

Medico - Online Doctor Appointment Application

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INTRODUCTION

The "Medico" was created to address the shortcomings of the previously used manual system. It is hoped that this programme would make the existing system more user-friendly by doing away with, or at least greatly reducing, the aforementioned difficulties. In addition, the system is tailored to the company's specific requirements, allowing for efficient and successful operations. Errors in data entry have been minimised by streamlining the programme as much as possible. A warning appears if you try to enter invalid information. The user does not require any prior training to operate this equipment. This alone demonstrates that it is user-friendly. The aforementioned Doctor Appointment System has the potential to be a hassle-free, safe, dependable, and quick method of administration. It can make record keeping easier, allowing the user more time for other pursuits. As a result, the organisation will be able to make better use of its resources. Appointment, Doctor, Booking, Doctor Fees, Doctor Schedule data management is a challenge for every business, no matter how large or small. Due to the unique requirements of each Doctor Appointment System, our team creates custom HR software tailored to your specific business needs. This is meant to be used in strategic planning, and it will help you make sure your company has all the data and knowledge it needs to achieve its long-term objectives. In addition, our systems have remote access capabilities that make it possible to supervise your staff at all times, even if you are constantly on the road as a busy executive. In the long run, these methods will help you better oversee assets.

Overview

The goal of the Doctor Appointment System is to make the current manual system fully automated with the help of computerised equipments and fully functional computer software, meeting their needs, so that their valuable data/information can be stored for a longer period of time and easily accessed and manipulated. The necessary tools and resources are readily accessible and user-friendly. As was just discussed, implementing a Doctor Appointment System could result in a management system that is quick, secure, and free of mistakes. It can make record keeping easier, allowing the user more time for other pursuits. As a result, the organization's use of its resources will improve. A computer system allows for accurate record-keeping without the need for duplicative data entry. Therefore, it is possible to get to the content without getting sidetracked by irrelevant data. The plan is to replace its current manual system with computerised equipment and fully functional computer software that meets their needs, making it possible to store and access their vital data and information for a longer period of time and make any necessary changes quickly and easily. The project's primary purpose is to outline methods of management that will improve productivity and customer satisfaction.

Purpose

The purpose of developing an online doctor booking appointment application - Medico is to provide a convenient and efficient way for patients to schedule appointments with doctors or healthcare providers. Here are some key reasons for developing such an application:

- Accessibility and Convenience: Online doctor booking applications allow patients to easily access a wide range of healthcare professionals and book appointments at their convenience. Patients can schedule appointments from anywhere and at any time, without the need to visit or call the doctor's office.
- Time and Resource Efficiency: By providing a centralized platform for booking appointments, the application reduces the time and effort required to find and contact healthcare providers. Patients can quickly browse through available doctors, check their availability, and book appointments instantly, saving both time and resources.
- Improved Patient Experience: Online doctor booking applications enhance the overall patient experience by providing a user-friendly interface and streamlining the appointment booking process. Patients can view doctor profiles, read reviews and ratings, and choose healthcare providers based on their preferences and requirements.
- Reduced Wait Times: With online appointment scheduling, patients can book their preferred time slots in advance, reducing the need for long waiting times at the doctor's office. It allows healthcare providers to manage their schedules more efficiently and optimize patient flow.
- Reminders and Notifications: The application can send automated reminders and notifications to patients, ensuring they do not miss their appointments. These reminders can be delivered through email, SMS, or push notifications, reducing no-show rates and improving overall appointment adherence.
- Integration with Electronic Health Records (EHR): Online doctor booking applications can integrate with electronic health record systems, allowing seamless sharing of patient information between the patient, doctor, and healthcare facility. This integration enhances care coordination, reduces administrative tasks, and improves the quality of healthcare services.
- Data Analytics and Insights: By capturing and analyzing data on patient preferences, appointment patterns, and healthcare provider availability, the application can generate valuable insights. These insights can be used to optimize appointment scheduling, identify trends, and improve the overall efficiency of healthcare delivery.

Overall, the development of an online doctor booking appointment application aims to provide a convenient, efficient, and patient-centered approach to healthcare access, benefiting both patients and healthcare providers.

LITERATURE SURVEY

Existing problem and approaches used to solve those problems

The existing doctor appointment systems often face several challenges and limitations, which can be addressed by developing an online doctor booking appointment application. Here are some common problems with the existing systems:

Manual Process: Traditional appointment systems typically rely on manual processes, such as phone calls or in-person visits, to book appointments. This can be time-consuming and inconvenient for both patients and healthcare providers.

Limited Accessibility: Patients may face difficulties in accessing healthcare providers due to limited office hours or long waiting times. It can be challenging to find available appointments that fit their schedules, especially for urgent or non-emergency healthcare needs.

Communication Issues: Miscommunication or lack of clear communication can occur between patients and healthcare providers when scheduling appointments. Errors in understanding the patient's requirements, availability, or appointment details can lead to confusion and disruptions in the healthcare delivery process.

Appointment Backlogs and No-Shows: Manual appointment systems are prone to overbooking or long waiting lists, leading to appointment backlogs. Additionally, patients may forget or miss their appointments, resulting in wasted time and resources for healthcare providers.

Limited Information: Patients often lack comprehensive information about healthcare providers, including their specialties, experience, availability, and patient reviews. This lack of information makes it challenging for patients to make informed decisions when choosing a healthcare provider.

Administrative Burden: Traditional appointment systems require significant administrative efforts, including managing appointment calendars, handling paperwork, and coordinating between patients and healthcare providers. This can be time-consuming and inefficient, taking away valuable resources from patient care.

Inefficient Record-keeping: Maintaining accurate and up-to-date records of appointments, patient information, and medical histories can be challenging with manual systems. This can lead to errors, delays, or difficulties in accessing vital patient data when needed.

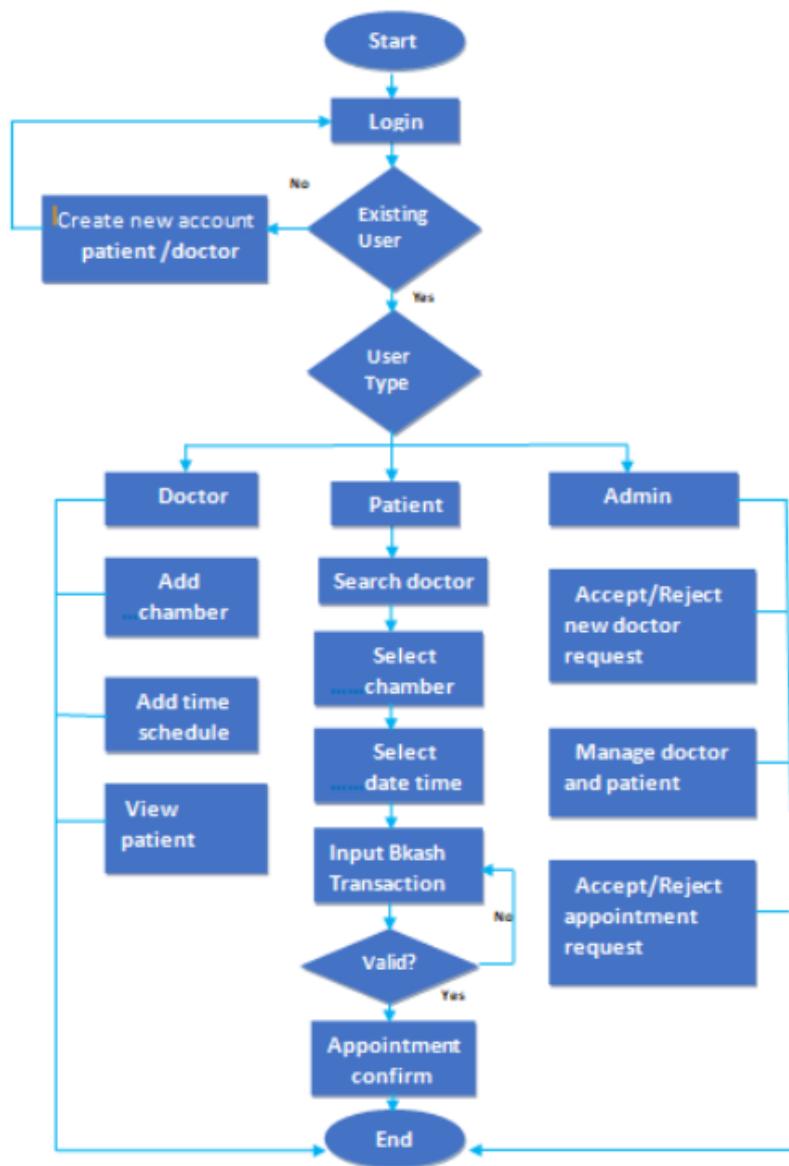
By developing an online doctor booking appointment application, these problems can be addressed through automation, improved accessibility, streamlined communication, enhanced information sharing, and efficient record-keeping. Such an application can significantly enhance the patient experience, optimize healthcare provider schedules, and improve the overall efficiency of the appointment booking process.

Proposed Solution

- System needs store information about new entry of Doctor.
- System needs to help the internal staff to keep information of Appointment and find them as per various queries.
- System need to maintain quantity record.
- System need to keep the record of Patient.
- System need to update and delete the record.
- System also needs a search area.
- It also needs a security system to prevent data.

THEORITICAL ANALYSIS

Block Diagram



Hardware / Software designing

Hardware Requirements:

- Computer: A desktop or laptop computer capable of running the required software.
- Processor: A modern processor with sufficient processing power.
- Memory (RAM): Recommended minimum of 8GB RAM or higher.
- Storage: Adequate storage space to accommodate the development tools, libraries, and project files.

- Internet Connection: A stable internet connection for accessing documentation, libraries, and APIs.

Software Requirements:

- Operating System: Windows, macOS, or Linux-based operating system.
- Integrated Development Environment (IDE): Choose an IDE that supports Java development, such as Eclipse, IntelliJ IDEA, or Visual Studio Code.
- Node.js: Install the latest stable version of Node.js, which includes npm (Node Package Manager) for managing JavaScript dependencies.
- ReactJS: Install ReactJS, a JavaScript library, using npm.
- Java Development Kit (JDK): Install the latest version of JDK to compile and run Java code.
- Java Spring Boot: Spring Boot is a Java framework. Set up Spring Boot using your preferred IDE or manually using Spring Initializr.
- MySQL: Install MySQL, a relational database management system, and set up a database for storing application data.
- Axios: Axios is a JavaScript library used for making HTTP requests from the frontend. Install it using npm.
- Version Control: Choose a version control system like Git to manage source code and collaborate with other developers.
- Web Browser: Install a modern web browser for testing and debugging your application, such as Google Chrome or Mozilla Firefox.

EXPERIMENTAL INVESTIGATIONS

During the development of an online doctor appointment system, various analysis and investigations are typically conducted to ensure the effectiveness and success of the solution. Here are some common areas of analysis and investigation:

User Needs Analysis: Understanding the needs and preferences of the target users (patients and healthcare providers) is crucial. This involves conducting surveys, interviews, or focus groups to gather information about their expectations, pain points, and desired features in an online appointment system.

Market Research: Analyzing the existing market landscape and competition helps identify opportunities and differentiating factors for the online doctor appointment system. It involves studying similar applications, evaluating their strengths and weaknesses, and identifying gaps that the new system can address.

Workflow and Process Analysis: Analyzing the existing appointment scheduling workflow in healthcare facilities helps identify inefficiencies, bottlenecks, and areas for improvement. This involves studying the current processes, interactions between patients and healthcare providers, and identifying pain points in the appointment booking process.

Technical Feasibility Study: Assessing the technical feasibility of the solution involves evaluating the compatibility of the chosen technologies (ReactJS, Java Spring Boot, MySQL, etc.) with the desired functionality and scalability requirements. This analysis ensures that the selected technologies can effectively support the desired features and handle the expected user load.

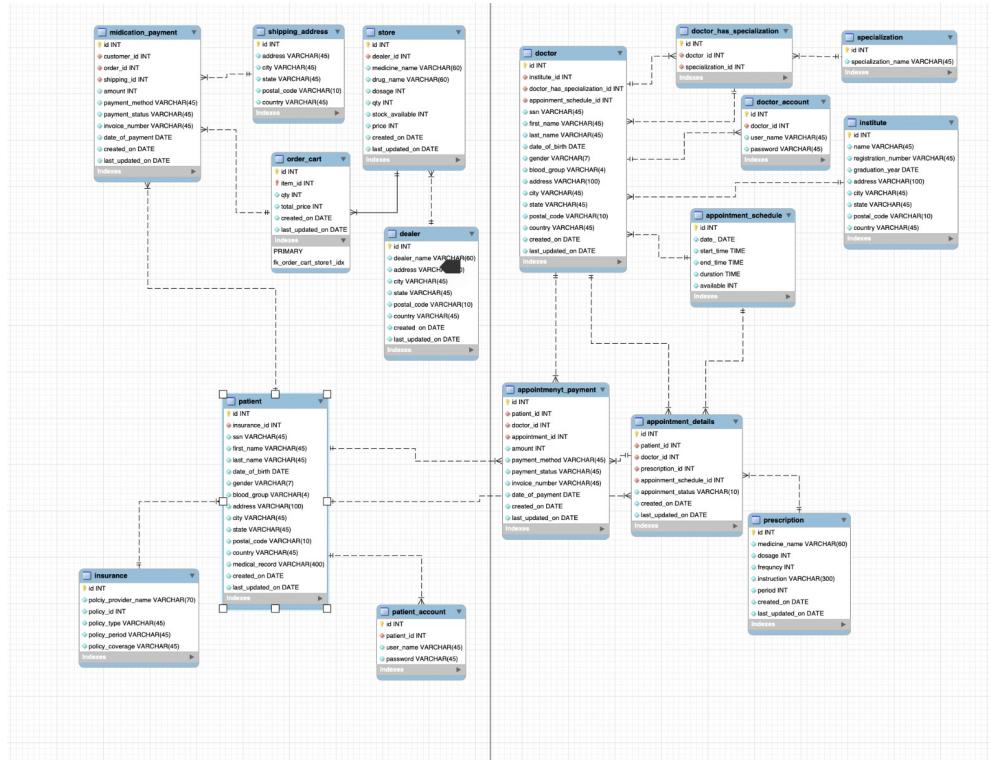
Security and Privacy Analysis: Ensuring the security and privacy of patient data is critical. Analyzing the system's security requirements involves identifying potential vulnerabilities, implementing secure authentication and authorization mechanisms, and complying with relevant data protection regulations (e.g., HIPAA, GDPR).

Integration Analysis: Investigating the integration requirements with external systems, such as electronic health records (EHR) or payment gateways, helps ensure seamless data exchange and interoperability. This analysis includes identifying necessary APIs, data formats, and integration protocols to facilitate smooth communication between the appointment system and other healthcare systems.

Usability and User Experience Testing: Conducting usability testing and user experience (UX) analysis helps evaluate the system's ease of use, intuitiveness, and overall user satisfaction. This investigation involves gathering feedback from potential users through prototypes, mockups, or beta testing to identify areas for improvement and optimize the user interface and interaction flow.

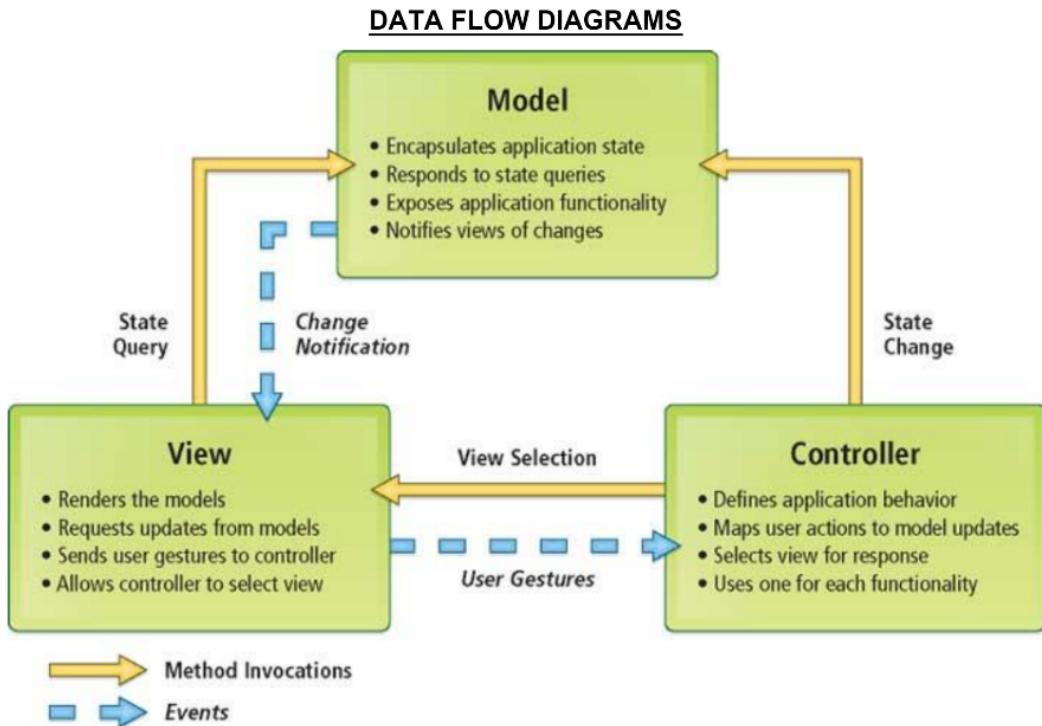
FLOWCHART

UML Diagrams



MVC (Model View Controller Flow)

MVC (Model View Controller Flow) Diagram



SCREENSHOTS

FRONT PAGE:





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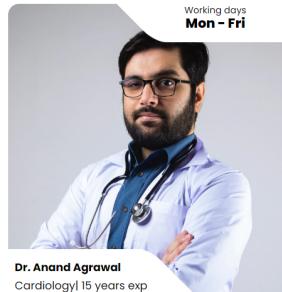
About Us

Introducing Medico: The Complete Hospital Management Solution. Our comprehensive system is designed to streamline operations and elevate patient care at your healthcare facility. With Medico, you can customize and scale the solution to meet your organization's unique needs, ensuring seamless integration into your existing workflows. Our user-friendly interface simplifies adoption and enhances productivity for your staff, allowing them to focus on delivering exceptional patient care. By providing quick access to comprehensive patient information, Medico empowers your healthcare providers to make informed decisions and deliver personalized care that improves patient outcomes. With a proven track record of delivering results and backed by dedicated support and industry recognition, Medico is your trusted partner in achieving operational efficiency, exceptional care, and success for your healthcare organization. Choose Medico today and experience the difference it can make in transforming your hospital management processes.



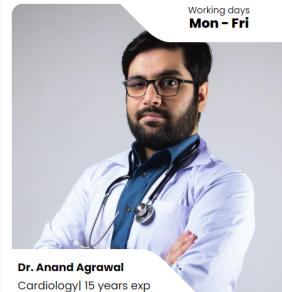
Our Doctors

Meet our top Professional doctors



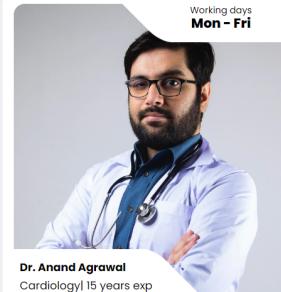
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Mon - Fri

Dr. Anand Agrawal
Cardiologist 15 years exp
MBBS MD MEDICINE DM CARDIOLOGY



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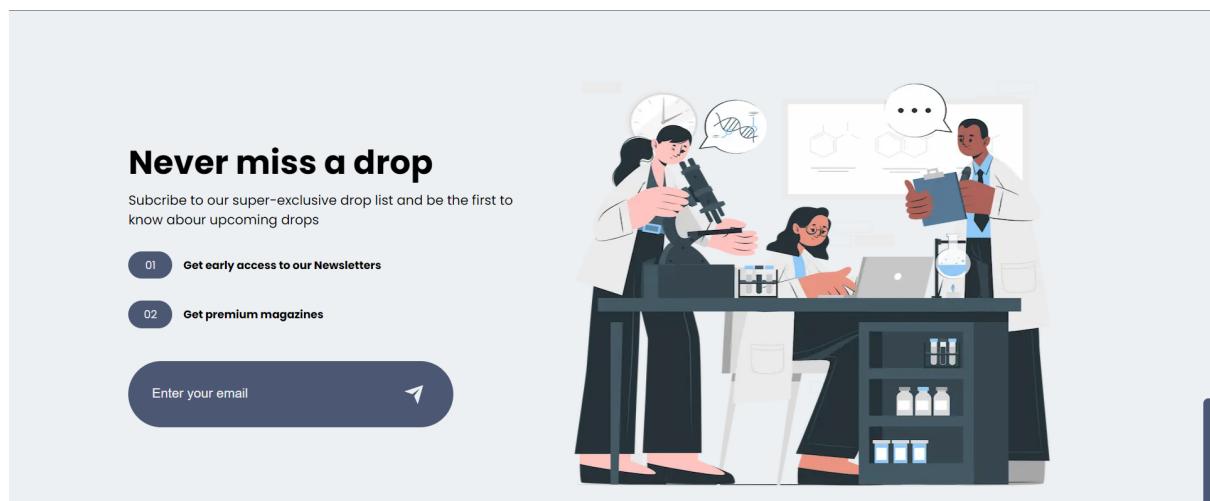


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PATIENTCARE SECTION:

Book an Appointment:



Search Doctors

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Book an Ap

Name:

Email:

Phone:

Date:

Book an Appointment

Name:

Email:

Phone:

Date: dd-mm-yyyy

Time: -- : --

Specialty: Select Specialty

Doctor: Select Doctor

Book Appointment

Registration Page:

The registration page features a header with the Medico logo, a search bar, and navigation links for Patient Care, Services, Blogs, and Contact Us. A 'Login' button is also present.

Personal Questionnaire

First Name:

Last Name:

Date of Birth: dd-mm-yyyy

Phone Number:

Address:

State:

City:

Postal Code:

Health Questionnaire

Existing or Recent Illness:

Recent Hospitalization or Surgery:

Recent Medications:

Allergies:

Medicine Intolerance:

Pregnancy: Select Pregnancy Status

COVID-19 within 6 Months: Select COVID-19 Status

Blood Pressure Problem: Select Blood Pressure Problem

Permanent Implantation of Metal Rods or Plates: Select Implantation Status

Submit

SERVICES SECTION:

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About Us

Introducing Medico: The Complete Hospital Management Solution. Our comprehensive system is

Doctors:

Dr. Anand Agrawal
Cardiology | 15 years exp
MBBS MD MEDICINE DM CARDIOLOGY

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- Patient Testimonials
- Buy Medicines
- Health Record

Services

- Heart
- Orthopedics
- Spine
- ENT (Otolaryngology)
- Dermatology

Subscribe Our Newsletter

Enter your email.*

CONTACT US SECTION:

Post a Query:

The screenshot shows the Medico website's homepage. At the top, there is a search bar labeled "Search Doctors" with a magnifying glass icon. To the right of the search bar are links for "Patient Care", "Services", and "Blogs". On the far right, there are "Contact Us" and "Login" buttons. A dropdown menu titled "Post a query" is open, containing options: "Post a query", "Consult Doctors Online", "Book Physical Appointment", and "Appointment". Below the search bar is a large form titled "Post a query". This form includes fields for "Name", "Email", "Phone", and "Query", each with its own input box. At the bottom of the form is a dark blue button labeled "Post Query".

Book Offline Appointment:

This screenshot shows the "Book an offline Appointment" form from the Medico website. The form is contained within a white box with a black border. It includes fields for "Name", "Email", "Phone", "Date" (a date picker), "Time" (a time picker), "Specialty" (a dropdown menu with "Select Specialty" placeholder), and "Doctor" (a dropdown menu with "Select Doctor" placeholder). At the bottom of the form is a dark blue button labeled "Book Physical Appointment". To the right of the form, there is a sidebar with a "Post a query" section and links for "Consult Doctors Online", "Book Physical Appointment", and "Appointment".

Take Online Consultation:

The image shows the homepage of the Medico website. At the top left is the Medico logo. To its right is a search bar with the placeholder "Search Doctors" and a magnifying glass icon. Further right are links for "Patient Care", "Services", and "Blogs". On the far right are "Contact Us" and "Login" buttons, along with a dropdown menu containing "Post a query", "Consult Doctors Online", and "Book Physical Appointment". Below the header is a large rectangular form titled "Online Consultation". It contains fields for "Name", "Email", "Phone", "Specialty" (with a dropdown placeholder "Select Speciality"), and "Doctor" (with a dropdown placeholder "Select Doctor"). At the bottom of the form is a dark blue button labeled "Consult Online". At the very bottom of the page are links for "Patient Care", "Services", and "Subscribe Our Newsletter".

Admin all users Dashboard:

All Users										
	S.No	Pic	First Name	Last Name	Email	Mobile No.	Age	Gender	Is Doctor	Remove
Users	1		Angel	Macdonald	angel@gmail.com			neither	No	<button>REMOVE</button>
Doctors	2		Franco	May	franco@gmail.com			neither	No	<button>REMOVE</button>
Appointments	3		Iyla	Terrell	iyla@gmail.com			neither	No	<button>REMOVE</button>
Applications	4		Logan	Hood	logan@gmail.com			neither	No	<button>REMOVE</button>
Profile	5		test	user	test@gmail.com			neither	No	<button>REMOVE</button>

Admin all application Page:

S.No	Pic	First Name	Last Name	Email	Mobile No.	Experience	Specialization	Fees	Action
1		Angel	Macdonald	angel@gmail.com		3	Dentist	50	<button>ACCEPT</button> <button>REJECT</button>
2		Franco	May	franco@gmail.com		7	Orthopedics	60	<button>ACCEPT</button> <button>REJECT</button>
3		Logan	Hood	logan@gmail.com		4	Dermatology	40	<button>ACCEPT</button> <button>REJECT</button>

ADVANTAGES & DISADVANTAGES

Advantages of the proposed online doctor appointment system:

- Increased Accessibility: Patients can easily access and book appointments with healthcare providers from anywhere and at any time, improving convenience and accessibility to healthcare services.
- Time Efficiency: The system streamlines the appointment booking process, reducing the time and effort required for patients to find and schedule appointments. It also helps healthcare providers manage their schedules more efficiently.
- Improved Patient Experience: The user-friendly interface and comprehensive information about healthcare providers allow patients to make informed decisions when selecting a doctor. This enhances the overall patient experience and satisfaction.
- Reduced No-Shows: The system can send automated reminders and notifications to patients, reducing the likelihood of missed appointments and improving appointment adherence.

Disadvantages/Challenges of the proposed online doctor appointment system:

- Technical Issues: The system may encounter technical glitches, such as server downtime or software bugs, which can impact its availability and reliability. Regular maintenance and prompt technical support are necessary to mitigate these issues.
- User Adoption: Some patients, particularly those less familiar with technology or with limited access to internet connectivity, may face challenges in adopting and utilizing the online appointment system. Adequate training and support should be provided to overcome this barrier.

- Data Security Concerns: Storing and transmitting sensitive patient data requires robust security measures to protect against unauthorized access or data breaches. Compliance with data protection regulations is crucial to maintain patient trust.
- Limited Personal Interaction: Online appointment systems may reduce personal interaction between patients and healthcare providers, which can impact the doctor-patient relationship. Efforts should be made to ensure effective communication and patient-centered care despite the virtual nature of the system.
- Technological Requirements: Both patients and healthcare providers need access to suitable hardware and internet connectivity to utilize the online appointment system effectively. This can be a limitation in areas with limited technological infrastructure or among underserved populations.

APPLICATIONS

The online doctor appointment system can be applied in various healthcare settings and scenarios. Here are some areas where this solution can be effectively implemented:

- Primary Care Clinics: Patients can schedule appointments with general practitioners or family physicians for routine check-ups, vaccinations, or minor illnesses.
- Specialist Clinics: The system can facilitate appointments with specialists such as cardiologists, dermatologists, neurologists, orthopedic surgeons, and other medical experts.
- Hospitals: Patients can book appointments with specific departments or services within a hospital, such as radiology, physiotherapy, oncology, or surgical consultations.
- Telemedicine and Virtual Consultations: The online appointment system can support virtual visits, allowing patients to schedule and conduct remote consultations with healthcare providers via video or audio calls.
- Dental Clinics: Patients can schedule appointments with dentists for dental check-ups, cleanings, or specific dental procedures.
- Mental Health Services: The system can be utilized to book appointments with psychologists, psychiatrists, or counselors for mental health assessments, therapy sessions, or medication consultations.
- Rehabilitation Centers: Patients seeking physical therapy, occupational therapy, or speech therapy can use the online appointment system to schedule sessions with therapists.
- Diagnostic Centers: The system can facilitate appointments for various diagnostic tests such as blood tests, X-rays, MRIs, ultrasounds, or mammograms.

CONCLUSION

In conclusion, the development of an online doctor appointment system offers numerous advantages in the healthcare industry. By leveraging technologies like ReactJS, CSS, Java Spring Boot, MySQL, and Axios, the system provides increased accessibility, time efficiency, and improved patient experience. It streamlines the appointment booking process, reduces no-shows through automated reminders, optimizes resource utilization, and enhances care coordination through integration with electronic health records.

However, the proposed solution also presents challenges that need to be addressed. Technical issues, user adoption barriers, data security concerns, limited personal interaction, technological requirements, and initial development and maintenance costs are important considerations during implementation.

Through careful analysis and investigation, including user needs analysis, market research, workflow analysis, technical feasibility study, security analysis, usability testing, and performance testing, the system can be designed to meet the requirements of healthcare providers and patients effectively.

The online doctor appointment system finds applications in primary care clinics, specialist clinics, hospitals, telemedicine, dental clinics, mental health services, rehabilitation centers, diagnostic centers, wellness and preventive care, home healthcare services, medical research studies, and healthcare campaigns and events.

Overall, the development of an online doctor appointment system offers a transformative solution to enhance patient access to healthcare services, optimize appointment scheduling processes, improve patient satisfaction, and streamline healthcare operations. By addressing the identified advantages and challenges, this solution has the potential to significantly improve the efficiency and quality of healthcare delivery.

FUTURE SCOPE

There are several potential enhancements that can be made to the online doctor appointment system in the future to further improve its functionality, user experience, and impact. Here are some ideas for future enhancements:

- Mobile Application: Develop a mobile application version of the online appointment system to provide even greater convenience and accessibility to patients who prefer using their smartphones for scheduling appointments.
- Real-time Availability: Implement real-time availability updates, allowing patients to view the actual availability of healthcare providers and book appointments based on up-to-date information. This can help reduce the possibility of appointment conflicts or overbooking.

- Advanced Search and Filtering: Enhance the search and filtering capabilities, allowing patients to search for healthcare providers based on various criteria such as location, specialty, availability, patient ratings, and languages spoken. This will enable patients to find the most suitable healthcare providers more efficiently.
- Appointment Reminders and Follow-ups: Expand the system's communication capabilities to include automated appointment reminders via SMS, email, or push notifications. Additionally, incorporate functionality for post-appointment follow-ups, allowing patients to provide feedback or schedule further consultations if needed.
- Telemedicine Integration: Integrate telemedicine features directly into the appointment system, enabling patients to schedule and conduct virtual consultations seamlessly within the platform. This can enhance accessibility, particularly for patients who may have difficulty traveling to healthcare facilities.
- Patient Health Records Integration: Enhance the system's integration capabilities with electronic health records (EHR) or personal health records (PHR), allowing patients to access their medical history, test results, and other relevant health information within the appointment system. This integration can facilitate better-informed appointments and improve care coordination.
- Predictive Analytics and AI: Leverage predictive analytics and AI technologies to analyze appointment data and patient behavior patterns. This can help predict appointment demand, optimize provider schedules, and provide personalized appointment recommendations based on patient preferences and historical data.
- Integration with Wearable Devices: Explore the integration of wearable devices and health monitoring technologies to enable patients to share relevant health data with healthcare providers, providing a more comprehensive and personalized approach to care.

BIBILOGRAPHY

https://github.com/SmartInternProject/medico_