HOSPITAL MANAGEMENT SYSTEM

A MINI PROJECT REPORT

SUBMITTED BY

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In partial fulfillment for the award of the degree of

BACHELOR OF ENGINEERING IN COMPUTER SCIENCE AND ENGINEERING

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BONAFIDE CERTIFICATE

Certified that this project report **"HOSPITAL MANAGEMENT SYSTEM"** is the Bonafide work of **"AADHITHYA K 221701001, ADHITHYA A 221701004,BHARATH N 221701010,SANTHRU 221701049**" who carried out the **project work under my supervision.**

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ABSTRACT

A **Hospital Management System (HMS)** is a comprehensive software application designed to streamline the operations and management of healthcare facilities. This system provides an integrated platform to manage patient information, doctor schedules, medical records, billing processes, inventory, and administrative tasks efficiently.

The HMS aims to enhance patient care by enabling quick access to accurate data and reducing manual errors through automation. It supports key functionalities such as patient registration, appointment scheduling, diagnosis recording, treatment tracking, and real-time reporting. Additionally, it ensures secure storage of sensitive medical records, complying with data privacy regulations.

This project leverages modern technologies to improve the overall operational workflow of hospitals, enabling better resource allocation, reduced waiting times, and improved coordination among staff. By implementing this system, hospitals can optimize service delivery, reduce costs, and ensure a seamless experience for both patients and medical professionals.

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INTRODUCTION 1. INTRODUCTION

A **Hospital Management System (HMS)** is a digital platform that streamlines hospital operations like patient registration, appointment scheduling, medical records, billing, and inventory. It enhances efficiency, reduces manual tasks, and improves patient care while securely managing sensitive data.

2. SCOPE OF THE WORK

The Hospital Management System (HMS) streamlines patient registration, appointment scheduling, and medical record management. It automates billing, monitors inventory, and generates reports for operational insights. Additionally, it ensures secure handling of sensitive data, improving hospital efficiency and decision-making.

3.PROBLEM STATEMENT

Manual hospital management is inefficient, error-prone, and leads to issues like misplaced records, long wait times, and inconsistent billing. Lack of integration between departments hampers coordination and data security. A centralized system is needed to streamline workflows, ensure accuracy, and improve patient care.

1.4 AIM AND OBJECTIVES OF THE PROJECT

Aim

To create an efficient system to automate and streamline hospital operations for better patient care and resource management.

Objectives

1. Automate key processes like registration and billing.
2. Securely manage and retrieve medical data.
3. Improve coordination and operational efficiency.

CHAPTER – 2

SYSTEM SPECIFICATIONS

2.1 HARDWARE SPECIFICATIONS

Processor	:	Intel i5
Memory Size	:	8GB (Minimum)
HDD	:	1 TB (Minimum)

2.2 SOFTWARE SPECIFICATIONS

Operating System	:	WINDOWS 10
Front – End	:	REACT
Back - End	:	EXPRESS,MANGODB,Nodejs
Language	:	JAVASCRIPT

CHAPTER - 3

MODULE DESCRIPTION

The Hospital Management System (HMS) includes several modules that streamline hospital operations. The Patient Management module handles registration, appointments, and medical records. Doctor Management manages doctor profiles, schedules, and patient interactions. The Billing System automates invoicing and payment tracking, while the Inventory Management module keeps track of hospital supplies and equipment. The Reports and Analytics module generates insights into operational efficiency and patient care, and the Data Security module ensures the protection of sensitive medical and administrative data. Together, these modules improve hospital management and enhance patient care.

1. Login/Sign Up:
   - Provides secure user authentication and access based on roles (admin, doctor, patient).
   - Allows new users to sign up and existing users to log in securely.
2. Admin Management:
   - Enables administrators to manage and assign user roles (admin, doctor, patient).
   - Provides tools for monitoring hospital operations and managing system access.
   - Generates reports on hospital performance, resource usage, and other key metrics.
3. Message System:
   - Facilitates secure communication between doctors, patients, and hospital staff.
   - Enhances coordination, allowing users to send and receive messages about appointments, treatment updates, and administrative tasks.
4. Doctor Management:
   - Manages doctor profiles, including personal details, specialties, and schedules.
   - Allows the tracking of doctor-patient interactions, ensuring smooth workflow and effective care delivery.
5. Patient Management:
   - Handles patient registration, appointment scheduling, and the maintenance of medical records.

    - Tracks patient medical history, treatment plans, and other vital information, ensuring comprehensive care.

6. Add New Doctor:
    - Allows administrators to add new doctors to the system by entering relevant details, including their specialization, contact information, and availability.
    - Ensures the hospital’s doctor roster is always up to date and accessible.

Together, these modules ensure efficient management, improved coordination, and enhanced patient care within the hospital.

CHAPTER - 4

SAMPLE CODING APP.jsx

```
import express from "express";
import {config} from "dotenv";
import cors from "cors"
import fileUpload from "express-fileupload";
import cookieParser from "cookie-parser";
import {dbconnection} from "./database/dbconnection.js";
import messageRouter from "./router/messageRouter.js";
import{errorMiddleware}from "./middleware/errorMiddleware.js";
import userRouter from "./router/userRouter.js";
import appointmentRouter from "./router/appointmentRouter.js";
const app=express();
config({path:"./config/config.env"});

app.use(cors({

   origin:[process.env.FRONTEND_URL,process.env.DASHBOARD_URL],
   METHODS:["GET","POST","PUT","DELETE"],
   credentials:true,

}));
app.use(cookieParser());
app.use(express.json());
app.use(express.urlencoded({extended:true}));
app.use(fileUpload({
   useTempFiles:true,
   tempFileDir:"/tmp/",
}));

app.use("/api/v1/message",messageRouter);
app.use("/api/v1/user",userRouter);
app.use("/api/v1/appointment", appointmentRouter);
dbconnection();
app.use(errorMiddleware);
export default app;
```

Sample Code HOME.jsx

```
import React, { useContext } from "react";
import Hero from "../components/Hero";
import Biography from "../components/Biography";
import MessageForm from "../components/MessageForm";
import Departments from "../components/Departments";
const Home = () => {
  return (
    <>
      <Hero
        title={
          "Welcome to ZeeCare Medical Institute | Your Trusted Healthcare Provider"
        }
        imageUrl={"/hero.png"}
      />
      <Biography imageUrl={"/about.png"} />
      <Departments />
      <MessageForm />
    </>
  );
};

export default Home;
```

Sample code Login.jsx

```
import axios from "axios";
import React, { useContext, useState } from "react";
import { toast } from "react-toastify";
import { Context } from "../main";
import { Link, useNavigate, Navigate } from "react-router-dom";

const Login = () => {
  const { isAuthenticated, setIsAuthenticated } = useContext(Context);

  const [email, setEmail] = useState("");
  const [password, setPassword] = useState("");
  const [confirmPassword, setConfirmPassword] = useState("");

  const navigateTo = useNavigate();
const handleLogin = async (e) => {
  e.preventDefault();
  try {
    await axios
      .post(
        "http://localhost:4000/api/v1/user/login",
        { email, password, confirmPassword, role: "Patient" },
        {
          withCredentials: true,
          headers: { "Content-Type": "application/json" },
        }
      )
      .then((res) => {
        toast.success(res.data.message);
        setIsAuthenticated(true);
        navigateTo("/");
        setEmail("");
        setPassword("");
        setConfirmPassword("");
      });
  } catch (error) {
    toast.error(error.response.data.message);
  }
};

if (isAuthenticated) {
  return <Navigate to={"/"} />;
}

return (
  <>
    <div className="container form-component login-form">
      <h2>Sign In</h2>
      <p>Please Login To Continue</p>
      <p>
        Lorem ipsum dolor sit amet consectetur adipisicing elit. Placeat culpa
        voluptas expedita itaque ex, totam ad quod error?
      </p>
      <form onSubmit={handleLogin}>
```

```
          <input
            type="text"
            placeholder="Email"
            value={email}
            onChange={(e) => setEmail(e.target.value)}
          />
          <input
            type="password"
            placeholder="Password"
            value={password}
            onChange={(e) => setPassword(e.target.value)}
          />
          <input
            type="password"
            placeholder="Confirm Password"
            value={confirmPassword}
            onChange={(e) => setConfirmPassword(e.target.value)}
          />
          <div
            style={{
              gap: "10px",
              justifyContent: "flex-end",
              flexDirection: "row",
            }}
          >
            <p style={{ marginBottom: 0 }}>Not Registered?</p>
            <Link
              to={"/register"}
              style={{ textDecoration: "none", color: "#271776ca" }}
            >
              Register Now
            </Link>
          </div>
          <div style={{ justifyContent: "center", alignItems: "center" }}>
            <button type="submit">Login</button>
          </div>
        </form>
      </div>
    </>
  );
```

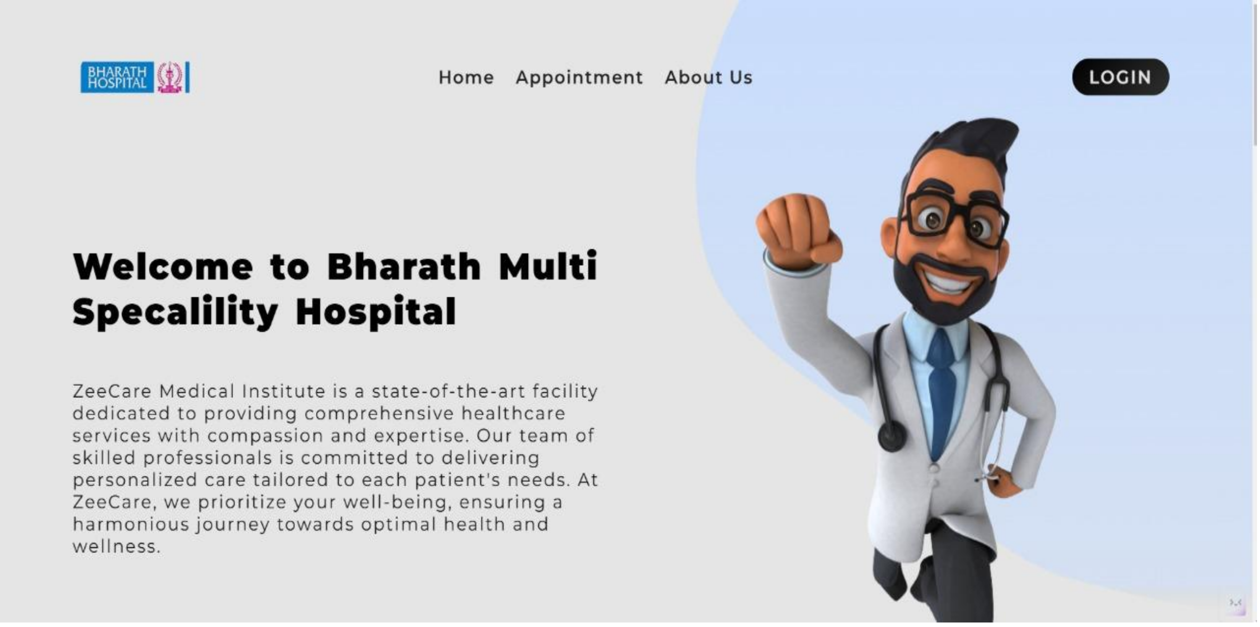
```
};

export default Login;
```

CHAPTER - 5

SCREEN SHOTS

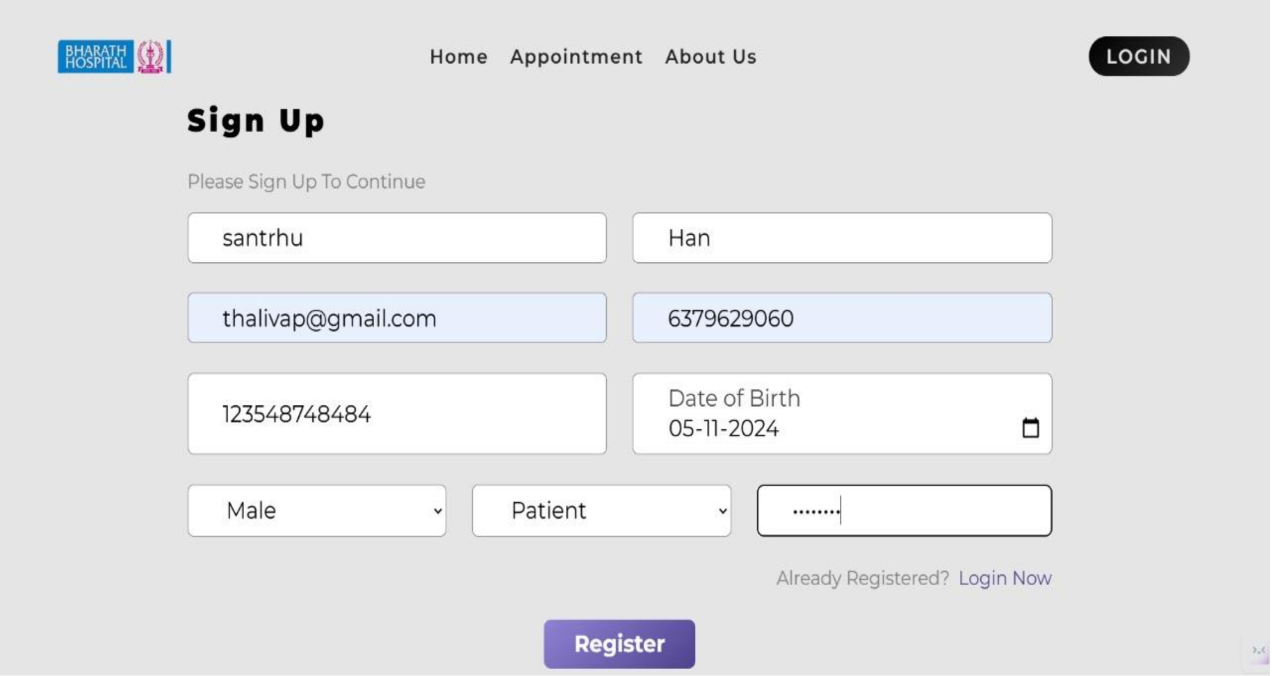
Fig 5.1 Home page



Welcome to Bharath Multi Specalility Hospital

ZeeCare Medical Institute is a state-of-the-art facility dedicated to providing comprehensive healthcare services with compassion and expertise. Our team of skilled professionals is committed to delivering personalized care tailored to each patient's needs. At ZeeCare, we prioritize your well-being, ensuring a harmonious journey towards optimal health and wellness.

Fig 5.2 Signup page



Sign Up

Please Sign Up To Continue

santrhu

Han

thalivap@gmail.com

6379629060

123548748484

Date of Birth 05-11-2024

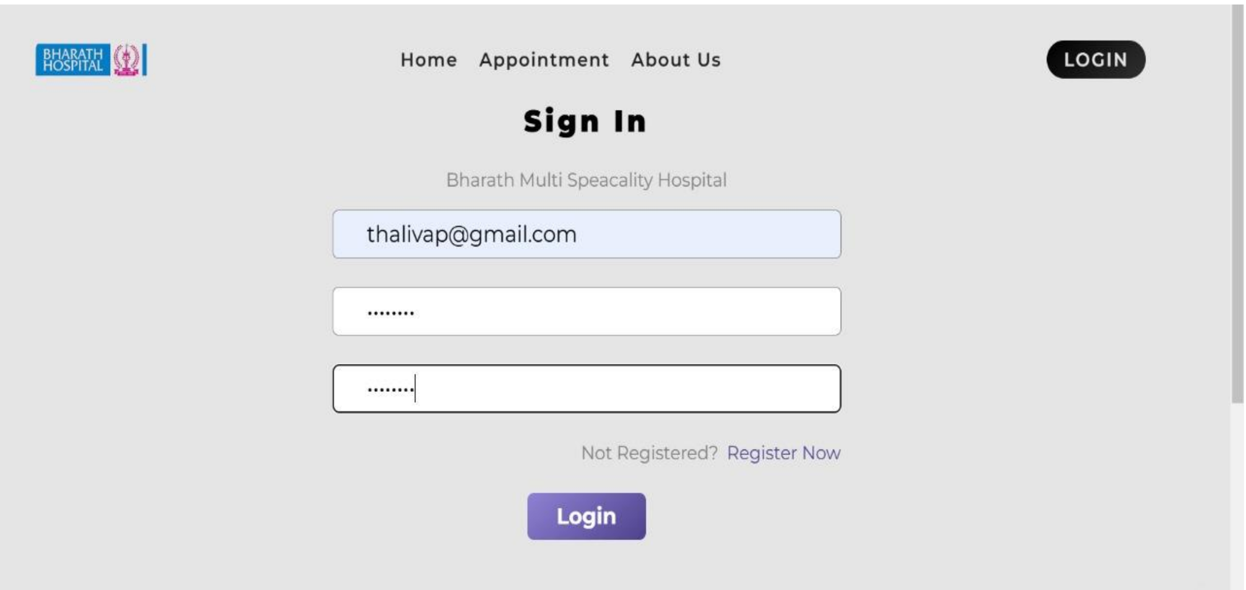
Male

Patient

••••••••

Already Registered? Login Now

Sign in page



Sign In

Bharath Multi Speacality Hospital

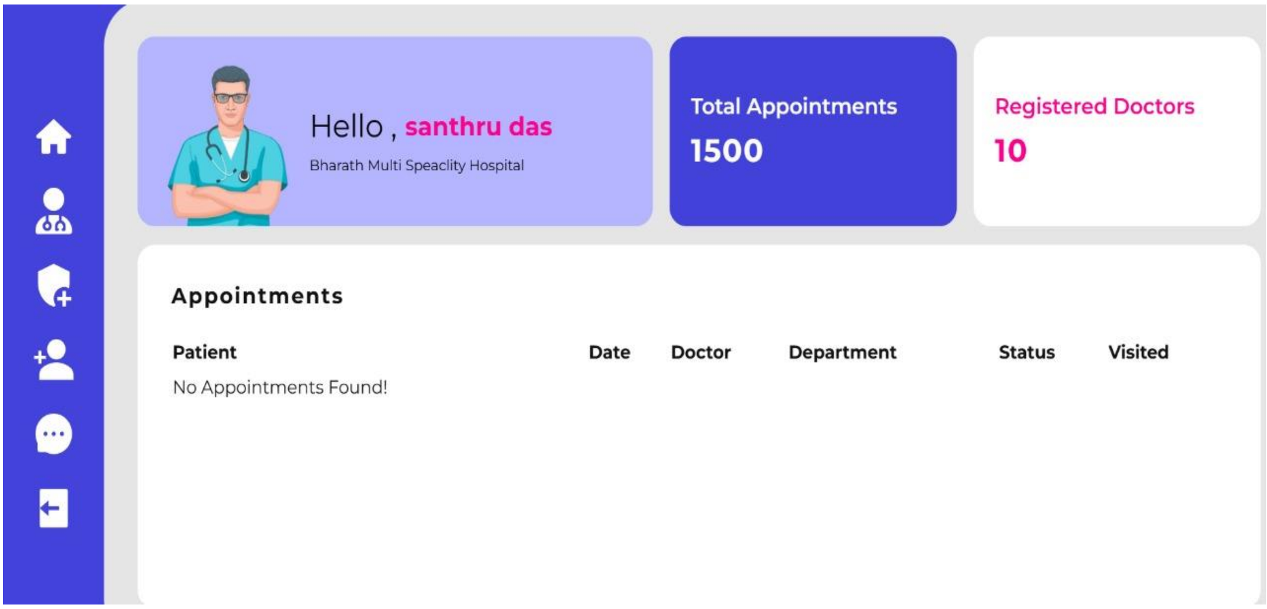
thalivap@gmail.com

········

········

Not Registered? Register Now

Fig 5.3 Admin Page



Hello , santhru das

Bharath Multi Speaclity Hospital

Total Appointments

1500

Registered Doctors

10

Appointments

Patient	Date	Doctor	Department	Status	Visited
No Appointments Found!					

CHAPTER 6

Fig 5.6 Database creation

Conclusion

The Hospital Management System streamlines operations, enhances patient care, and reduces errors through efficient data management. It ensures seamless communication, real-time data access, and secure handling of records, improving hospital productivity and decision-making.

Future Enhancements

1. Integrate IoT devices for real-time health monitoring.
2. Implement AI for diagnosis and treatment assistance.
3. Enable telemedicine and online consultation features.

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