

**A report on**

**The Doctor and Patient Appointment System**

Submitted to the CMR Institute of Technology in partial fulfilment of the requirement for the  
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**REAL TIME SOCIETAL RESEARCH PROJECT**

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**In**

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Submitted by

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**Kandlakoya, Medchal Road, Hyderabad**

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**CERTIFICATE**

This is to certify that a Real Time Societal Research Project entitled with: “**The Doctor and Patient Appointment System**” is being

Submitted By

**K. PRASHANTH - 22R01A0523**

In partial fulfillment of the requirement for award of the Real Time Societal Research Project Laboratory of II B. Tech II Semester in CSE to the CMRIT, Hyderabad is a record of a bonafide work carried out under our guidance and supervision.

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## **ABSTRACT**

The Doctor and Patient Appointment System is a cutting-edge tool designed to significantly streamline the process of scheduling, managing, and monitoring medical appointments. It addresses several common challenges associated with traditional appointment scheduling, such as long wait times, overbooking, and communication gaps between patients and healthcare providers. By harnessing modern technology, the system aims to greatly enhance the overall healthcare experience for both doctors and patients.

One of the key features of this system is the ability for patients to book appointments online through a user-friendly web interface or mobile application. This functionality provides real-time availability of doctors, reducing the need for phone calls or in-person visits to schedule appointments, thereby saving time and resources for both patients and medical staff.

For healthcare providers, the system offers robust tools for real-time schedule management. Doctors can easily view and update their availability, approve or reschedule appointments, and receive notifications of upcoming appointments. Calendar synchronization ensures that all appointments are up-to-date, preventing double-booking and optimizing the utilization of doctors' time.

Improved communication between patients and healthcare providers is another significant advantage of the system. Through a secure messaging feature, patients can communicate directly with their doctors to ask questions, receive pre-appointment instructions, or obtain follow-up care guidelines. This functionality not only enhances patient engagement but also ensures that both parties are well-prepared for each appointment, leading to a more efficient consultation process.

Integration with electronic health records is another key component of the system. This integration allows doctors to access comprehensive patient histories, previous appointment notes, and test results during consultations. As a result, doctors can provide more informed and personalized care, while patients benefit from a seamless continuity of care. The system's data analytics capabilities further enable healthcare providers to track appointment trends, patient demographics, and service demand, facilitating better resource planning and decision-making.

In conclusion, the Doctor and Patient Appointment System represents a significant advancement in healthcare management. By streamlining appointment scheduling, enhancing communication, and integrating with electronic health records, the system improves the efficiency and effectiveness of healthcare delivery. Patients enjoy greater convenience and engagement, while doctors benefit from optimized schedules and better access to patient information. The system's emphasis on security and compliance ensures that patient data is protected, fostering trust and confidence among users. As healthcare continues to evolve, innovative solutions like this will play a crucial role in meeting the growing demands and challenges of the industry.

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# 1. INTRODUCTION

A Doctor-Patient Appointment System is a pivotal component of modern healthcare management, designed to streamline the process of scheduling and managing appointments between healthcare providers (doctors) and patients. This system leverages technology to improve efficiency, enhance patient satisfaction, and optimize resource allocation within healthcare facilities.

If anybody is ill and wants to visit a doctor for check-up, he or she needs to visit the hospital and waits until the doctor is available. The patient also waits in a queue while getting appointment. If the doctor cancels the appointment for some emergency reasons, then the patient is not able to know about the cancelation of the appointment unless or until he or she visits the hospital. As the mobile communication technology is developing rapidly, therefore, one can use the mobile's applications to overcome such problems and inconvenience for the patients.

The proposed work in this paper is an Online Hospital Management Application that uses an android platform that makes the task of making an appointment from the doctor easy and reliable for the users. Android based online doctor appointment application contains two modules. One module is the application designed for the patient that contains a login screen. The patient has to register himself before logging in to the application. After logging in, the patient can select a hospital and can view the hospital details. The patient has the option of selecting a doctor from the list of doctors and can view the doctor's details. The patient can request for an appointment on his/her preferred day/time.

The selected day/time slot will be reserved and patient will receive the notification of the successfully added appointment. There are considerable online scheduling tools in the internet, a few of which are trait loaded, simple to setup and economical for practitioners, online appointment reservation and scheduling delivers a lot of merit added benefits and services, like captivating the patient, composing the patient to feel welcomed, and being capable to save patients' details safely for future information. But the most admirable and useful preference is that online appointment reservation and scheduling is remarkably in expensive. Both doctors and patients can access the portal through their unique ID's.



## Importance and Purpose

The primary purpose of a Doctor-Patient Appointment System is to provide a structured and efficient method for patients to schedule appointments with healthcare providers. By moving from traditional phone-based scheduling to a digital platform, healthcare facilities can reduce administrative overhead, minimize scheduling conflicts, and improve overall patient care.

## Key Benefits:

- **Improved Accessibility:** Patients can conveniently schedule appointments online or through mobile applications, eliminating the need for phone calls during busy periods.
- **Enhanced Efficiency:** Automated appointment reminders and notifications reduce no-show rates and optimize resource utilization within healthcare facilities.
- **Better Patient Experience:** Seamless appointment booking, access to doctor availability, and real-time updates on appointment status contribute to improved patient satisfaction.
- **Effective Resource Management:** Healthcare providers can manage their schedules more effectively, reducing downtime and maximizing patient throughput.
- **Data-Driven Insights:** The system generates valuable data on appointment trends, patient preferences, and operational efficiency, aiding in strategic decision-making and resource planning.
- 

## Functional Components

A typical Doctor-Patient Appointment System includes:

- **User Interfaces:** Interfaces for patients, doctors, and administrators, each tailored to their specific needs and permissions.
- **Appointment Scheduling:** Tools for patients to view available time slots, select preferred doctors, and book appointments.
- **Notifications:** Automated reminders and updates sent via email or SMS to patients and healthcare providers.
- **Data Management:** Secure storage and management of patient information, appointment records, and doctor schedules.

- **Reporting and Analytics:** Tools to analyze appointment metrics, patient feedback, and system performance.

## Technological Framework

Doctor-Patient Appointment Systems are built using a combination of frontend and backend technologies:

- **Frontend:** HTML, CSS, JavaScript, and frameworks like React, Angular, or Vue.js for interactive user interfaces.
- **Backend:** Server-side technologies such as Node.js, Django, or Spring Boot, paired with databases like MySQL, PostgreSQL, or MongoDB for data storage and retrieval.
- **Integration:** Integration with external services for notifications (e.g., Twilio for SMS), authentication (e.g., JWT tokens), and calendar systems (e.g., Google Calendar API).

## **2. LITRATURE SURVEY**

Here we present an interaction system for doctor and patient communication. It has an exceptional administration of several nodes through which doctors and patients interact with each other. The patients can easily access the hospital server nodes. Here the patients are allowed to interact with the doctors about their symptoms. The doctors can list and track their patients who are geographically dispersed and provide diagnosis on the needful. Proposing a new system from where the patients can easily book their appointments online and the doctors can view and manage them. Here the patients book their appointments online depending on the doctor's availability and their time feasibility. The doctors on the other hand can either extend or reduce their working hours depending on the number of patients arriving for that day. In addition, the approximate time of arrival for the patients is also approximately calculated and notified to the registered number. Any other information can also be fabricated at installation and hence removes the need for a technician install the software.

### **2.1 Waiting Time**

Waiting time simply means a period of time which one must wait in order for a specific action to occur, after that action is requested or mandated (Fernandes et al., 1994). Patients' waiting time has been defined as "the length of time from when the patient entered the outpatient clinic to the time the patient actually received his or her prescription" (Jamaiah, 2003). It is defined as the total time from registration until consultation with a doctor. There were two waiting times, the first is time taken to see a physician and the second is time to obtain medicine (Suriani, 2003).

### **2.2 Patients' Appointment System**

A patient appointment system or appointment schedule for health care center started long time ago (Harper, 2003). Management of patients' appointments has earlier works and has developed simplified queuing models and fairly static scheduling conditions. Another attempt was made to calculate the waiting time between patient and doctor using the mathematical queuing models to minimize waiting time (Gamlin, 2003). However; traditionally the appointment system has considered that the doctor time is more important than patient time (Wijewickrama, 2005). So an appointment system was designed to minimize the doctor idle time but current designing of an appointment system is based on decisive factors with respect to both the patient and doctor (Takakuwa, 2005).

### **2.3 Managing Patients' Appointment system**

According to Dexter (1999), managing patient appointment system is a computer application used to manage and reduce the patient waiting time in the health care center. Some health care centers do not use any appointment system. So it has a longer average patients' waiting time than the health care center that adopts the patients' appointment system.

### **2.4 Online Booking System**

An online system is also known as a web-based system. A web is made up of page that is commonly known as web page or web site, and a web site is a computer program that runs a webserver that provides access to a group of related web pages (Alex, 2000). A system is a set of in dependent components working together to achieve a common objective.

### **2.5 Existing Hospital Appointment Schemes**

One application developed to manage patients' appointment scheduling has used exponential enter arrival times. This model assumes that the exponential enter arrival times could not be directly validated by date, and it is limited due to the nature of the appointment scheduling (Rohleder, 2002). Since appointments are scheduled in the future, the exact model of call arrivals will only have limited impact on measures related to the time between the call and the appointment time. For this reason, the challenge for making appointment system is designing a suitable system based on the health care procedure environment (Klassen, 2002). Hence, the appointment provider in the health care center can schedule a patient into an appropriate time slot on a given day.

### **3. SYSTEM ANALYSIS**

#### **3.1 Existing System:**

The current medical appointment booking system has problems. Patients often wait a long time to schedule appointments, which is frustrating and delays their care. The manual process also creates a heavy admin burden for healthcare providers, taking time away from patient care.

Old-fashioned scheduling methods like phone calls and paper forms lack the convenience and accessibility that patients expect today. The lack of a central, user-friendly system leads to communication issues, missed appointments, and poor patient experiences.

#### **3.2 Disadvantages of Existing System:**

1. Long Waiting Times: Patients often face extended wait times on the phone or at clinics due to manual scheduling processes.
2. Administrative Burden: Healthcare staff must handle numerous phone calls and paperwork, leading to inefficiencies.
3. Scheduling Errors: Manual entry can result in errors such as double bookings or incorrect patient information.
4. Limited Accessibility: Patients may struggle to reach clinics during office hours for appointment booking.
5. Communication Delays: Patients may not receive timely updates or reminders about appointments, leading to missed appointments.
6. Lack of Transparency: Patients may not have visibility into available appointment slots or doctor availability in real-time.
7. Patient Frustration: Cumbersome booking processes and long wait times can lead to dissatisfaction among patients.
8. Resource Inefficiency: Healthcare providers may not efficiently allocate resources based on patient demand and clinic capacity.

### **3.3 Proposed System:**

The proposed Doctor Appointment System is an advanced web application aimed at revolutionizing the way patients schedule, manage, and cancel medical appointments. By leveraging modern web technologies such as HTML, CSS, and JavaScript, the system ensures a seamless, efficient, and user-friendly experience for both patients and healthcare providers. This system addresses the shortcomings of traditional appointment booking processes, which often involve time-consuming phone calls, long waiting times, and administrative inefficiencies.

Upon accessing the system, users are greeted with a secure login and registration interface. New users can easily create an account by providing basic information such as username, password, email, and mobile number. Once registered, users can log in to access the main dashboard, which features a welcoming interface with navigation options to book an appointment, view or cancel an existing appointment, and log out.

The appointment booking process is streamlined to enhance user convenience. Patients start by selecting their geographic area from a list of options including Jubilee Hills, Gachibowli, HITECH City, Manikonda, and others. Based on the selected area, the system dynamically updates the list of available hospitals, ensuring patients can choose the most convenient location for their medical needs. This area-based filtering significantly reduces the complexity of finding suitable healthcare facilities.

Patients then specify their health issue by selecting from a predefined list of common medical problems such as allergies, colds and flu, conjunctivitis, diarrhea, headaches, and more. If the health issue is not listed, there is an option to specify other problems. This detailed categorization helps in accurately triaging the patient and matching them with the most suitable healthcare provider. The system dynamically populates a list of doctors based on the selected health issue and hospital, presenting patients with relevant choices. Each doctor's profile includes their specialty, experience, and patient reviews, enabling informed decision-making.

Once the patient selects a doctor, they can choose their preferred appointment date and time from available slots. This feature ensures that patients can book appointments that fit their schedules, minimizing disruptions to their daily routines. After submitting the appointment form, patients receive a summary of their booking details, which they can review or cancel if needed.

The system also incorporates robust security measures to protect sensitive patient data. It ensures compliance with healthcare regulations such as HIPAA, safeguarding patient information through encryption, secure authentication, and strict access controls. The

automation of appointment scheduling reduces the administrative burden on healthcare providers, allowing them to focus more on patient care rather than managing appointments manually. Additionally, the system's intuitive interface caters to users of all ages and technical abilities, promoting widespread adoption and usage.

In conclusion, the proposed Doctor Appointment System offers a comprehensive solution to the challenges of traditional appointment booking processes. It enhances operational efficiency, improves patient satisfaction, and ensures secure handling of patient data. This innovative system represents a significant advancement in healthcare management, providing a reliable and user-friendly platform for managing medical appointments.

### **3.4 Advantages of Proposed System:**

1. **Efficiency:** Streamlines appointment scheduling, reducing waiting times and administrative workload.
2. **Accessibility:** Allows patients to book appointments online anytime, from anywhere, improving convenience.
3. **Real-Time Updates:** Provides instant notifications and updates on appointment status and changes.
4. **Patient Engagement:** Enhances patient involvement in managing their healthcare appointments.
5. **Data Accuracy:** Reduces errors associated with manual scheduling and improves data management.
6. **Resource Optimization:** Efficiently allocates medical resources based on demand and availability.
7. **Enhanced Communication:** Facilitates better communication between patients and healthcare providers.
8. **Analytics and Insights:** Provides insights through data analytics for improved decision-making and resource planning.

### 3.5 Limitations of Advanced System:

1. **Technology Dependency:** Relies heavily on internet connectivity and technological infrastructure, limiting access in remote or underserved areas.
2. **User Adoption:** Requires users (patients and healthcare providers) to adapt to the new digital platform, which may pose initial resistance or learning curve challenges.
3. **Security Concerns:** Data security and patient privacy must be rigorously maintained to prevent unauthorized access or breaches.
4. **Maintenance Costs:** Ongoing maintenance and updates of the system can be costly, requiring dedicated resources and expertise.
5. **Digital Divide:** May widen the gap between tech-savvy users and those with limited digital literacy or access to technology.
6. **Integration Challenges:** Integration with existing healthcare systems or electronic health records (EHRs) may pose compatibility issues and require seamless interoperability.
7. **Reliability:** System downtime or technical glitches could disrupt appointment scheduling and patient care.
8. **Legal and Regulatory Compliance:** Compliance with healthcare regulations (e.g., HIPAA in the United States) requires stringent adherence to data protection laws, adding complexity to system development and operation.



## 4. SYSTEM STUDY

A system study of the Doctor Appointment System involves a comprehensive analysis of its various aspects to ensure its effectiveness and efficiency.

**1. Technical Feasibility:** Evaluate the technological infrastructure required for the system, including hardware, software, and networking capabilities. Assess if the proposed technologies (e.g., web development frameworks, database systems) can support the system's requirements.

**2. Operational Feasibility:** Examine how the system will integrate into existing healthcare operations. Consider user acceptance, training needs, and potential disruptions during implementation. Determine if the system can be implemented with minimal disruption to current workflows.

**3. Economic Feasibility:** Conduct a cost-benefit analysis to determine the financial viability of the system. Evaluate initial development costs, maintenance expenses, and potential savings or revenue generation from improved efficiency and patient satisfaction.

**4. Legal and Regulatory Compliance:** Ensure the system complies with healthcare regulations and data protection laws (e.g., HIPAA in the United States). Address privacy concerns and establish protocols for handling sensitive patient information securely.

**5. Functional Requirements:** Define the system's functional capabilities, such as appointment scheduling, patient registration, doctor selection, and appointment cancellation. Ensure these functionalities meet the needs of both patients and healthcare providers.

**6. Non-Functional Requirements:** Specify non-functional requirements related to usability, performance, scalability, and security. Define metrics for system responsiveness, data integrity, and user interface design to ensure optimal performance and user satisfaction.

**7. System Design:** Develop detailed system design documents outlining the architecture, database schema, user interfaces, and integration points with external systems (e.g., electronic health records). Ensure the design supports future scalability and enhancements.

**8. Implementation Plan:** Create a phased implementation plan detailing timelines, milestones, resource allocation, and responsibilities. Identify potential risks and mitigation strategies to ensure a smooth rollout of the system.

**9. Testing and Validation:** Conduct rigorous testing of the system to verify functionality, performance, and security. Include user acceptance testing (UAT) to gather feedback from stakeholders and make necessary refinements.

**10. Training and Support:** Develop training materials and programs for users (e.g., healthcare staff, patients) to ensure they can effectively use the system. Establish a support mechanism to address user inquiries, technical issues, and system maintenance.

## **5. HARDWARE AND SOFTWARE REQUIREMENTS**

### **5.1 Hardware Requirements:**

#### **1. Server:**

- A robust server to host the web application and manage database operations.
- Minimum specifications: Multi-core processor (e.g., Intel Xeon or AMD Ryzen), sufficient RAM (e.g., 8GB or more), ample storage (e.g., SSD storage for faster data access).

#### **2. Networking Equipment:**

- Reliable internet connectivity with adequate bandwidth to support simultaneous user access and data transmission.
- Network switches and routers to ensure stable communication between servers, clients, and external systems.

#### **3. Client Devices:**

- Desktop computers, laptops, or tablets for healthcare staff to access the system.
- Minimum specifications: Modern web browsers (e.g., Google Chrome, Mozilla Firefox), adequate RAM and processing power to handle web-based applications.

#### **4. Printers and Scanners:**

- Printers for generating appointment confirmations, reports, and patient documents.
- Scanners for digitizing paper-based records or documents for electronic storage.

#### **5. Backup and Storage:**

- Backup solutions (e.g., external hard drives, cloud storage) to ensure data redundancy and disaster recovery.
- Adequate storage capacity to accommodate patient records, appointment histories, and system backups.

#### **6. Security Infrastructure:**

- Firewalls, antivirus software, and intrusion detection systems (IDS) to protect against cyber threats and unauthorized access.
- Secure socket layer (SSL) certificates for encrypted data transmission over the internet to ensure patient data confidentiality.

#### **7. Power Backup:**

- Uninterruptible power supply (UPS) units or power generators to prevent data loss or system downtime during power outages.

These hardware components and specifications ensure that the Doctor Appointment System operates reliably, securely, and efficiently, supporting seamless healthcare service delivery and patient management.

## 5.2 Software Requirements:

### Visual Studio IDE:

Visual Studio is available in different editions (Community, Professional, and Enterprise) depending on your team size and project requirements. It provides a comprehensive integrated development environment for web development.

### Web Development Workload:

Install the "ASP.NET and web development" workload during Visual Studio installation. This workload includes essential tools and templates for developing web applications, including HTML, CSS, JavaScript, and web frameworks like ASP.NET.

### Web Browsers:

Ensure compatibility with modern web browsers like Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari for testing and debugging your web application.

### Node.js:

Node.js is often used in web development for server-side JavaScript execution and package management (npm). Visual Studio integrates with Node.js for running JavaScript-based servers and build tools.

### Git:

Git is essential for version control. Visual Studio includes built-in Git support, allowing you to clone repositories, commit changes, and collaborate with team members using Git repositories (like GitHub or Azure Repos).

### Extensions and Plugins:

Depending on your project needs, install relevant extensions or plugins from Visual Studio Marketplace. For example, extensions for JavaScript debugging, CSS preprocessors, or frameworks like React or Angular.

### Debugging Tools:

Visual Studio provides powerful debugging capabilities for client-side (JavaScript, CSS) and server-side (ASP.NET, Node.js) code. Use breakpoints, watch windows, and console output for debugging HTML, CSS, and JavaScript files.

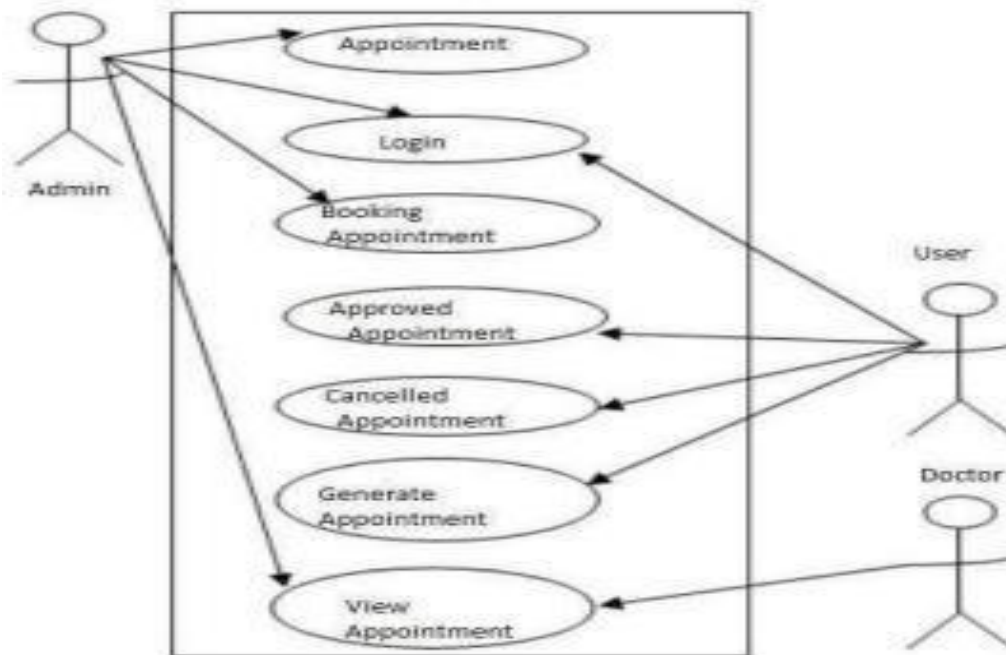
### Package Managers:

Visual Studio integrates with package managers like npm (Node Package Manager) for managing JavaScript dependencies and libraries used in your web application development.

Deployment Options:

## 6. ARCHITECTURE DIAGRAMS

The architecture is structured to allow users to make use of portable computer system, desktop computer system, and mobile phone as web browser to access the booking system. Client- server architecture was used and we used thin client-server. The medical appointment booking system has two components namely: the server-side and client-side that run on the browser. In the client approach almost all the processing work was done on demand at the server end and the client task was to display data and information on the screen. While in thin client- server architecture, the web browser is the client. This architecture was used because with it users will not be required to install any software on their PCs except a standard web browser, which often come, with most PC operating system and almost all the current standard mobile phone. Clients would also not require any powerful PC; users can use any PC with a web browser such as laptop/notebook, mobile phone, and desktop PC. The servers would require higher configuration (in terms of hardware) because it would be regularly subjected to heavy load.



**Figure 6.1. Depicts the medical appointment booking system architecture.**

## **7. MODULES**

The Doctor Appointment System encompasses a comprehensive range of modules designed to enhance patient care, operational efficiency, and overall user satisfaction within healthcare organizations. The User Authentication and Authorization module ensures secure access for patients, doctors, and administrators, allowing them to manage their access permissions effectively. Patients can register and manage their profiles through the Patient Registration and Profile Management module, keeping their personal information secure. The Doctor Management module facilitates the management of doctor profiles, specialties, availability, and scheduling preferences, ensuring that patients can find the right healthcare providers.

The Appointment Scheduling module allows patients to book appointments with available doctors based on their specialty, date, and time preferences. This is complemented by the Appointment Management module, which provides doctors and administrators with tools to view, modify, and cancel appointments as needed. The Health Issue Specification module enables patients to specify their health issues or reasons for booking an appointment, aiding in effective triage and doctor selection. Hospital and Clinic Management handles information about the associated hospitals or clinics, including locations, services offered, and availability, ensuring that patients have access to comprehensive healthcare options.

The system also features an Area and Location Selection module, allowing patients to choose hospitals or clinics based on geographic areas or locations. The Doctor Search and Selection module enables patients to search for doctors based on specialties, location, availability, and patient reviews, ensuring informed decision-making. Automated reminders and notifications are sent to both patients and doctors about upcoming appointments, changes, or cancellations through the Appointment Reminders and Notifications module. Additionally, the system implements robust security measures to protect patient data and ensure compliance with healthcare regulations and privacy laws, such as HIPAA, under the Security and Compliance module.

These modules collectively form an integrated Doctor Appointment System, improving the scheduling process, enhancing patient-doctor interactions, and delivering efficient healthcare services. The system's design ensures that each module serves a specific function, ultimately contributing to a streamlined and effective healthcare delivery process.

## 8. IMPLEMENTATION

### index.html

```
<!DOCTYPE html>

<html lang="en">

<head>

  <meta charset="UTF-8">

  <title>Doctor Appointment System</title>

  <link rel="stylesheet" href="style.css">

</head>

<body>

  <!-- Login Section -->

  <div class="container" id="login-section">

    <h1>Login to Doctor Appointment System</h1>

    <form id="login-form">

      <label for="username">Username:</label>

      <input type="text" id="username" name="username" required>

      <label for="password">Password:</label>

      <input type="password" id="password" name="password" required>

      <button type="submit">Login</button>

    </form>

    <button id="register-button">Register</button>

  </div>

  <!-- Registration Section -->

  <div class="container" id="register-section" style="display: none;">

    <h1>Register for Doctor Appointment System</h1>

    <form id="register-form">

      <label for="reg-username">Username:</label>
```

```

    <input type="text" id="reg-username" name="username" required>

    <label for="reg-password">Password:</label>

    <input type="password" id="reg-password" name="password" required>

    <label for="reg-email">Email:</label>

    <input type="email" id="reg-email" name="email" required>

    <label for="reg-mobile">Mobile Number:</label>

    <input type="tel" id="reg-mobile" name="mobile" pattern="[0-9]{3}[0-9]{3}[0-
9]{4}" required>

    <button type="submit">Register</button>

</form>

</div>

<!-- Main Section -->

<div class="container" id="main-section" style="display: none;">

    <header>

        <h1>Welcome to Doctor Appointment System</h1>

    </header>

    <section id="home-section">

        <div class="slider">

            <div class="slider-item" id="appointment-form-link">Appointment Form</div>

            <div class="slider-item" id="cancel-appointment-link">Cancel Appointment</div>

            <div class="slider-item" id="logout">Logout</div>

        </div>

    </section>

    <section id="appointment-form-section" style="display: none;">

        <h2>Appointment Form</h2>

        <form id="appointment-form">

```

```
<label for="name">Name:</label>

<input type="text" id="name" name="name" required>

<label for="age">Age:</label>

<input type="number" id="age" name="age" required>

<label for="gender">Gender:</label>

<select id="gender" name="gender" required>

  <option value="male">Male</option>

  <option value="female">Female</option>

  <option value="other">Other</option>

</select>

<label for="phone">Phone Number:</label>

<input type="tel" id="phone" name="phone" required>

<label for="area">Area:</label>

<select id="area" name="area" required>

  <option value="jubilee-hills">Jubilee Hills</option>

  <option value="gachibowli">Gachibowli</option>

  <option value="hitech-city">HITECH City</option>

  <option value="manikonda">Manikonda</option>

  <option value="kondapur">Kondapur</option>

  <option value="kothaguda">KothaGuda</option>

  <option value="abids">Abids</option>

  <option value="miyapur">Miyapur</option>

  <option value="madinaguda">Madinaguda</option>

  <option value="kukatpally">Kukatpally</option>

  <option value="medchal">Medchal</option>

  <option value="nizampet">Nizampet</option>

  <option value="balanagar">Balanagar</option>
```



```

        <option value="dilshuknagar">Dilshuknagar</option>
        <option value="ameerpet">Ameerpet</option>
        <option value="other">Other</option>
    </select>

    <label for="hospital">Hospital:</label>
    <select id="hospital" name="hospital" required></select>

    <label for="problem">Problem:</label>
    <select id="problem" name="problem" required>
        <option value="general">General</option>
        <option value="cardiology">Cardiology</option>
        <option value="neurology">Neurology</option>
        <option value="orthopedics">Orthopedics</option>
        <option value="pediatrics">Pediatrics</option>
        <option value="dermatology">Dermatology</option>
        <option value="other">Other</option>
    </select>

    <label for="doctor">Doctor:</label>
    <select id="doctor" name="doctor" required></select>

    <label for="date">Date:</label>
    <input type="date" id="date" name="date" required>

    <label for="time">Time:</label>
    <input type="time" id="time" name="time" required>

    <button type="submit">Book Appointment</button>
</form>

</section>

<section id="appointment-details-section" style="display: none;">
    <h2>Appointment Details</h2>

```

```

    <p>Name: <span id="appointment-name"></span></p>
    <p>Age: <span id="appointment-age"></span></p>
    <p>Gender: <span id="appointment-gender"></span></p>
    <p>Phone: <span id="appointment-phone"></span></p>
    <p>Area: <span id="appointment-area"></span></p>
    <p>Hospital: <span id="appointment-hospital"></span></p>
    <p>Problem: <span id="appointment-problem"></span></p>
    <p>Doctor: <span id="appointment-doctor"></span></p>
    <p>Date: <span id="appointment-date"></span></p>
    <p>Time: <span id="appointment-time"></span></p>
    <button id="cancel-appointment-button">Cancel Appointment</button>

</section>

</div>

<script src="script.js"></script>

</body>

</html>

```

### **script.js**

```

document.addEventListener('DOMContentLoaded', function () {
    const loginSection = document.getElementById('login-section');
    const registerSection = document.getElementById('register-section');
    const mainSection = document.getElementById('main-section');
    const appointmentFormSection = document.getElementById('appointment-form-section');
    const appointmentFormLink = document.getElementById('appointment-form-link');
    const cancelAppointmentLink = document.getElementById('cancel-appointment-link');
    const logoutButton = document.getElementById('logout');
    const registerButton = document.getElementById('register-button');

```

```

const cancelAppointmentButton = document.getElementById('cancel-appointment-
button');

// Show register section

registerButton.addEventListener('click', function () {

    loginSection.style.display = 'none';

    registerSection.style.display = 'block';

});

// Handle login form submission

document.getElementById('login-form').addEventListener('submit', function (e) {

    e.preventDefault();

    loginSection.style.display = 'none';

    mainSection.style.display = 'block';

});

// Handle register form submission

document.getElementById('register-form').addEventListener('submit', function (e) {

    e.preventDefault();

    registerSection.style.display = 'none';

    mainSection.style.display = 'block';

});

// Show appointment form section

appointmentFormLink.addEventListener('click', function () {

    appointmentFormSection.style.display = 'block';

    document.getElementById('appointment-details-section').style.display = 'none';

});

// Show appointment details section

cancelAppointmentLink.addEventListener('click', function () {

    document.getElementById('appointment-details-section').style.display = 'block';

```

```

        appointmentFormSection.style.display = 'none';
    });

    // Handle cancel appointment

    cancelAppointmentButton.addEventListener('click', function () {

        // Logic to cancel appointment goes here

        alert('Appointment canceled');

        // Optionally, you can add code to hide the appointment details section or perform other
        actions

        document.getElementById('appointment-details-section').style.display = 'none';

    });

    // Handle logout

    logoutButton.addEventListener('click', function () {

        mainSection.style.display = 'none';

        loginSection.style.display = 'block';

    });

    // Function to update hospitals based on selected area

    function updateHospitals(area) {

        const hospitalSelect = document.getElementById('hospital');

        hospitalSelect.innerHTML = ""; // Clear previous options

        let hospitals;

        switch (area) {

            case 'jubilee-hills':

                hospitals = ['Hospital AA', 'Hospital BB', 'Hospital CC'];

                break;

            case 'gachibowli':

                hospitals = ['Hospital DD', 'Hospital EE', 'Hospital FF'];

                break;

```

```
case 'hitech-city':  
    hospitals = ['Hospital GG', 'Hospital HH', 'Hospital II'];  
    break;  
case 'manikonda':  
    hospitals = ['Hospital JJ', 'Hospital KK', 'Hospital LL'];  
    break;  
case 'kondapur':  
    hospitals = ['Hospital MM', 'Hospital NN', 'Hospital OO'];  
    break;  
case 'kothaguda':  
    hospitals = ['Hospital PP', 'Hospital QQ', 'Hospital RR'];  
    break;  
case 'abids':  
    hospitals = ['Hospital SS', 'Hospital TT', 'Hospital UU'];  
    break;  
case 'miyapur':  
    hospitals = ['Hospital VV', 'Hospital WW', 'Hospital XX'];  
    break;  
case 'madinaguda':  
    hospitals = ['Hospital YY', 'Hospital ZZ', 'Hospital AAA'];  
    break;  
case 'kukatpally':  
    hospitals = ['Hospital BBB', 'Hospital CCC', 'Hospital DDD'];  
    break;  
case 'medchal':  
    hospitals = ['Hospital EEE', 'Hospital FFF', 'Hospital GGG'];  
    break;
```

```

    case 'nizampet':
        hospitals = ['Hospital HHH', 'Hospital III', 'Hospital JJJ'];
        break;
    case 'balanagar':
        hospitals = ['Hospital KKK', 'Hospital LLL', 'Hospital MMM'];
        break;
    case 'dilshuknagar':
        hospitals = ['Hospital NNN', 'Hospital OOO', 'Hospital PPP'];
        break;
    case 'ameerpet':
        hospitals = ['Hospital QQQ', 'Hospital RRR', 'Hospital SSS'];
        break;
    case 'other':
        hospitals = ['Other Hospital (Specify)'];
        break;
    default:
        hospitals = ['Select an Area First'];
        break;
}

hospitals.forEach(hospital => {
    let option = document.createElement('option');
    option.value = hospital.toLowerCase().replace(/\s+/g, '-');
    option.textContent = hospital;
    hospitalSelect.appendChild(option);
});

// Trigger update of doctors based on the first hospital in the list
updateDoctors(hospitals[0].toLowerCase().replace(/\s+/g, '-'));

```

```

}

// Function to update doctors based on selected hospital
function updateDoctors(hospital) {

    const doctorSelect = document.getElementById('doctor');

    doctorSelect.innerHTML = ""; // Clear previous options let
    doctors;

    switch (hospital) {

        case 'hospital-aa':

            doctors = ['Dr. John Smith', 'Dr. Emily Johnson', 'Dr. Michael Brown'];

            break;

        case 'hospital-bb':

            doctors = ['Dr. Emma Wilson', 'Dr. James Jones', 'Dr. Olivia Davis'];

            break;

        case 'hospital-cc':

            doctors = ['Dr. William Wilson', 'Dr. Sophia Garcia', 'Dr. Ethan Hall'];

            break;

        case 'hospital-dd':

            doctors = ['Dr. Mia Phillips', 'Dr. Wyatt Hill', 'Dr. Emily Carter'];

            break;

        case 'hospital-ee':

            doctors = ['Dr. Owen Adams', 'Dr. Leah Torres', 'Dr. Caleb Foster'];

            break;

        case 'hospital-ff':

            doctors = ['Dr. Zoe Hall', 'Dr. Samuel Wright', 'Dr. Bella Martinez'];

            break;

        case 'hospital-gg':

            doctors = ['Dr. Max Carter', 'Dr. Lily Foster', 'Dr. Jacob Hall'];

```

```
        break;

    case 'hospital-hh':

        doctors = ['Dr. Maya Phillips', 'Dr. Mason Hill', 'Dr. Olivia Adams'];

        break;

    case 'hospital-ii':

        doctors = ['Dr. Leo Torres', 'Dr. Grace Foster', 'Dr. Ethan Hall'];

        break;

    case 'hospital-jj':

        doctors = ['Dr. Owen Adams', 'Dr. Mia Torres', 'Dr. Jack Foster'];

        break;

    case 'hospital-kk':

        doctors = ['Dr. Ella Hall', 'Dr. Wyatt Wright', 'Dr. Ava Martinez'];

        break;

    case 'hospital-ll':

        doctors = ['Dr. Zoe Carter', 'Dr. Samuel Foster', 'Dr. Bella Hall'];

        break;

    case 'hospital-mm':

        doctors = ['Dr. Max Phillips', 'Dr. Lily Hill', 'Dr. Jacob Adams'];

        break;

    case 'hospital-nn':

        doctors = ['Dr. Maya Torres', 'Dr. Mason Foster', 'Dr. Olivia Hall'];

        break;

    case 'hospital-oo':

        doctors = ['Dr. Leo Adams', 'Dr. Grace Wright', 'Dr. Ethan Martinez'];

        break;

    case 'hospital-pp':

        doctors = ['Dr. John Smith', 'Dr. Emily Johnson', 'Dr. Michael Brown'];
```



```
        break;

    case 'hospital-qq':

        doctors = ['Dr. Emma Wilson', 'Dr. James Jones', 'Dr. Olivia Davis'];

        break;

    case 'hospital-rr':

        doctors = ['Dr. William Wilson', 'Dr. Sophia Garcia', 'Dr. Ethan Hall'];

        break;

    case 'hospital-ss':

        doctors = ['Dr. Mia Phillips', 'Dr. Wyatt Hill', 'Dr. Emily Carter'];

        break;

    case 'hospital-tt':

        doctors = ['Dr. Owen Adams', 'Dr. Leah Torres', 'Dr. Caleb Foster'];

        break;

    case 'hospital-uu':

        doctors = ['Dr. Zoe Hall', 'Dr. Samuel Wright', 'Dr. Bella Martinez'];

        break;

    case 'hospital-vv':

        doctors = ['Dr. Max Carter', 'Dr. Lily Foster', 'Dr. Jacob Hall'];

        break;

    case 'hospital-ww':

        doctors = ['Dr. Maya Phillips', 'Dr. Mason Hill', 'Dr. Olivia Adams'];

        break;

    case 'hospital-xx':

        doctors = ['Dr. Leo Torres', 'Dr. Grace Foster', 'Dr. Ethan Hall'];

        break;

    case 'hospital-yy':

        doctors = ['Dr. Owen Adams', 'Dr. Mia Torres', 'Dr. Jack Foster'];
```

```
        break;

    case 'hospital-zz':

        doctors = ['Dr. Ella Hall', 'Dr. Wyatt Wright', 'Dr. Ava Martinez'];

        break;

    case 'hospital-aaa':

        doctors = ['Dr. Zoe Carter', 'Dr. Samuel Foster', 'Dr. Bella Hall'];

        break;

    case 'hospital-bbb':

        doctors = ['Dr. Max Phillips', 'Dr. Lily Hill', 'Dr. Jacob Adams'];

        break;

    case 'hospital-ccc':

        doctors = ['Dr. Maya Torres', 'Dr. Mason Foster', 'Dr. Olivia Hall'];

        break;

    case 'hospital-ddd':

        doctors = ['Dr. Leo Adams', 'Dr. Grace Wright', 'Dr. Ethan Martinez'];

        break;

    case 'hospital-eee':

        doctors = ['Dr. John Smith', 'Dr. Emily Johnson', 'Dr. Michael Brown'];

        break;

    case 'hospital-fff':

        doctors = ['Dr. Emma Wilson', 'Dr. James Jones', 'Dr. Olivia Davis'];

        break;

    case 'hospital-ggg':

        doctors = ['Dr. William Wilson', 'Dr. Sophia Garcia', 'Dr. Ethan Hall'];

        break;

    case 'hospital-hhh':

        doctors = ['Dr. Mia Phillips', 'Dr. Wyatt Hill', 'Dr. Emily Carter'];
```

```
        break;

    case 'hospital-iii':

        doctors = ['Dr. Owen Adams', 'Dr. Leah Torres', 'Dr. Caleb Foster'];

        break;

    case 'hospital-jjj':

        doctors = ['Dr. Zoe Hall', 'Dr. Samuel Wright', 'Dr. Bella Martinez'];

        break;

    case 'hospital-kkk':

        doctors = ['Dr. Max Carter', 'Dr. Lily Foster', 'Dr. Jacob Hall'];

        break;

    case 'hospital-lll':

        doctors = ['Dr. Maya Phillips', 'Dr. Mason Hill', 'Dr. Olivia Adams'];

        break;

    case 'hospital-mmm':

        doctors = ['Dr. Leo Torres', 'Dr. Grace Foster', 'Dr. Ethan Hall'];

        break;

    case 'hospital-nnn':

        doctors = ['Dr. Owen Adams', 'Dr. Mia Torres', 'Dr. Jack Foster'];

        break;

    case 'hospital-ooo':

        doctors = ['Dr. Ella Hall', 'Dr. Wyatt Wright', 'Dr. Ava Martinez'];

        break;

    case 'hospital-ppp':

        doctors = ['Dr. Zoe Carter', 'Dr. Samuel Foster', 'Dr. Bella Hall'];

        break;

    case 'hospital-qqq':

        doctors = ['Dr. Max Phillips', 'Dr. Lily Hill', 'Dr. Jacob Adams'];
```

```

        break;

    case 'hospital-rrr':

        doctors = ['Dr. Maya Torres', 'Dr. Mason Foster', 'Dr. Olivia Hall'];

        break;

    case 'hospital-sss':

        doctors = ['Dr. Leo Adams', 'Dr. Grace Wright', 'Dr. Ethan Martinez'];

        break;

    case 'other-hospital':

        doctors = ['Dr. Specify Doctor Name 1', 'Dr. Specify Doctor Name 2', 'Dr. Specify
Doctor Name 3'];

        break;

    default:

        doctors = ['Select a Hospital First'];

        break;

}

doctors.forEach(doctor => {

    let option = document.createElement('option');

    option.value = doctor.toLowerCase().replace(/\s+/g, '-');

    option.textContent = doctor;

    doctorSelect.appendChild(option);

});

}

// Update hospitals when area changes

document.getElementById('area').addEventListener('change', function () {

    updateHospitals(this.value);

});

// Update doctors when hospital changes

```

```

document.getElementById('hospital').addEventListener('change', function () {
    updateDoctors(this.value);
});

// Handle appointment form submission
document.getElementById('appointment-form').addEventListener('submit', function (e) {
    e.preventDefault();

    const name = document.getElementById('name').value;
    const age = document.getElementById('age').value;
    const gender = document.getElementById('gender').value;
    const phone = document.getElementById('phone').value;
    const area = document.getElementById('area').value;
    const hospital = document.getElementById('hospital').value;
    const problem = document.getElementById('problem').value;
    const doctor = document.getElementById('doctor').value;
    const date = document.getElementById('date').value;
    const time = document.getElementById('time').value;

    document.getElementById('appointment-name').textContent = name;
    document.getElementById('appointment-age').textContent = age;
    document.getElementById('appointment-gender').textContent = gender;
    document.getElementById('appointment-phone').textContent = phone;
    document.getElementById('appointment-area').textContent = area;
    document.getElementById('appointment-hospital').textContent = hospital;
    document.getElementById('appointment-problem').textContent = problem;
    document.getElementById('appointment-doctor').textContent = doctor;
    document.getElementById('appointment-date').textContent = date;
    document.getElementById('appointment-time').textContent = time;

```

```
appointmentFormSection.style.display = 'none';

document.getElementById('appointment-details-section').style.display = 'block';

});

});
```

### **style.css:**

```
body {

    font-family: Arial, sans-serif;

    background-color: #f0f0f0;

    margin: 0;

    padding: 0;

}

.container {

    max-width: 800px;

    margin: 20px auto;

    background-color: #fff;

    padding: 20px;

    border-radius: 5px;

    box-shadow: 0 0 10px rgba(0,0,0,0.1);

}

header {

    text-align: center;

    margin-bottom: 20px;

}

#hospital-image {

    width: 100%;

    height: auto;
```

```
display: block;

margin: 20px 0;

position: relative;
}

.slider {

display: flex;

justify-content: space-around;

width: 100%;

background: rgba(0, 0, 0, 0.5);

padding: 10px;

border-radius: 10px;
}

.slider-item {

flex: 1;

text-align: center;

color: white;

background-color: rgba(0, 0, 0, 0.7);

padding: 15px;

margin: 5px;

border-radius: 10px;

cursor: pointer;
}

.slider-item:hover {

background-color: rgba(0, 0, 0, 0.9);
}

nav ul {

list-style-type: none;
```

```
padding: 0;
}
nav ul li {
    display: inline;
    margin-right: 10px;
}
nav ul li a {
    text-decoration: none;
    color: #007bff;
}
nav ul li a:hover {
    text-decoration: underline;
    color: #0056b3;
}
form {
    margin-bottom: 20px;
}
label {
    display: block;
    margin-bottom: 5px;
}
input[type=date],
input[type=time],
select {
    width: 100%;
    padding: 8px;
    margin-bottom: 10px;
```



```
border: 1px solid #ccc;

border-radius: 4px;

box-sizing: border-box;
}

button {

background-color: #007bff;

color: #fff;

padding: 10px 20px;

border: none;

cursor: pointer;

border-radius: 4px;
}

button:hover {

background-color: #0056b3;
}

.menu-button {

position: relative;
}

.menu-content {

position: absolute;

top: 100%;

left: 0;

background: #fff;

border: 1px solid #ccc;

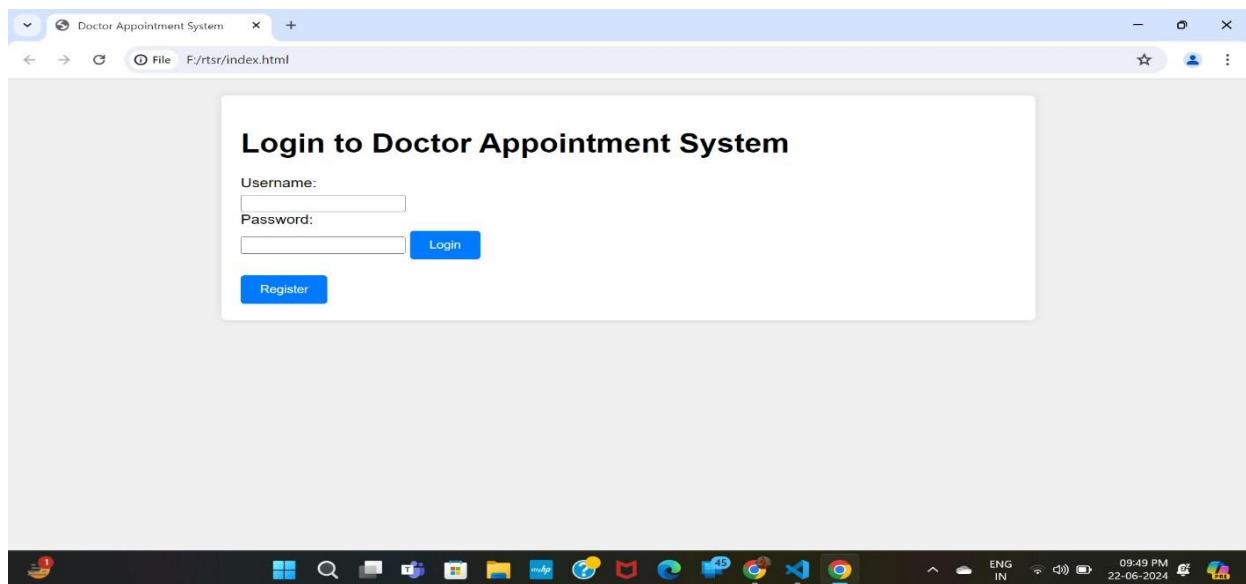
box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);

z-index: 1;
}
```

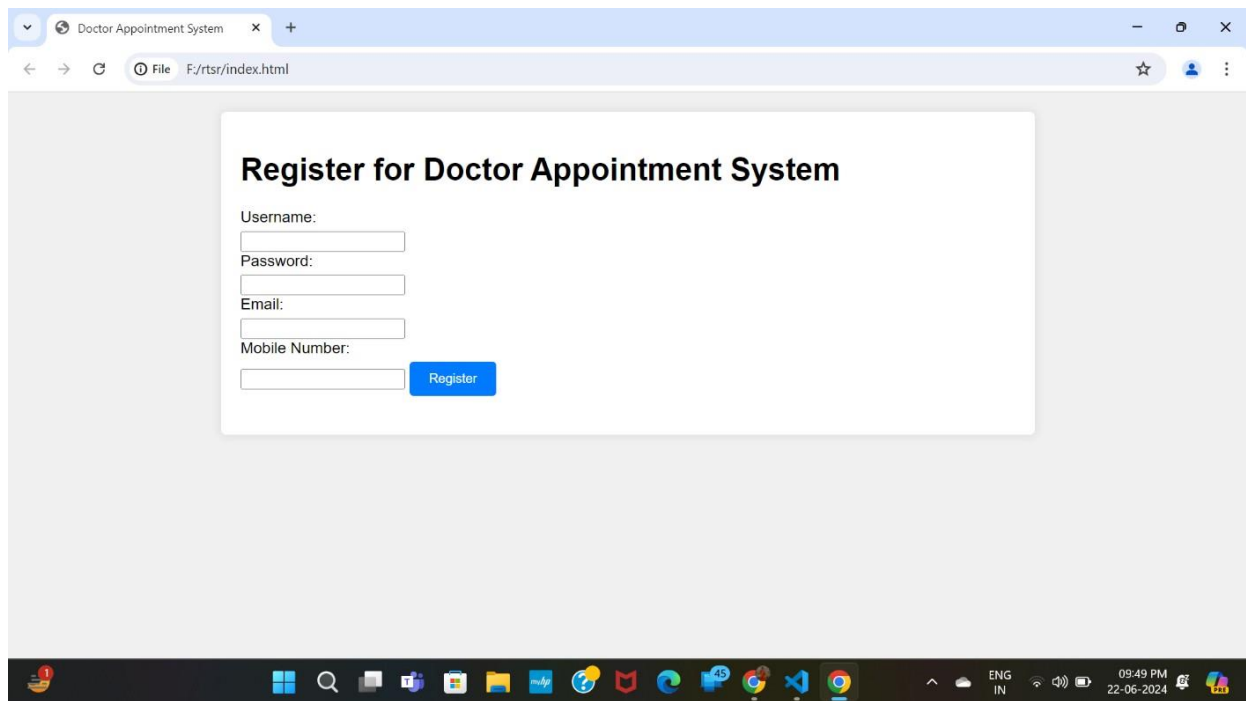
## 9.

## SCREENSHOTS

The user will access the Doctor Appointment System through their web browser. Once on the website, the user will register by filling in the required fields: username, email, password, and mobile number. After registration, the user will receive a username and password. For sign-up, the user fills in the given fields and clicks on the register button to complete the registration process. All the information provided by the user is securely saved in the database located on the server. After successful registration, the user can log in using the username and password. The login page screen is shown, allowing users to securely access their profiles and utilize the system's features for managing appointments and healthcare services.



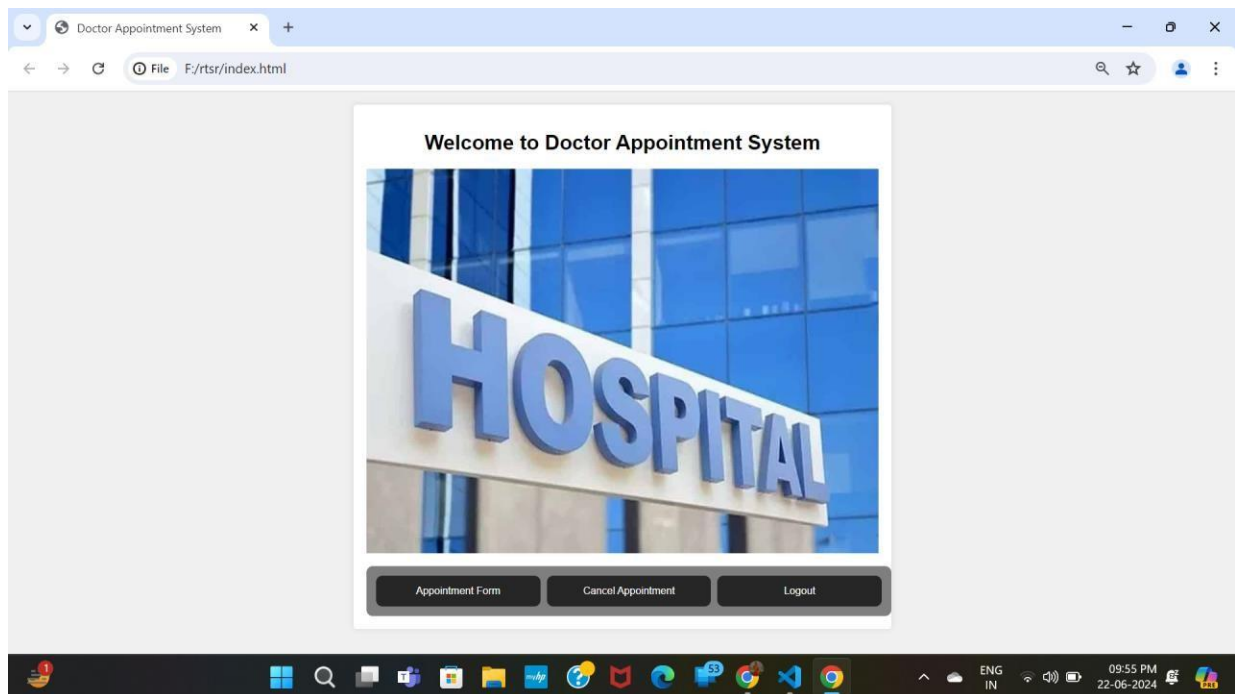
### 9.1 Login Page



## 9.2 Register into website

The registration page of the Doctor Appointment System allows new users to create an account to access the platform's features. To register, the user must fill in the required fields: username, email, password, and mobile number. Each field is mandatory to ensure complete user information for secure access and communication. The user then clicks on the register button to submit their details.

Upon submission, the provided information is securely stored in the server database. If the registration is successful, the user receives a confirmation and can proceed to the login page. The registration page ensures user data is handled securely, complying with privacy standards to protect personal information. This process facilitates a seamless onboarding experience, allowing users to easily set up their accounts and access the system to manage their healthcare needs efficiently.



### 9.3 Welcome Page

The welcome page of the Doctor Appointment System greets users after they log in. This page serves as the main dashboard, providing an overview of the system's features and easy navigation options. At the top, a welcoming header confirms successful login, making users feel acknowledged and secure.

Below the header, users can find a brief introduction to the system's functionalities, highlighting key features such as appointment scheduling, managing appointments, and viewing hospital information. The welcome page includes a user-friendly navigation menu or slider with links to different sections: "Appointment Form," "Cancel Appointment," and "Logout." These options allow users to quickly access the desired services.

The center of the page displays an inviting image of a hospital, reinforcing the healthcare theme and providing a visual context. The welcome page is designed to be intuitive, ensuring users can effortlessly navigate the system and access the tools they need to manage their healthcare appointments efficiently.

The screenshot displays a web browser window titled "Doctor Appointment System". The address bar shows the file path "F:/rtsr/index.html". The page features a navigation bar with three buttons: "Appointment Form", "Cancel Appointment", and "Logout". The main content area is titled "Appointment Form" and contains the following fields:

- Name:** A text input field.
- Age:** A text input field.
- Gender:** A dropdown menu currently set to "Male".
- Phone Number:** A text input field.
- Choose an Area:** A dropdown menu with a list of locations including Jubilee Hills, HITECH City, Marakonda, Kondapur, KothaGuda, Abids, Miyapur (highlighted), Madinaguda, Kukatpally, Medchal, Nizampet, Balanagar, Dishukunagar, and Ameerpet.
- Preferred Date:** A date picker set to "dd-mm-yyyy".
- Preferred Time:** A time picker set to "--:--:--".

A blue "Submit" button is located at the bottom of the form. The Windows taskbar at the bottom shows the time as 10:21 PM on 22-06-2024.

## 9.4 Appointment form

The appointment form page of the Doctor Appointment System allows users to schedule medical appointments efficiently. Users must provide their name, age, gender, phone number, and preferred area and hospital. They can specify their health issue and select an appropriate doctor based on their needs. Additionally, users choose a preferred date and time for the appointment. The form is designed to be user-friendly, ensuring that all necessary information is collected to facilitate a seamless scheduling process. After filling in the details, users submit the form to finalize their appointment.

The screenshot displays a web browser window titled "Doctor Appointment System" with a single tab. The address bar shows the file path "F:/rtr/index.html". The page content features a navigation bar with three buttons: "Appointment Form", "Cancel Appointment", and "Logout". Below this is the "Appointment Form" itself, which includes the following fields and options:

- Name:** Text input with "lucy" entered.
- Age:** Text input with "15" entered.
- Gender:** Dropdown menu with "Female" selected.
- Phone Number:** Text input with "999968888" entered.
- Area:** Dropdown menu with "Jubilee Hills" selected.
- Choose a Hospital:** Dropdown menu with "Hospital A" selected.
- Specify other hospital:** Text input (empty).
- Select Health Problem:** Dropdown menu with "Colds and Flu" selected.
- Specify other problem:** Text input (empty).
- Choose a Doctor:** Dropdown menu with a list of doctors: "Dr. John Doe", "Dr. Jane Smith", and "Dr. Michael Johnson". "Dr. John Doe" is currently selected.
- Preferred Time:** Time selection interface showing "--:--:--".
- Submit:** A blue button at the bottom of the form.

The Windows taskbar is visible at the bottom of the screen, showing various application icons and the system clock indicating 10:31 PM on 22-06-2024.

## 9.5 Choosing doctor according to the health issue

The "Choosing a Doctor" feature in the Doctor Appointment System allows users to select a healthcare professional based on their specific health issues and preferred hospital. After specifying their health problem in the appointment form, the system dynamically populates a list of relevant doctors specializing in the chosen field. Users can review the list, considering factors such as specialty, hospital affiliation, and availability. This feature ensures that patients are matched with the most suitable doctor for their needs, enhancing the quality of care and streamlining the appointment booking process.

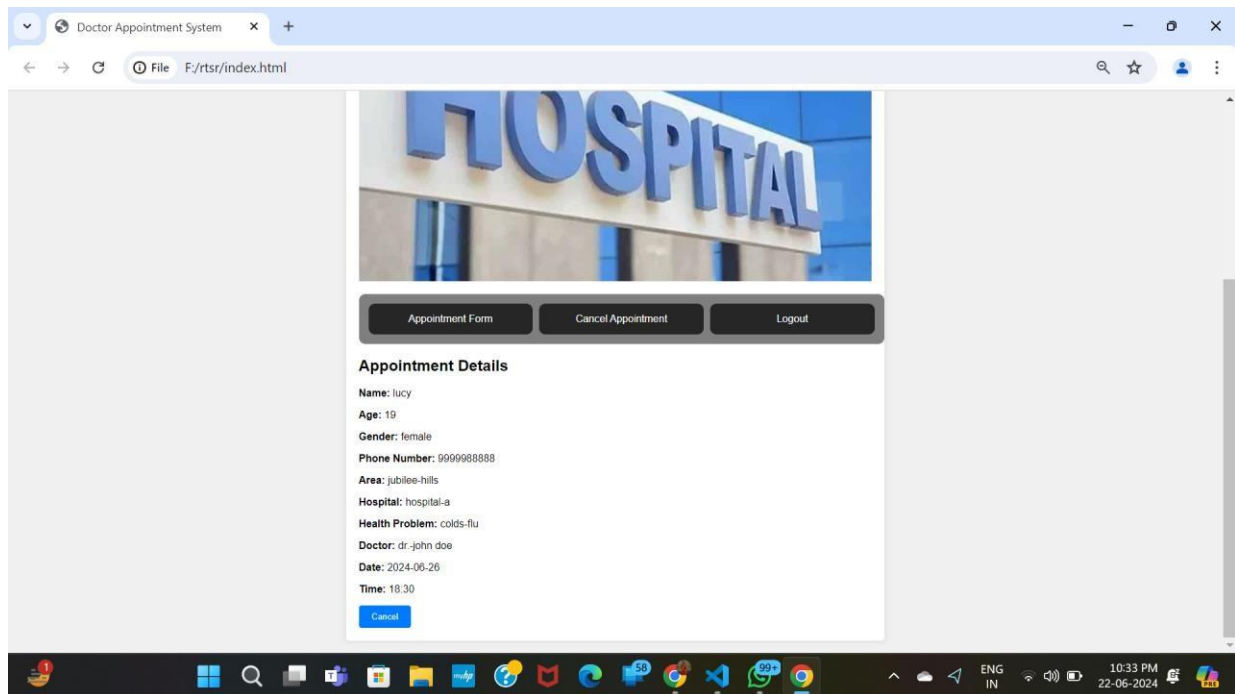
The screenshot displays a web browser window titled "Doctor Appointment System" with the address bar showing "F:/rtstr/index.html". The application interface includes three buttons at the top: "Appointment Form", "Cancel Appointment", and "Logout". The "Appointment Form" is active, showing fields for Name (lucy), Age (19), Gender (Female), Phone Number (999988888), Area (Jubilee Hills), and Choose a Hospital (Hospital A). A time selection dropdown is open, showing a table of available slots:

| 10 | 11 | PM |
|----|----|----|
| 11 | 12 | AM |
| 12 | 01 |    |
| 01 | 02 |    |
| 02 | 03 |    |
| 03 | 04 |    |

The "Submit" button is visible at the bottom of the form. The Windows taskbar at the bottom shows the time as 10:32 PM on 22-06-2024.

## 9.6 Choosing time of appointment

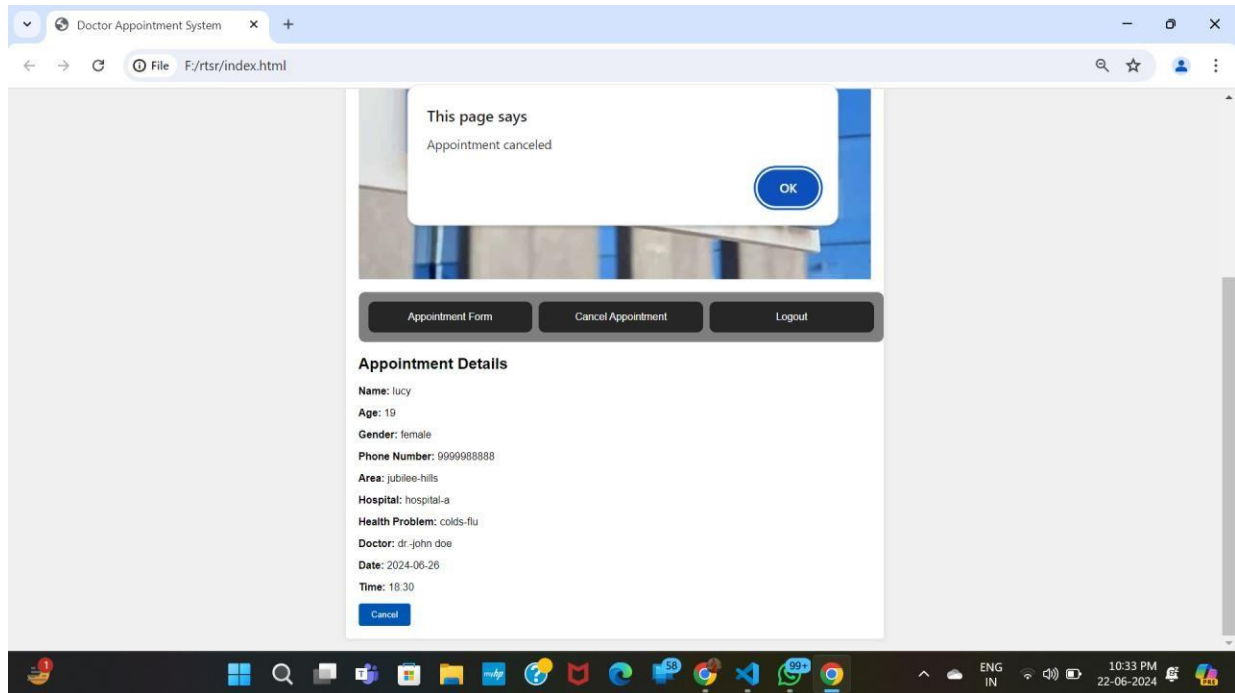
Choosing the time of the appointment in the Doctor Appointment System empowers users to select a convenient slot for their medical consultation. Users can specify their preferred time directly within the appointment form, ensuring flexibility and accommodating individual schedules. This feature enhances user experience by allowing patients to manage their healthcare appointments efficiently and ensures optimal utilization of healthcare providers' time.



## 9.7 Appointment details

Submitting the appointment details in the Doctor Appointment System finalizes the booking process, ensuring all necessary information for the scheduled visit is accurately captured. Users enter their personal details such as name, age, gender, and contact information, along with specifics like the preferred hospital, health issue, and desired doctor. This data facilitates seamless coordination between patients and healthcare providers, optimizing the efficiency of medical services.





## 9.8 Cancelling appointment

In the Doctor Appointment System, users have the ability to cancel their scheduled appointments through a straightforward process. Upon accessing the system, users navigate to the "Cancel Appointment" section, typically accessible from the main dashboard or menu. Here, they are presented with a list of their upcoming appointments.

To cancel an appointment, users simply select the appointment they wish to cancel and confirm their decision. The system then processes the cancellation request, updating the appointment status accordingly. Users receive a confirmation message indicating that the appointment has been successfully canceled.

This feature is designed to be user-friendly and efficient, allowing patients to manage their schedules effectively and ensuring that healthcare providers are informed of any changes promptly. It helps streamline administrative tasks and improves overall patient satisfaction by providing a seamless experience for appointment management.

## 10.

## .TESTING

Testing of a Doctor Appointment System involves various types of testing to ensure its functionality, reliability, usability, and security.

### 1. Unit Testing:

- Purpose: To test individual components or modules (e.g., functions, classes) of the system.
- Tools: JavaScript unit testing frameworks like Jest, Mocha, Jasmine for testing frontend (HTML, CSS, JavaScript) and backend (Node.js, APIs) components.

### 2. Integration Testing:

- Purpose: To test interactions between integrated components (e.g., frontend with backend, APIs with database).
- Tools: Tools integrated within development frameworks (e.g., testing tools in Express.js, ASP.NET) or third-party tools for API testing (e.g., Postman).

### 3. Functional Testing:

- Purpose: To validate functional requirements of the system (e.g., appointment scheduling, patient registration).
- Tools: Selenium WebDriver for automated browser testing, testing frameworks tailored for frontend and backend functionalities.

### 4. User Interface (UI) Testing:

- Purpose: To ensure the usability and user-friendliness of the system's interface.
- Tools: Selenium WebDriver, Puppeteer, or Cypress for automated UI testing to simulate user interactions and validate UI behaviors.

### 5. Performance Testing:

- Purpose: To assess system performance under various loads and stress conditions.
- Tools: Apache JMeter, LoadRunner, or built-in performance testing tools in development frameworks to measure response times, throughput, and resource utilization.

### 6. Security Testing:

- Purpose: To identify and address security vulnerabilities and ensure data protection.
- Tools: Security scanning tools (e.g., OWASP ZAP, Burp Suite) for detecting vulnerabilities in web applications, penetration testing to simulate attacks.

## **7. Compatibility Testing:**

- Purpose: To verify the system's compatibility across different devices, browsers, and operating systems.

- Tools: Cross-browser testing tools (e.g., BrowserStack, Sauce Labs), mobile device emulators for testing responsiveness and functionality.

## **8. Regression Testing:**

- Purpose: To ensure that recent code changes do not adversely affect existing functionality.

- Tools: Automated testing frameworks integrated into continuous integration/continuous deployment (CI/CD) pipelines, ensuring comprehensive test coverage.

## **9. Usability Testing:**

- Purpose: To evaluate the system's ease of use and user satisfaction.

- Approach: Conducting user surveys, observational studies, and feedback sessions with representative users to gather insights and improve user experience.

## **10. Accessibility Testing:**

- Purpose: To ensure the system is accessible to users with disabilities as per accessibility guidelines (e.g., WCAG).

- Tools: Accessibility testing tools (e.g., Axe, Wave) to identify accessibility issues and ensure compliance.

## **11. Test Cases:**

### **Test Case 1: Empty Fields Submission**

Description: Ensure that submitting the appointment form with one or more empty required fields shows an error message.

- Steps:

1. Navigate to the appointment form page.
2. Leave the "Name" field empty.
3. Fill out the other required fields.
4. Click the "Submit" button.

- Expected Result: An error message should be displayed indicating that the "Name" field is required.

### **Test Case 2: Invalid Phone Number Format**

Description: Ensure that entering an invalid phone number format shows an error message.

- Steps:

1. Navigate to the appointment form page.

2. Enter "John Doe" in the "Name" field.
3. Enter an invalid phone number (e.g., "123") in the "Phone Number" field.
4. Fill out the other required fields.
5. Click the "Submit" button.

- Expected Result: An error message should be displayed indicating that the phone number format is incorrect.

### **Test Case 3: Area and Hospital Selection**

Description: Ensure that selecting an area enables the hospital selection dropdown and populates it with relevant options.

- Steps:

1. Navigate to the appointment form page.
2. Select "Gachibowli" from the "Choose an Area" dropdown.

- Expected Result: The "Choose a Hospital" dropdown should be enabled and populated with hospitals located in Gachibowli.

### **Test Case 4: Valid Form Submission**

Description: Ensure that submitting the form with all valid fields successfully displays the appointment details.

- Steps:

1. Navigate to the appointment form page.
2. Enter valid data in all required fields (e.g., Name, Age, Gender, Phone Number, Area, Hospital, Problem, Doctor, Date, and Time).
3. Click the "Submit" button.

- Expected Result: The form should submit successfully, and the appointment details should be displayed on the confirmation page.

### **Test Case 5: Cancel Appointment Functionality**

Description: Ensure that clicking the "Cancel" button next to an already booked appointment successfully removes the appointment.

- Steps:

1. Navigate to the cancel appointment page.
2. Ensure there is a booked appointment displayed.
3. Click the "Cancel" button next to the booked appointment.

- Expected Result: The appointment should be removed from the list, and a confirmation message should be displayed indicating that the appointment has been canceled.

## 12. CONCLUSION

In conclusion, the Doctor Appointment System represents a significant advancement in healthcare management, addressing many of the inefficiencies and challenges inherent in traditional appointment scheduling processes. By leveraging modern web technologies and user-centric design principles, this system has successfully transformed how patients interact with healthcare services.

The system's intuitive interface allows patients to schedule appointments conveniently from anywhere, reducing the need for phone calls or in-person visits to healthcare facilities. It streamlines the entire appointment booking process, from selecting hospitals based on geographic areas to choosing doctors specializing in specific health issues. This ensures that patients can receive timely and appropriate medical care tailored to their needs.

Moreover, the system enhances operational efficiency for healthcare providers by automating administrative tasks related to appointment scheduling and management. Doctors and administrative staff can view, modify, or cancel appointments effortlessly, enabling them to allocate their time more effectively and focus on patient care.

The integration of robust security measures ensures that patient data is protected and compliant with healthcare regulations, fostering trust and confidentiality. Overall, the Doctor Appointment System not only improves access to healthcare services but also enhances the patient experience, promotes efficiency in healthcare delivery, and sets a benchmark for future innovations in healthcare technology.

## 13. REFERENCES

- [MDN Web Docs] (<https://developer.mozilla.org/>)
- [W3Schools] (<https://www.w3schools.com/>)
- [Stack Overflow] (<https://stackoverflow.com/>)
- [Bootstrap] (<https://getbootstrap.com/>)
- [JavaScript Info] (<https://javascript.info/>)
- [Google Fonts] (<https://fonts.google.com/>)
- [Font Awesome] (<https://fontawesome.com/>)