENTS
RECEPTIONIST_ID
DOC_ID
APPOINTMENT TIME
PATIENT_ID
EMPLOYEE
EID
NAME
SEX
ADDRESS
HID
CONTACT NO
SALARY
SPECIALISATION OF EMPLOYEE
EID
TYPE_FLAG
NAME
SEX
ADDRESS
CONTACT_NO
SALARY
SPECIALISATION
CONTACT NO
CONTACT NO
EID
PHONE NUMBER
PHONE NO
PID
TREATS
DOCTOR_EID
REG_NO
ACCESS
REG_NO
SID
PATIENT
PID
SEX
PNAME
PLOCATION
PHONE NUMBER
ASSIGNED
PID
ADMITTED DATE
DISCHARGED DATE
PATIENT DETAILS
SERVICES_REG
TREATMENT
WRITE REVIEWS
QUERIES
LAB REPORTS
APPOINTMENTS
SID
VIEWS
USID
PID
SERVICES
USID
VACANCIES
DOCTOR AVAILABILITY
APPROX ADV AMOUNT
SPECIALIASATIONS
NEARER HOSPITALS
VIEW REVIEWS
REGISTERS_INTO
PID
REG_NO
HID
UNREGISTERED_PATIENTS
PID
REGISTERED_PATIENTS
PID
REG_NO

The following links take you to Relational Schema which we uploaded for a clear and large view:

https://drive.google.com/file/d/15kxA_mFOXd1SL3bylNO-dRj3fowvchcd/view?usp=sharing

9 Database Normalisation

9.1 Normalisation of Database

It is the process of minimizing redundancy from a relation or set of relations.Redundancy in relation may cause insertion,deletion and updation anomalies.

Fig 6.3 shows the tables in our database

9.2 Checking for 1 NF

Employee contains multi-valued attribute contact number,composite variable Address and Patient contains a multi-valued attribute phone number and composite variables name and Location.

EMPLOYEE

EID	Name	Sex	Address	HID	Contact number	Salary

⇓

EID	Fname	Minit	Lname	Sex	Dno	Street	City	HID	Contact Number	Salary

PATIENT

PID	Sex	Name	Location	Phone number

⇓

PID	Sex	Fname	Minit	Lname	Dno	Street	City	Phone number

9.3 Checking for 2 NF

(Partial dependency)

Patient and Employee contains partial dependency.

PATIENT

PID	Sex	Fname	Minit	Lname	Dno	Street	City	Phone number

⇓

PATIENT1

PID	Phone Number

PATIENT2

Phone number	Sex	Fname	Minit	Lname	Dno	Street	City

PATIENT3

PID	Sex	Fname	Minit	Lname	Dno	Street	City

EMPLOYEE

EID	Fname	Minit	Lname	Sex	Dno	Street	City	HID	Contact Number	Salary

⇓

EMPLOYEE1

EID	Contact number

EMPLOYEE2

Contact number	Fname	Minit	Lname	Sex	Dno	Street	City	Salary

EMPLOYEE3

PID	Fname	Minit	Lname	Sex	Dno	Street	City	Salary

9.4 Checking for 3 NF

(transitive dependency)

Only specialisation of employee table contains transitive dependency

SPECIALISATION OF EMPLOYEE

EID	Type_flag	Fname	Minit	Lname	Sex	Dno	Street	City	Contact no	Salary	Specialisation

⇓

SPECIALISATION OF EMPLOYEE1

EID	Type_flag	Fname	Minit	Lname	Sex	Dno	Street	City	Contact number	Salary

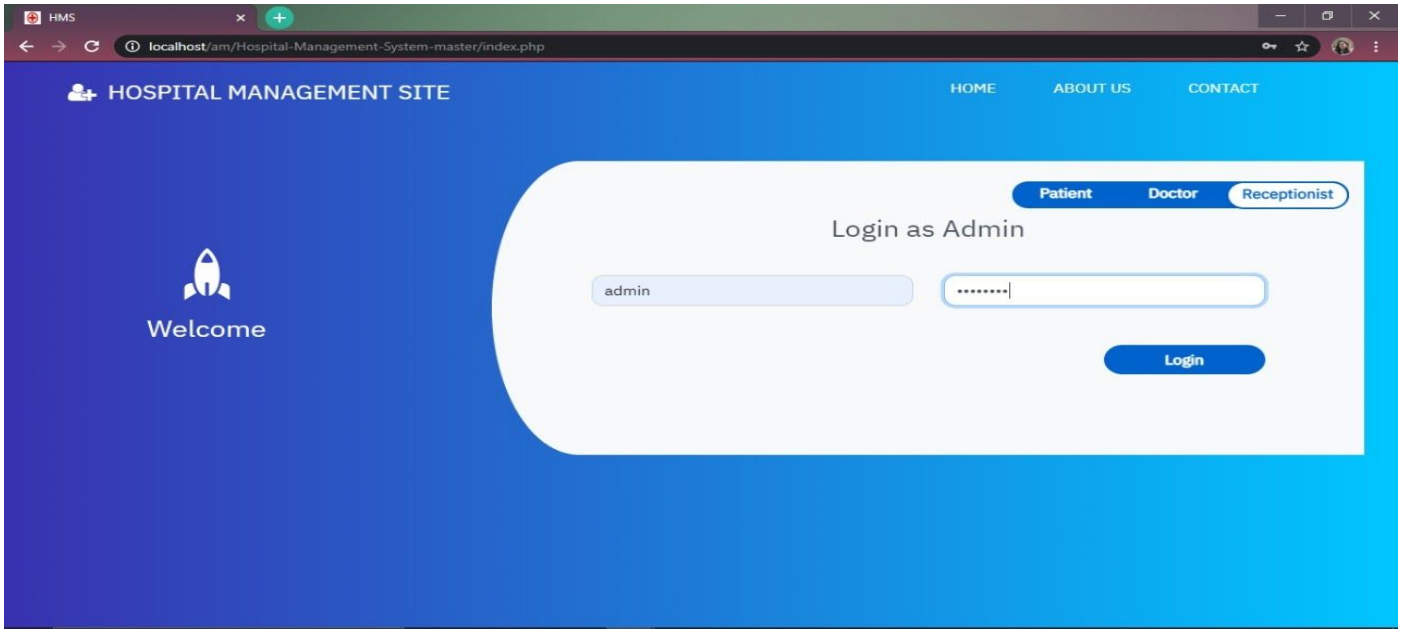
SPECIALISATION OF EMPLOYEE2

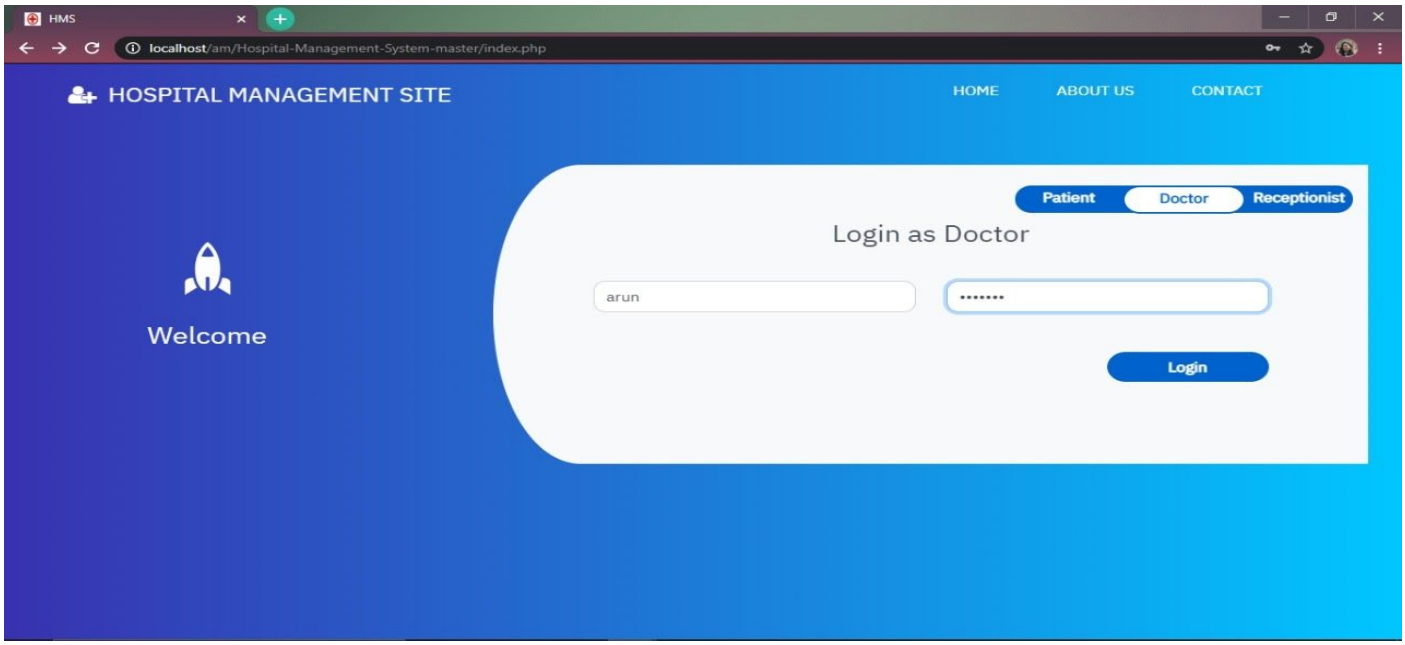
Type_flag	Specialization	Salary

9.5 Checking for BCNF

Since all the super keys in each of the tables determine tuples uniquely all tables are in BCNF.

10 Graphic User Interface



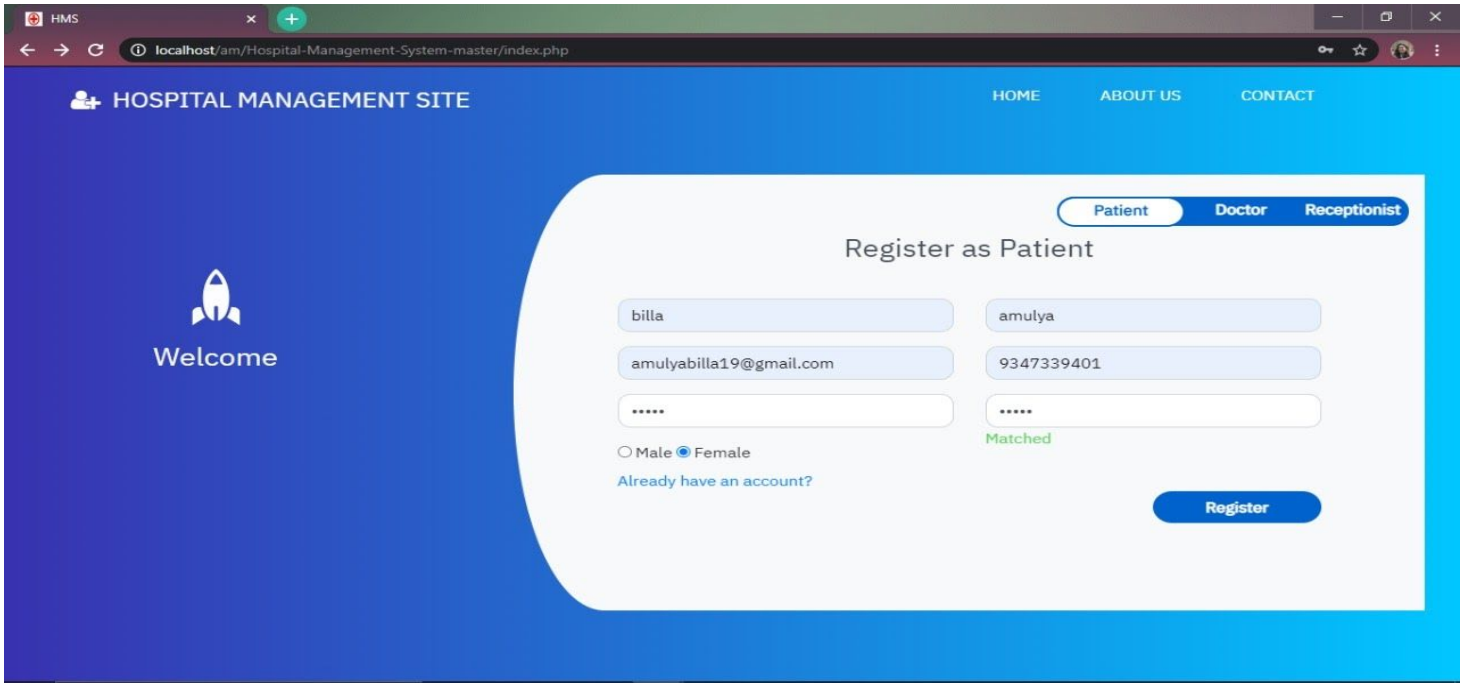


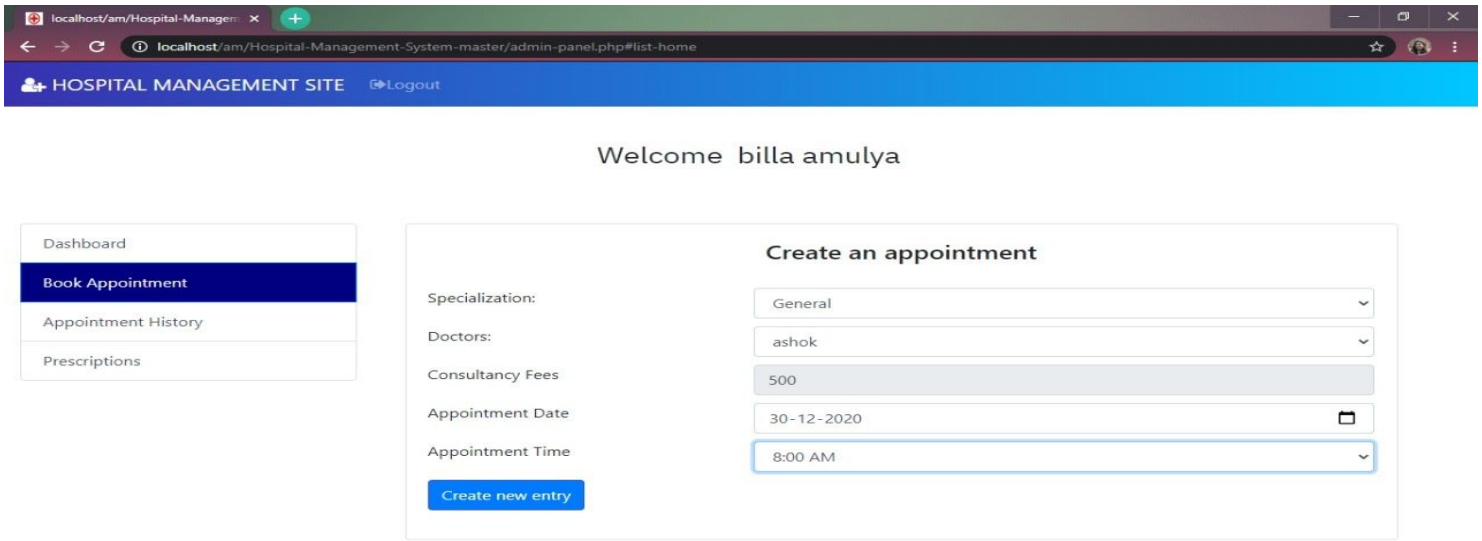
11 Implementation

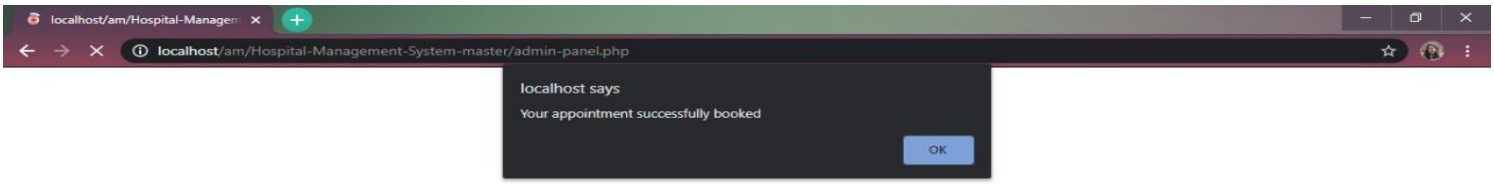
This web application is developed using html,css, bootstrap as front end and php as backend. MySQL Database is used here and the application used to host on a web server, along with the MySQL database is XAMPP. Using the XAMPP application,importing the sql file which was written for creating databases in a much easier way. The folder containing all the files should be placed inside the htdocs folder of the xampp application folder which we will further discuss in the user manual.

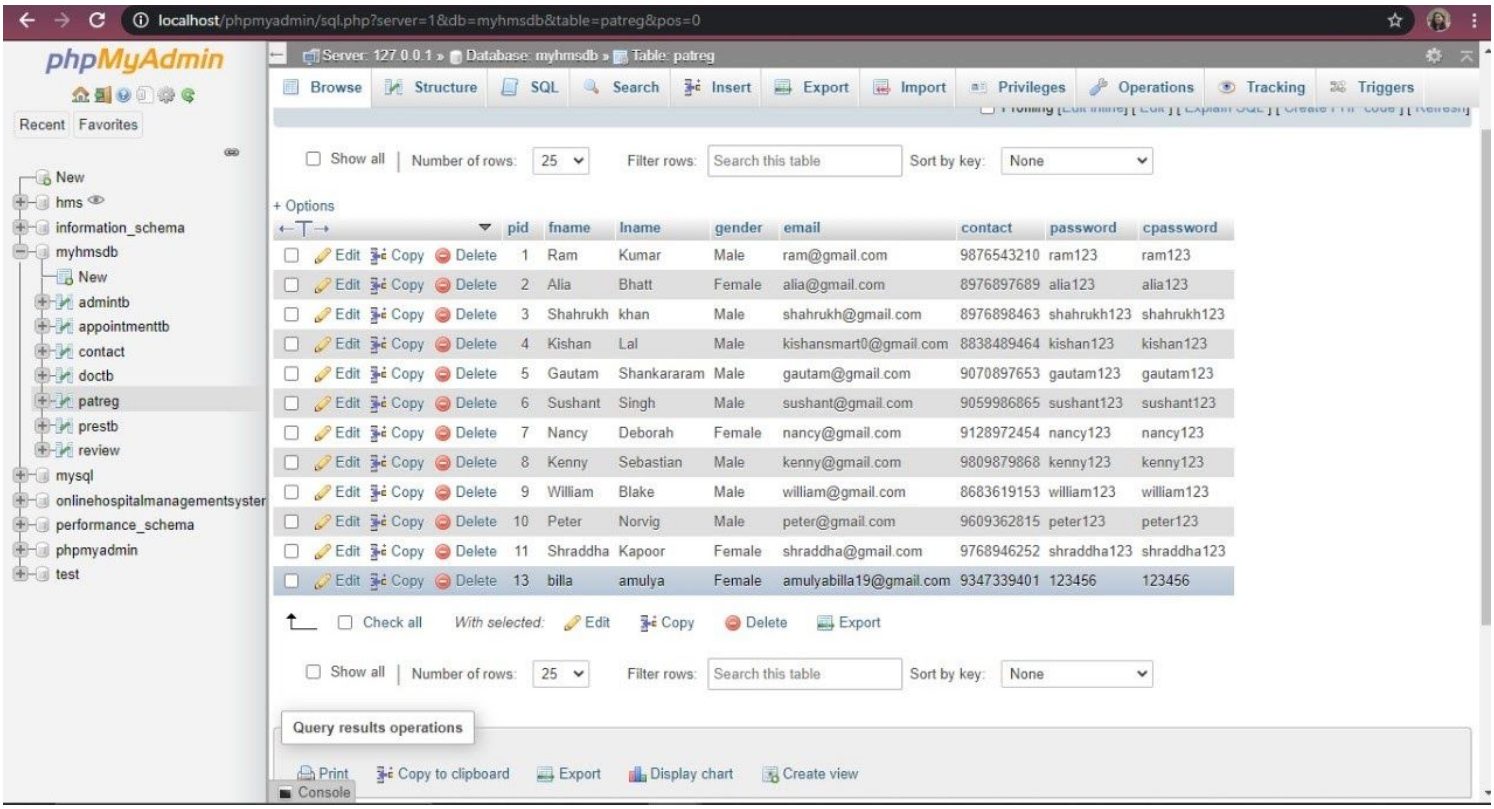
The above are the GUI's for both user and admin.

12 Testing

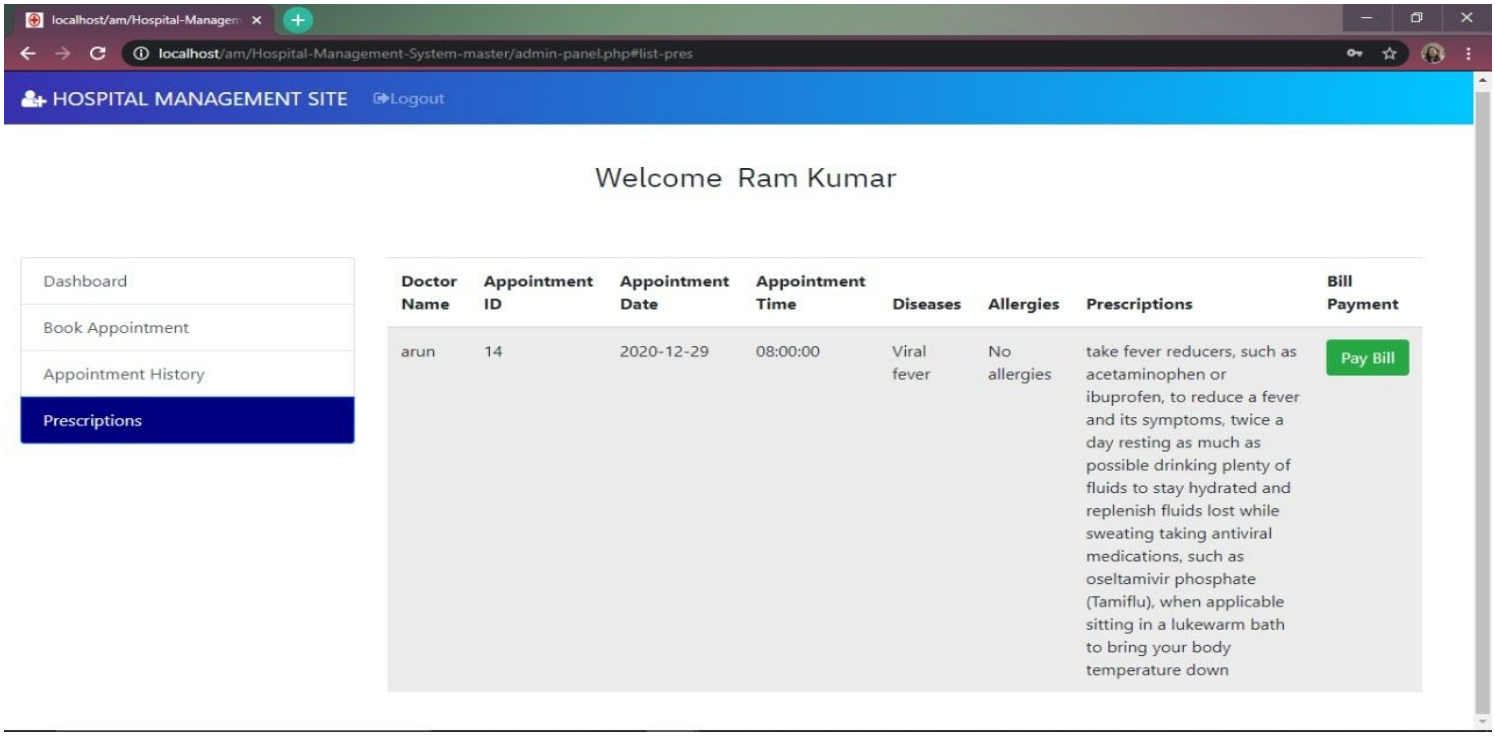

HMS
localhost/am/Hospital-Management-System-master/index.php
HOSPITAL MANAGEMENT SITE
HOME
ABOUT US
CONTACT
Welcome
Patient
Doctor
Receptionist
Register as Patient
billa
amulya
amulyabilla19@gmail.com
9347339401
Matched
Male
Female
Already have an account?
Register

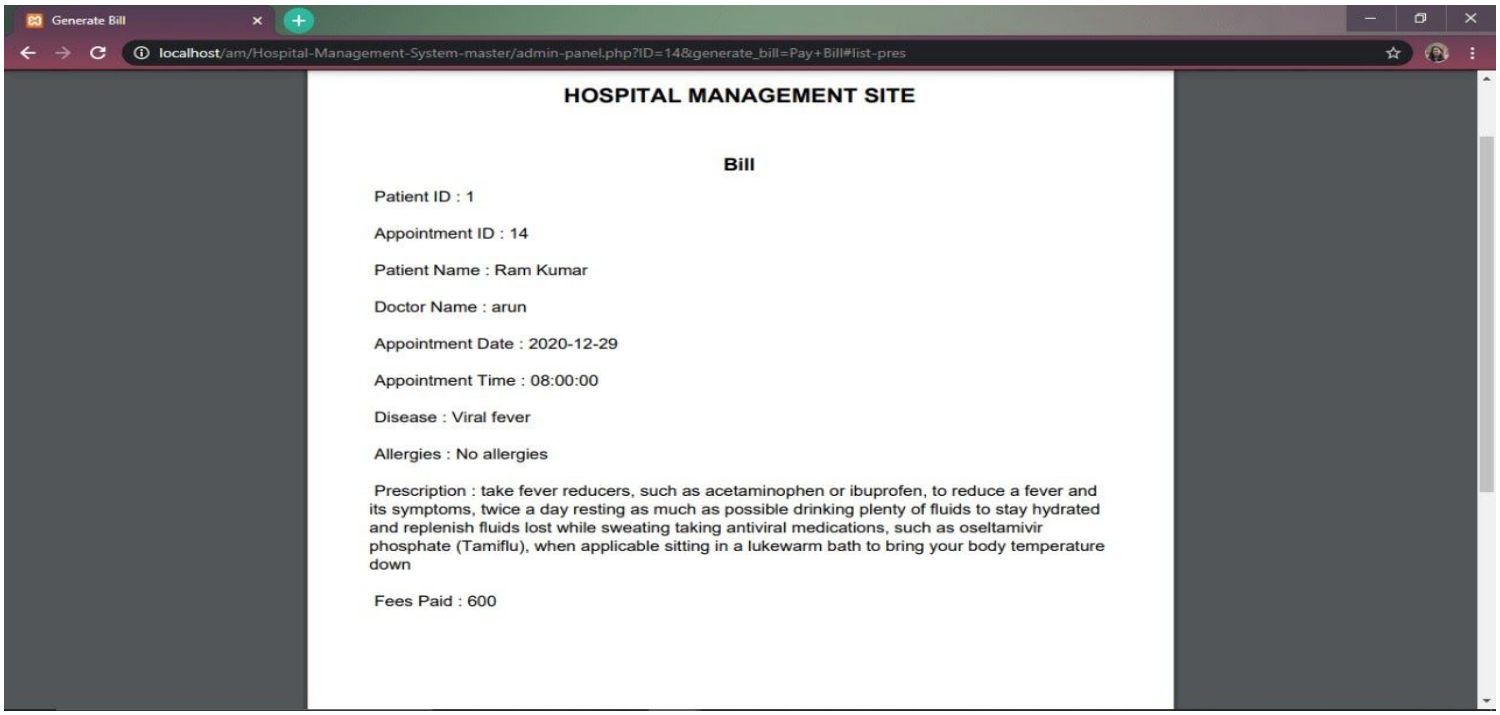

localhost/am/Hospital-Manage
localhost/am/Hospital-Management-System-master/admin-panel.php#list-home
HOSPITAL MANAGEMENT SITE
Logout
Welcome billa amulya
Dashboard
Book Appointment
Appointment History
Prescriptions
Create an appointment
Specialization:
General
Doctors:
ashok
Consultancy Fees
500
Appointment Date
30-12-2020
Appointment Time
8:00 AM
Create new entry


localhost/am/Hospital-Manager
localhost/am/Hospital-Management-System-master/admin-panel.php
localhost says
Your appointment successfully booked
OK


localhost/phpmyadmin/sql.php?server=1&db=myhmsdb&table=patreg&pos=0
phpMyAdmin
Recent Favorites
New
hms
information_schema
myhmsdb
New
admintb
appointmenttb
contact
doctb
patreg
prestb
review
mysql
onlinehospitalmanagementsyster
performance_schema
phpmyadmin
test
Server: 127.0.0.1 » Database: myhmsdb » Table: patreg
Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers
Show all | Number of rows: 25 Filter rows: Search this table Sort by key: None
+ Options
pid fname lname gender email contact password cpassword
1 Ram Kumar Male ram@gmail.com 9876543210 ram123 ram123
2 Alia Bhatt Female alia@gmail.com 8976897689 alia123 alia123
3 Shahrukh khan Male shahrukh@gmail.com 8976898463 shahrukh123 shahrukh123
4 Kishan Lal Male kishansmart0@gmail.com 8838489464 kishan123 kishan123
5 Gautam Shankararam Male gautam@gmail.com 9070897653 gautam123 gautam123
6 Sushant Singh Male sushant@gmail.com 9059986865 sushant123 sushant123
7 Nancy Deborah Female nancy@gmail.com 9128972454 nancy123 nancy123
8 Kenny Sebastian Male kenny@gmail.com 9809879868 kenny123 kenny123
9 William Blake Male william@gmail.com 8683619153 william123 william123
10 Peter Norvig Male peter@gmail.com 9609362815 peter123 peter123
11 Shraddha Kapoor Female shraddha@gmail.com 9768946252 shraddha123 shraddha123
13 billa amulya Female amulyabilla19@gmail.com 9347339401 123456 123456
Edit Copy Delete
Check all With selected: Edit Copy Delete Export
Query results operations
Print Copy to clipboard Export Display chart Create view
Console

13 Result


localhost/am/Hospital-Manage
localhost/am/Hospital-Management-System-master/admin-panel.php#list-pres
HOSPITAL MANAGEMENT SITE
Logout
Welcome Ram Kumar
Dashboard
Book Appointment
Appointment History
Prescriptions
Doctor Name
Appointment ID
Appointment Date
Appointment Time
Diseases
Allergies
Prescriptions
Bill Payment
arun
14
2020-12-29
08:00:00
Viral fever
No allergies
take fever reducers, such as acetaminophen or ibuprofen, to reduce a fever and its symptoms, twice a day resting as much as possible drinking plenty of fluids to stay hydrated and replenish fluids lost while sweating taking antiviral medications, such as oseltamivir phosphate (Tamiflu), when applicable sitting in a lukewarm bath to bring your body temperature down
Pay Bill


Generate Bill
localhost/am/Hospital-Management-System-master/admin-panel.php?ID=14&generate_bill=Pay+Bill#list-pres
HOSPITAL MANAGEMENT SITE
Bill
Patient ID : 1
Appointment ID : 14
Patient Name : Ram Kumar
Doctor Name : arun
Appointment Date : 2020-12-29
Appointment Time : 08:00:00
Disease : Viral fever
Allergies : No allergies
Prescription : take fever reducers, such as acetaminophen or ibuprofen, to reduce a fever and its symptoms, twice a day resting as much as possible drinking plenty of fluids to stay hydrated and replenish fluids lost while sweating taking antiviral medications, such as oseltamivir phosphate (Tamiflu), when applicable sitting in a lukewarm bath to bring your body temperature down
Fees Paid : 600

14 User Manual

1. Visit the domain
2. Click ‘Already have an account’ if you registered before,otherwise Register as patient by entering the details
3. Check the available doctors
4. Book the appointment by selecting the preferable time
5. You can view your appointments and prescription.
6. you can pay the bill.
7. Doctors can login in with the username and password
8. Doctors can view the appointments and can give prescriptions to the patients.
9. Admin can see doctor list,patient list,appointments,prescription list
10. Admin can also update and delete doctors based on their available timings
11. one can logout by clicking the logout button on the top left side

15 Conclusion

Since the System is essential for maintaining detail about the Doctor, Patient, Hospital staff etc. we understand that by using this Management System project the work becomes very easy and we save a lot of time. Hospital administrators would be able to significantly improve the operational control and thus streamline operations. This would enable to improve the response time to the demands of patient care because it automates the process of collecting, collating and retrieving patient information. Accounting sometimes becomes awfully pathetic and complex. This product will eliminate any such complexity.

16 References

https://www.w3schools.com/css/
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