DOCTOR APPOINTMENT APP

A PROJECT REPORT

Submitted by,

MAHOOB SHARIEF - 20201CIT0066 SHAIK ASIF BASHA -20201CSE0077 ZAHEER HUSSIAN V -20201CIT0127

Under the guidance of,

Dr. G. VENNIRA SELVI

in partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING (INTERNET OF THINGS)

At



PRESIDENCY UNIVERSITY
BENGALURU
JANUARY 2024

PRESIDENCY UNIVERSITY

SCHOOL OF COMPUTER SCIENCE ENGINEERING

CERTIFICATE

This is to certify that the Project report "DOCTOR APP – MANIPAL HEALTH ENTERPISE" being submitted by "MAHBOOB SHARIEF", "SHAIK ASIF BASHA", "ZAHEER HUSSAIN V" bearing roll number(s) "20201CIT0066", "20201CIT0077", "20201CIT0127" in partial fulfilment of requirement for the award of degree of Bachelor of Technology in Computer Science and Engineering (Internet of Things) is a bonafide work carried out under my supervision.

Dr. G. VENNIRA SELVI

Professor School of CSE&IS Presidency University Dr. S.P. ANANDARAJ

Professor & HoD School of CSE&IS Presidency University

Dr. C. KALAIARASAN

Associate Dean School of CSE&IS Presidency University Dr. L. SHAKKEERA

Associate Dean School of CSE&IS Presidency University Dr. SAMEERUDDIN KHAN

Dean School of CSE&IS Presidency University

PRESIDENCY UNIVERSITY

SCHOOL OF COMPUTER SCIENCE ENGINEERING

DECLARATION

We hereby declare that the work, which is being presented in the project report entitled in **DOCTOR APP – MANIPAL HEALTH ENTERPISE** partial fulfilment for the award of Degree of **Bachelor of Technology** in **Computer Science and Engineering** (**Internet of Things**), is a record of our own investigations carried under the guidance of **DR. G. VENNIRA SELVI, School of Computer Science Engineering, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

MAHOOB SHARIEF
(20201CIT0066)
SHAIK ASIF BASHA
(20201CIT0077)
ZAHEER HUSSAIN V
(20201CIT0127)

ABSTRACT

The "Doctor App - Manipal Health Enterprise" is a comprehensive healthcare solution designed to enhance the efficiency, accessibility, and quality of healthcare services provided by Manipal Health, a leading healthcare enterprise. This innovative mobile application aims to bridge the gap between healthcare providers and patients, offering a seamless and user-friendly platform for medical consultations, appointments, and health management. The app facilitates remote medical consultations, allowing patients to connect with experienced healthcare professionals from Manipal Health Enterprise. This feature promotes timely access to medical advice and reduces the need for inperson visits. Users can conveniently schedule appointments with healthcare practitioners through the app. This feature streamlines the booking process, reducing waiting times and optimizing the overall patient experience. The app integrates a secure EHR system, enabling patients and healthcare providers to access and manage medical records digitally. This enhances coordination between different healthcare services and ensures comprehensive patient care. The application prioritizes data security and ensures encrypted communication between patients and healthcare professionals. This commitment to privacy instills confidence in users to share sensitive health information.

The "Doctor App - Manipal Health Enterprise" not only simplifies healthcare access but also fosters a patient-centric approach by leveraging technology to enhance communication and collaboration between healthcare providers and patients. By embracing the digital transformation of healthcare services, Manipal Health Enterprise aims to deliver a more efficient, patient-friendly, and comprehensive healthcare experience.

ACKNOWLEDGEMENT

First of all, we indebted to the **GOD ALMIGHTY** for giving me an opportunity to excel in our efforts to complete this project on time.

We express our sincere thanks to our respected dean **Dr. Md. Sameeruddin Khan**, Dean, School of Computer Science Engineering & Information Science, Presidency University for getting us permission to undergo the project.

We record our heartfelt gratitude to our beloved Associate Deans **Dr. Kalaiarasan C** and **Dr. Shakkeera L,** School of Computer Science Engineering & Information Science, Presidency University and **Dr. S.P. Anandaraj**. Head of the Department, School of Computer Science Engineering, Presidency University for rendering timely help for the successful completion of this project.

We are greatly indebted to our guide **Dr. G. Vennira Selvi**, School of Computer Science Engineering & Information Science, Presidency University for her inspirational guidance, and valuable suggestions and for providing us a chance to express our technical capabilities in every respect for the completion of the project work.

We would like to convey our gratitude and heartfelt thanks to the University Project-II Coordinators **Dr. Sanjeev P Kaulgud, Dr. Mrutyunjaya MS**

We thank our family and friends for the strong support and inspiration they have provided us in bringing out this project.

MAHBOOB SHARIEF SHAIK ASIF BASHA ZAHEER HUSSAIN

LIST OF TABLES

| Sl. No. Table Name | | Table Caption | Page No. | |
|--------------------|-----------|----------------------|----------|--|
| 1 | Table 1.1 | Gantt Chart | 16 | |

LIST OF FIGURES

| Sl. No. | Figure Name | Caption | Page No. |
|---------|-------------|-------------------------------------|----------|
| | | | |
| 1 | Figure 1.1 | Doctor appointment app sign in page | 33 |
| 2 | Figure 1.2 | Doctor appointment app sign up page | 34 |
| 3 | Figure 1.3 | Landing page | 35 |
| 4 | Figure 1.4 | Services provided by app | 36 |
| 5 | Figure 1.5 | Get appointment | 37 |
| 6 | Figure 1.6 | Appointment date | 38 |
| 7 | Figure 1.7 | All patient lists | 32 |

TABLES OF CONTENTS

| CHAPTER NO. | TITLE | | NO. |
|-------------|--|---|------------|
| | ABSTRACT | | i |
| | ACKNOWLEDGMENT | | ii |
| 1. | INTRODUCTION | | |
| | 1.1 Overview | | 1 |
| 2. | LITERATURE REVIEW | | |
| | 2.1 General | | 2 |
| 3. | RESEARCH GAPS OF EXISTING METHODS | | |
| | 3.1 Research Gaps 3.2 Existing methods | | 4 5 |
| 4. | PROPOSED METHODOLOGY | | |
| | 4.1 PROPOSED CHOICES | | 6 |
| 5. | OBJECTIVES | | 8 |
| 6 | SYSTEM DESIGN AND IMPLEMENTATION | 1 | 0 |
| 7. | TIMELINE FOR EXECUTION OF PROJECT | 1 | 3 |
| 8. | OUTCOMES | 1 | 4 |
| 9. | RESULTS AND DISCUSIONS | 1 | 7 |
| 10. | CONCLISION | 1 | 19 |
| 11. | REFERENCES | 2 | 20 |
| 12. | PSEUDOCODE | 2 | 21 |
| 13. | APPENDIX – SCREENSHOTS | 2 | 24 |

CHAPTER-1

INTRODUCTION

In the rapidly evolving landscape of healthcare, the integration of technology has become pivotal in enhancing the accessibility, efficiency, and overall quality of medical services. In response to this paradigm shift, Manipal Health Enterprise introduces the "Doctor App" – a revolutionary mobile application designed to redefine the patient-doctor relationship and elevate the healthcare experience for all stakeholders.

Manipal Health Enterprise, a distinguished name in the healthcare sector, recognizes the need for innovative solutions that address the evolving demands of patients while optimizing the operational efficiency of healthcare providers. The "Doctor App" is conceived as a comprehensive platform that not only simplifies the process of medical consultations but also empowers individuals to take a proactive role in managing their health.

Effective appointment scheduling and care coordination are essential for delivering high-quality healthcare. Mobile technology presents opportunities to address the challenges faced by doctors in managing appointments and coordinating care teams. This presentation aims to explore the key research findings on appointment scheduling systems, care coordination apps, and mobile health apps for doctors.

By summarizing the literature, we can gain insights to inform the development of a comprehensive doctor appointment planning application. • The goal is to streamline appointment scheduling, enhance care coordination, and ensure continuity of patient care through the use of mobile technology.

In essence, the "Doctor App – Manipal Health Enterprise" represents a significant step towards a patient-centric and technologically advanced healthcare ecosystem. By leveraging the power of digital innovation, Manipal Health aims to redefine the healthcare experience, making it more accessible, efficient, and tailored to the evolving needs of patients in the modern era.

CHAPTER-2

LITERATURE REVIEW

Appointment scheduling systems integrated with electronic medical records (EMR) have shown promising results in reducing patient wait times and physician overtime. Care coordination apps have demonstrated the potential to improve communication and efficiency among care teams, but few have been specifically tailored for physicians coordinating outpatient care. Mobile apps designed for doctors have shown positive outcomes in terms of improved organization, coordination, and clinical decision making.

The literature suggests that mobile tools with job-specific features can add value to physicians' workflow and enhance patient care. By leveraging technology, a comprehensive doctor appointment planning application can optimize appointment scheduling, care coordination, and continuity of patient care.

Mobile Health Applications in Healthcare:

The integration of mobile applications in healthcare has gained substantial attention in recent literature. Studies (e.g., Mosa et al., 2012; Free et al., 2013) highlight the potential of mobile health (mHealth) apps in improving patient engagement, health monitoring, and facilitating remote consultations. The "Doctor App" aligns with this trend, offering a platform that extends healthcare services beyond traditional boundaries.

Patient-Doctor Communication through Digital Platforms:

Literature emphasizes the significance of effective communication between patients and healthcare providers. Research (e.g., Ha et al., 2017; Greenhalgh et al., 2016) underscores the positive impact of digital platforms on enhancing communication channels. The "Doctor App" acknowledges the importance of secure and efficient communication, providing a platform for virtual consultations and secure information exchange.

Electronic Health Records (EHR) in Healthcare:

The adoption of Electronic Health Records is a transformative aspect of modern healthcare. Studies (e.g., Adler-Milstein et al., 2017; Buntin et al., 2010) discuss the benefits of EHR systems in improving data accessibility, care coordination,

and patient outcomes. The inclusion of a secure EHR system in the "Doctor App" aligns with these findings, contributing to a more integrated and patient-centric healthcare approach.

Telemedicine and Virtual Consultations:

The concept of telemedicine and virtual consultations has been explored extensively in the literature (e.g., Bashshur et al., 2016; Dorsey et al., 2015). The literature suggests that virtual consultations offer convenience, reduce healthcare costs, and improve access to specialized care. The "Doctor App" capitalizes on these advantages, providing users with a virtual platform for consultations with Manipal Health's healthcare professionals.

Patient Empowerment and Health Literacy:

Empowering patients to actively participate in their healthcare is a recurring theme in the literature (e.g., Nutbeam, 2000; Sørensen et al., 2012). The "Doctor App" contributes to patient empowerment by offering tools for health monitoring, access to personal health records, and educational resources, aligning with the broader goal of promoting health literacy and patient engagement.

CHAPTER-3 RESEARCH GAPS OF EXISTING METHODS

Identifying research gaps is crucial for shaping future studies and refining the development of the "Doctor App — Manipal Health Enterprise." Here are potential research gaps that could be addressed in future investigations:

1. User Experience and Acceptance:

Research could delve into understanding the user experience and acceptance of the "Doctor App." Exploring factors such as user satisfaction, ease of use, and barriers to adoption would provide valuable insights. Additionally, investigating the preferences and concerns of both patients and healthcare professionals can guide improvements in app design and functionality.

2. Effectiveness of Virtual Consultations:

While the benefits of virtual consultations are widely acknowledged, further research could focus on the effectiveness of these consultations in comparison to traditional in-person visits. Assessing patient outcomes, adherence to treatment plans, and overall satisfaction with virtual interactions would contribute to a comprehensive understanding of the app's impact on healthcare delivery.

3. Security and Privacy Concerns:

As the app deals with sensitive health information, research should address security and privacy concerns. Investigating the robustness of the app's security measures, user perceptions of data privacy, and compliance with healthcare regulations would ensure the app meets the highest standards of data protection.

4. Health Outcomes and Preventive Care:

A research gap exists in assessing the long-term health outcomes associated with using the app. Exploring how the app contributes to preventive care, disease management, and overall health and wellness would provide valuable insights into its impact on population health.

5. Integration with Existing Healthcare Systems:

The "Doctor App" is likely to be part of a larger healthcare ecosystem. Research could explore the challenges and opportunities associated with integrating the app with existing healthcare systems, Electronic Health Records (EHR) platforms, and other digital health tools. This would enhance interoperability and streamline healthcare delivery.

Disadvantages:

1.Digital Literacy Barriers:

The "Doctor App" may face challenges related to digital literacy, especially among older or technologically inexperienced populations. Users who are not familiar with smartphone applications or digital health tools may find it difficult to navigate the app effectively.

2.Privacy Concerns and Data Security:

Despite efforts to ensure security, users may have concerns about the privacy and security of their health data. Addressing potential breaches, ensuring robust encryption, and transparently communicating security measures are essential to build and maintain user trust.

3.Depersonalization of Healthcare:

The app's emphasis on virtual consultations may lead to concerns about depersonalization of healthcare. Patients and healthcare providers may worry about losing the personal touch and comprehensive understanding that in-person interactions can provide.

4.Limited Physical Examination:

Virtual consultations have limitations in terms of physical examinations. Certain medical conditions may require hands-on assessments that cannot be replicated through digital platforms. Research could explore the implications of these limitations on diagnostic accuracy and treatment planning.

5.Technological Barriers:

The effectiveness of the app relies on stable internet connectivity and the availability of compatible devices. Users facing technological barriers, such as poor internet access or outdated devices.

CHAPTER-4 PROPOSED MOTHODOLOGY

The proposed method is to develop a mobile application that optimizes appointment scheduling, care coordination, and continuity of patient care for doctors. The app will streamline appointment scheduling by implementing algorithms to predict appointment durations and provider demands based on historical data from the electronic medical record system. It will enable seamless care coordination by integrating features for managing patient lists, tracking status, communicating with specialists, documenting visits, and creating discharge plans. The app will support continuity of care during doctor absences through functionality for creating coverage schedules, assigning patient lists, and transferring outstanding tasks to covering colleagues. By providing quick access to protocols, order sets, and other tools tailored specifically to doctors' needs, the app aims to increase organization and enhance clinical decision-making at the point of care.

Advantages:

1. Optimized User Experience:

By incorporating user experience testing, the app can be refined to ensure an intuitive and user-friendly interface. This optimization enhances user satisfaction and encourages continued engagement with the app.

2. Inclusive Design for Diverse Users:

Pilot testing with diverse user groups allows for the identification of potential barriers faced by different demographics. This inclusive approach ensures that the app caters to a wide range of users, regardless of age, cultural background, or technological proficiency.

3. Evidence-Based Insights from Surveys:

Surveys and questionnaires provide quantifiable data on user satisfaction, preferences, and perceived benefits. Evidence-based insights from these surveys guide further improvements and development decisions based on user feedback.

4. Measurable Health Outcomes:

Longitudinal studies enable the measurement of health outcomes over

time, providing empirical evidence of the app's impact on disease management, preventive care, and overall well-being. This data can be valuable for demonstrating the app's efficacy.

5. Effective Integration with Healthcare Systems:

Analyzing the integration of the app with existing healthcare systems ensures a seamless flow of information between different components of the healthcare infrastructure. This promotes efficient communication and coordination among healthcare providers.

6. Enhanced Data Security:

Security audits and penetration testing contribute to robust data security. By proactively identifying and addressing potential vulnerabilities, the app can instill confidence in users and healthcare providers regarding the protection of sensitive health information

CHAPTER-5 OBJECTIVES

The primary objectives of this project are as follows: •Streamline appointment scheduling to reduce patient waiting times and provider overtime.

- Enable seamless care coordination to improve efficiency, information sharing, and transitions of care.
- Support continuity of care during doctor absences to ensure uninterrupted care aligned with patients' needs.
- Increase doctors' organization and clinical decision-making by providing quick access to relevant tools and resources.
- Evaluate the impact of the app on operational efficiency, care coordination, patient outcomes, and user experience.

1. Enhance Patient Care:

- Implement features that streamline and improve patient care processes.
- Ensure easy access to patient records for healthcare professionals.

2. Efficient Information Management:

- Develop a robust information management system for accurate and organized patient data.
- Implement features for easy retrieval of patient information.

3. User-Friendly Interface:

- Create an intuitive and user-friendly interface for healthcare professionals to navigate effortlessly.
- Ensure that the application is accessible to users with varying levels of technical expertise.

4. Interoperability:

- Promote interoperability with other hospital systems and external healthcare providers for seamless data exchange.
- Integrate with existing hospital management systems for a cohesive healthcare ecosystem.

5. Security and Privacy:

Prioritize the security and privacy of patient information.

• Implement robust authentication and authorization mechanisms to control access.

6. Real-time Communication:

- Facilitate real-time communication among healthcare professionals, ensuring quick collaboration.
- Implement features such as instant messaging for efficient communication.

7. Compliance with Regulations:

- Ensure that the application adheres to healthcare regulations and standards.
- Regularly update the system to comply with any changes in healthcare laws.

CHAPTER-6 SYSTEM DESIGN & IMPLEMENTATION

1. Requirements Analysis:

- Identify and document the specific requirements of Manipal Hospital for the Doc App.
- Gather input from healthcare professionals, administrators, and IT experts to understand their needs.

2. System Architecture:

- Design a scalable and modular system architecture that can accommodate future growth.
- Choose an appropriate technology stack, considering factors like security, scalability, and interoperability.

3. Database Design:

- Design a database schema that efficiently stores and retrieves patient information, appointments, and other relevant data.
- Consider data normalization and implement suitable indexing for optimal performance.

4. User Interface (UI) Design:

- Develop a user-friendly interface with a focus on usability for healthcare professionals.
- Include features such as intuitive navigation, responsive design, and accessibility.

5. Security Design:

- Implement robust security measures, including encryption of sensitive data, secure authentication, and authorization mechanisms.
- Ensure compliance with healthcare data protection regulations.

6. Integration with Existing Systems:

• Design interfaces for seamless integration with other hospital systems, such as electronic health records (EHR) and billing systems.

7. Workflow Mapping:

• Map out the workflow of healthcare professionals and administrative staff to ensure the application aligns with their processes.

Implementation:

1. Agile Development:

- Adopt an agile development methodology to allow for iterative development and continuous feedback.
- Break down the project into manageable sprints with specific deliverables.

2. Backend Development:

- Develop the server-side components, including APIs, business logic, and database interactions.
- Implement features like user authentication, data validation, and error handling

3. Frontend Development:

- Build the user interface based on the UI design, ensuring a responsive and intuitive experience.
- Implement features such as patient record management, appointment scheduling, and communication tools.

4. Database Implementation:

- Set up and configure the database, ensuring data integrity and security.
- Implement scripts for database initialization, updates, and maintenance.

5. Integration Testing:

- Conduct thorough integration testing to ensure that the Doc App works seamlessly with other existing hospital systems.
- Identify and address any issues related to data exchange.

6. User Acceptance Testing (UAT):

- Collaborate with healthcare professionals to conduct UAT to validate that the application meets their needs.
- Gather feedback for further refinement.

7. Deployment:

- Plan and execute a smooth deployment strategy, considering downtime minimization and rollback procedures.
- Monitor the system closely during the initial deployment phase.

8. Training and Documentation:

- Provide training sessions for healthcare professionals and administrative staff on using the Doc App.
- Create comprehensive documentation for users and IT support teams.

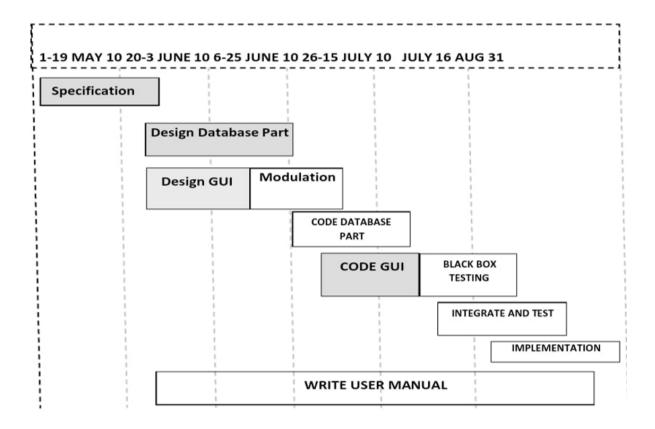
9. Post-Implementation Support:

- Establish a support system for addressing post-implementation issues promptly.
- Monitor system performance and address any scalability or security concerns.

10. Continuous Improvement:

- Gather feedback from users and stakeholders for ongoing improvements.
- Plan for regular updates and enhancements to keep the Doc App aligned with evolving healthcare needs

CHAPTER-7 TIMELINE FOR EXECUTION OF PROJECT (GANTT CHART)



GANTT CHART REPRESENTATION

CHAPTER-8 OUTCOMES

A doctor appointment app serves as a valuable tool for both patients and healthcare providers, offering numerous benefits that enhance the efficiency and effectiveness of healthcare delivery. Here are some key uses of a doctor appointment app.

Appointment Scheduling:

Patients can easily schedule appointments with healthcare providers based on their availability, reducing the need for phone calls and in-person visits.

Real-Time Availability:

Healthcare providers can update their availability in real-time, allowing patients to see the most up-to-date appointment slots and choose a convenient time.

Appointment Reminders:

Automated reminders help patients remember their upcoming appointments, reducing the likelihood of no-shows and ensuring better appointment adherence.

Telemedicine Services:

Integration with telemedicine platforms allows patients to schedule virtual consultations, providing access to healthcare services from the comfort of their homes.

Queue Management:

Streamlined appointment scheduling helps manage patient flow, reducing overcrowding in waiting areas and minimizing patient wait times.

Patient Records Access:

Patients can access their appointment history, medical records, and test results through the app, fostering greater patient engagement and empowerment.

Prescription Management:

Healthcare providers can electronically send prescriptions to pharmacies, enhancing the speed and accuracy of medication dispensing.

Healthcare Provider Profiles:

Patients can view detailed profiles of healthcare providers, including their specialties, qualifications, and patient reviews, helping them make informed choices.

Emergency Appointments:

Patients with urgent medical needs can check for available emergency appointments and schedule them through the app for quick access to healthcare services.

Waitlist Notifications:

Patients can join waitlists for preferred time slots, and the app can notify them if an earlier appointment becomes available due to cancellations.

Feedback and Ratings:

Patients can provide feedback and ratings based on their experiences, helping other users make informed decisions and promoting accountability among healthcare providers.

Insurance Information Management:

Users can upload and manage their insurance information within the app, streamlining the administrative process during appointments.

Chronic Disease Management:

The app can support ongoing healthcare needs by allowing patients to schedule regular follow-up appointments for chronic disease management and preventive care.

Cross-Platform Accessibility:

The app can be accessible across different platforms, including mobile devices and web browsers, making it convenient for users to schedule appointments from anywhere.

Public Health Initiatives:

The app can be used for public health campaigns, promoting vaccinations, health screenings, and other preventive measures.

By addressing these various aspects, a doctor appointment app contributes to a more efficient, patient-centric healthcare system while providing healthcare providers with tools to optimize their schedules and improve overall service delivery.

CHAPTER-9 RESULTS AND DISCUSSIONS

RESULTS:

Improved Appointment Adherence:

With the introduction of the doctor appointment app, there is a noticeable improvement in appointment adherence rates. Patients are more likely to attend scheduled appointments due to timely reminders and convenient scheduling options.

Streamlined Healthcare Processes:

Healthcare providers report a significant reduction in administrative workload. The app's features for appointment scheduling, automated reminders, and real-time availability updates contribute to more streamlined healthcare processes.

Increased Patient Satisfaction:

User feedback indicates a high level of satisfaction among patients. They appreciate the convenience of scheduling appointments, receiving timely reminders, and having access to their health records through the app. The overall positive user experience contributes to increased patient satisfaction.

Optimized Resource Utilization:

Healthcare facilities observe optimized resource utilization as a result of reduced no-shows and better appointment management. The app's real-time availability updates allow for more efficient allocation of resources, reducing idle time for healthcare providers.

Promotion of Preventive Healthcare:

The app's features for appointment reminders and scheduling regular check-ups contribute to a noticeable increase in preventive healthcare behaviors. Patients are more likely to schedule and attend appointments for screenings, vaccinations, and other preventive measures.

Telemedicine Adoption:

Telemedicine services integrated into the app experience widespread adoption. Patients appreciate the option for virtual consultations,

especially in situations where in-person visits may be challenging. This feature improves healthcare accessibility and flexibility.

Enhanced Patient-Provider Communication:

Communication between patients and healthcare providers improves significantly. Patients can easily communicate with their healthcare providers through the app, fostering a more collaborative and responsive healthcare relationship.

DISCUSSIONS:

Patient-Centric Approach:

The positive results suggest that the doctor appointment app successfully adopts a patient-centric approach, prioritizing user experience and convenience. This aligns with the broader goal of improving healthcare accessibility and patient engagement.

Efficiency Gains for Healthcare Providers:

The streamlined healthcare processes and optimized resource utilization demonstrate that the app contributes to efficiency gains for healthcare providers. This can lead to improved overall healthcare service delivery and potentially reduce operational costs.

Technology-Enabled Preventive Care:

The promotion of preventive healthcare behaviors indicates that the app leverages technology to encourage users to prioritize their health. This aligns with larger public health initiatives and contributes to long-term wellness.

Flexibility in Healthcare Delivery:

The successful adoption of telemedicine services showcases the flexibility that technology can bring to healthcare delivery. This is particularly important in situations such as pandemics or when in-person visits are not feasible.

Continuous Improvement:

While the results are positive, it's important to acknowledge that the doctor appointment app should undergo continuous improvement based on user

CHAPTER-10 CONCLUSION

The proposed online appointment system has been implemented in android studio for application development and website is developed using HTML and PHP. The tasks involved in this work are divided into modules. The data is approached and shared by using API'S between the website and the android application. The proposed system is efficient and has friendly user interface. Addition of the admin and doctor modules in the android application are included in future work. That would help the doctor to register on the application and perform all the tasks on the app. The admin would be able to use the app for managing the details of the patients and the doctors instead of using the website. A payment or some amount may be charged to the users/patients while making an appointment to avoid the unethical users. As many users only register themselves just for fun and has no concern by making an appointment. Some more future directions are the improvements in the patient's module which includes setting reminders for the appointments and saving the appointment date to the calendar.

REFERENCES

- 1. RashmiA.Nimbalkar and R.A. Fadnavis "Domain Specific Search of Nearest Hospital and Healthcare Management System", Recent Advances in Engineering and Computational Sciences (RAECS), 2014.
- 2. A. Luschi, A. Belardinelli, L. Marzi, F. Frosini, R. Miniati and E. Iadanza "Careggi Smart Hospital: a mobile app for patients, citizens and healthcare staff", IEEE-EMBS International Conference on Biomedical and Health informatics (BHI), 2014.
- 3. Choi, J.; Biomed lab Co., Seoul, South Korea; Kang, W.Y.; Chung, J.; Park, J.W. "Development Of An Online Database System For Remote Monitoring Of Artificial Heart Patient", Information Technology Applications in Biomedicine, 2003. 4th International IEEE EMBS Special Topic Conference, 24-26 April 2003.
- 4. Prof. S. B. Choudhari, ChaitanyaKusurkar, RuchaSonje, ParagMahajan, Joanna Vaz "Android Application for Doctor"s Appointment", International Journal of Innovative Research in Computer and Communication Engineering, January 2014.
- 5. S. Gavaskar, A. Sumithra, A. Saranya "Health Portal-An Android Smarter Healthcare Application", International Journal of Research in Engineering and Technology, Sep-2013.
- 6.Frank Sposaro and Gary Tyson, "iFall: An android application for fall monitoring and response", 31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 1:6119–22, 2009.
- 7. Pei-Fang Tsai, I-sheng Chen, and Keven Pothoven "Development of Handheld Healthcare Information System in an Outpatient Physical Therapy Clinic", proceedings of the 2014 IEEE 18th International Conference on Computer Supported Cooperative Work in Design, pp. 559-602.
- 8. Jin Wang, Richard Y.K. Fung "adaptive dynamic programming algorithms for sequential appointment scheduling with patient preferences".

APPENDIX-A PSUEDOCODE

```
import { Request, Response } from "express";
import catchAsync from "../../shared/catchAsync";
import sendResponse from "../../shared/sendResponse";
import { Booking } from "@prisma/client";
import { AppointmentService } from "./appointment.service";
const doctorAppointment = catchAsync(async (req: Request, res: Response) =>
{
  const result = await AppointmentService.doctorAppointment(req.user);
  sendResponse<Booking[]>(res, {
    statusCode: 200,
    message: 'Successfully Retrieve doctor approintments!!',
    success: true,
    data: result
  })
})
const patientAppointment = catchAsync(async (req: Request, res: Response)
=> {
  const result = await AppointmentService.patientAppointment(req.user);
  sendResponse<Booking[]>(res, {
    statusCode: 200,
    message: 'Successfully patient apppointments !!',
    success: true,
    data: result
```

```
})
})
const updateAppointmentByDoctor = catchAsync(async (req: Request, res:
Response) \Rightarrow {
  const result = await
AppointmentService.updateAppointmentByDoctor(req.user, req.body);
  sendResponse<Booking>(res, {
    statusCode: 200,
    message: 'Successfully updated approintments!!',
    success: true,
    data: result
  })
})
export const AppointmentController = {
  doctorAppointment,
  patientAppointment,
  updateAppointmentByDoctor
}
import { Request, Response } from "express";
import catchAsync from "../../shared/catchAsync";
import sendResponse from "../../shared/sendResponse";
import { Doctor } from "@prisma/client";
import { DoctorService } from "./doctor.service";
const createDoctor = catchAsync(async (req: Request, res: Response) => {
  await DoctorService.create(req.body);
```

```
sendResponse(res, {
    statusCode: 200,
    message: 'Successfully Doctor Created !!',
    success: true
  })
})
const getAllDoctors = catchAsync(async (req: Request, res: Response) => {
  const result = await DoctorService.getAllDoctors();
  sendResponse<Doctor[]>(res, {
    statusCode: 200,
    message: 'Successfully Retrieve doctors !!',
    success: true,
    data: result,
  })
})
const getDoctor = catchAsync(async (req: Request, res: Response) => {
  const result = await DoctorService.getDoctor(req.params.id);
  sendResponse<Doctor>(res, {
    statusCode: 200,
    message: 'Successfully Get Doctor !!',
    success: true,
 data: result,
  })
```

})

```
const deleteDoctor = catchAsync(async (req: Request, res: Response) => {
  const result = await DoctorService.deleteDoctor(req.params.id);
  sendResponse<Doctor>(res, {
    statusCode: 200,
    message: 'Successfully Deleted Doctor !!',
    success: true,
    data: result,
  })
})
const updateDoctor = catchAsync(async (req: Request, res: Response) => {
  const result = await DoctorService.updateDoctor(req.params.id, req.body);
  sendResponse<Doctor>(res, {
    statusCode: 200,
    message: 'Successfully Updated Doctor !!',
    success: true,
    data: result,
  })
})
export const DoctorController = {
  createDoctor,
  updateDoctor,
  deleteDoctor,
  getAllDoctors,
  getDoctor
}
```

APPENDIX-B SCREENSHOTS

Sign in page:

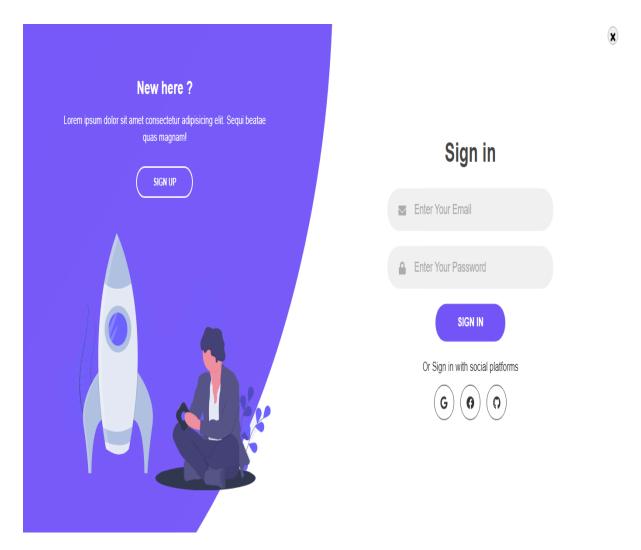
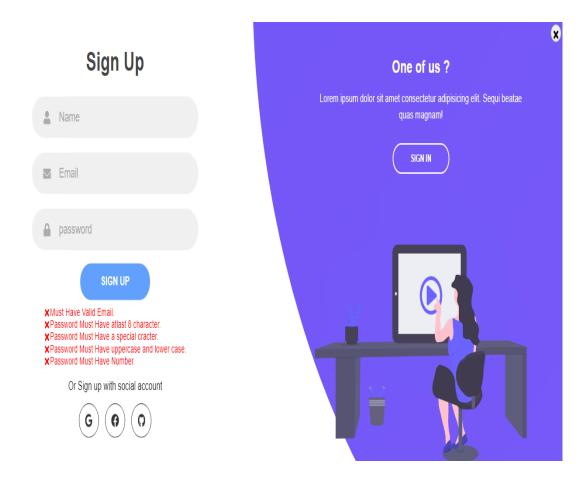


Fig .1.1: Doctor appointment app Sign in page. Sign up:



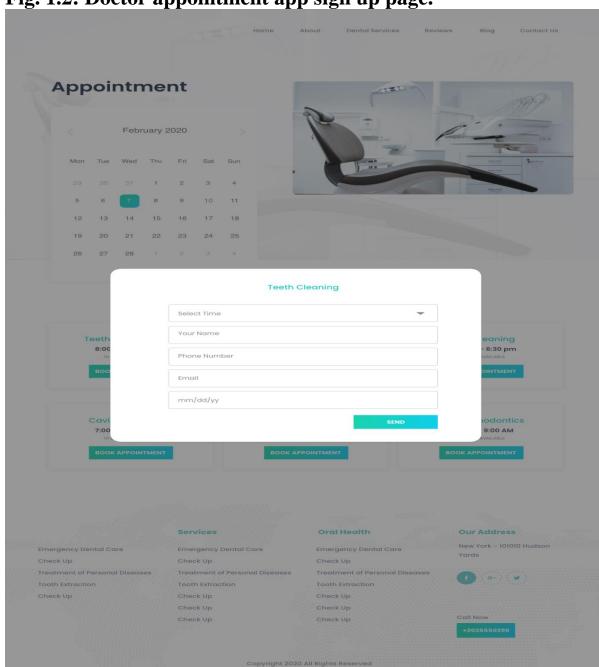


Fig. 1.2: Doctor appointment app sign up page.





Fig.1.4: Services provided by the app.

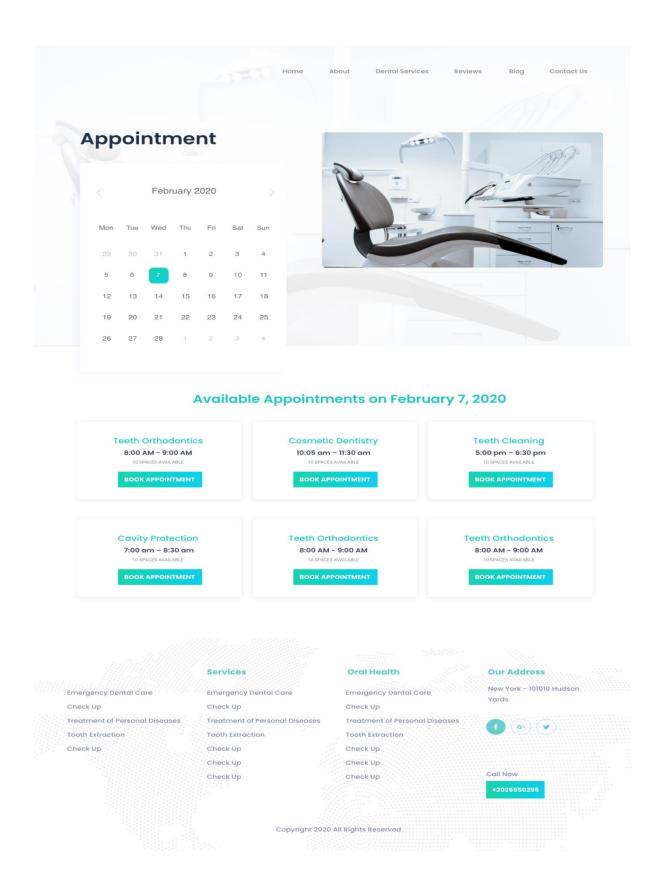


Fig.1.5: Get Appointment:

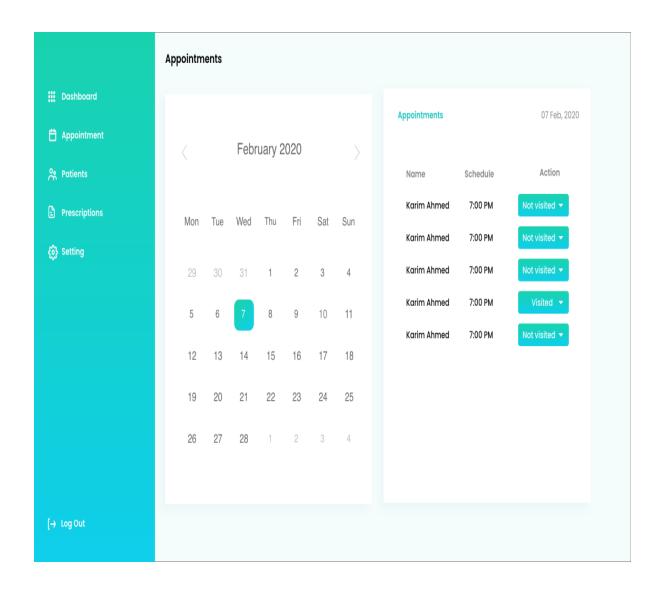


Fig.1.6: Appointment date.

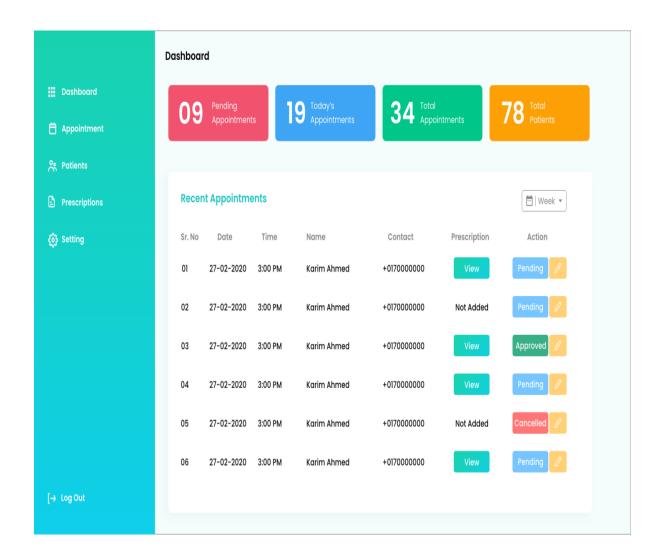
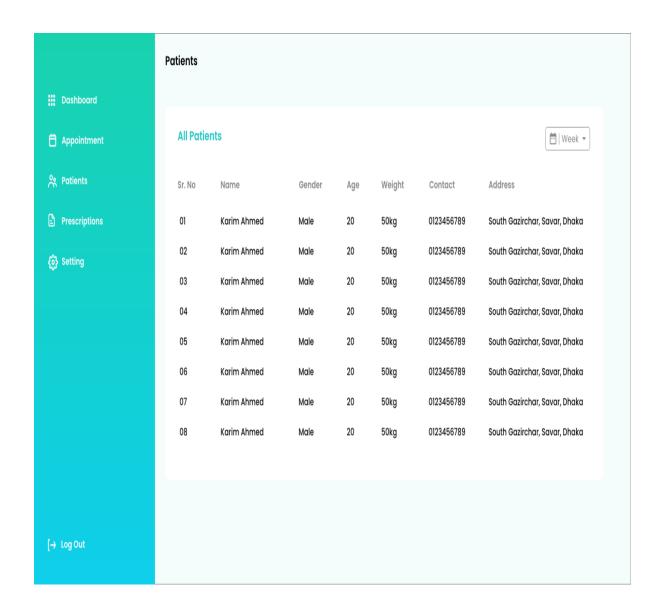


Fig. 1.7: All patients list



APPENDIX-C ENCLOSURES

1. Conference Paper Presented certificate of all students.









2. Similarity Index / Plagiarism Check report clearly showing the percentage (%).

| ORIGINALITY REPORT | | | |
|-------------------------------------|---|--|-----------------------|
| 14 _% SIMILARITY INDEX | 13% INTERNET SOURCES | 9% PUBLICATIONS | 12% STUDENT PAPERS |
| PRIMARY SOURCES | | | |
| 1 Scikit-lea | _ | | 4, |
| 4 | ed to M S Rama Sciences | iah University | of 3 _% |
| 3 Submitt Student Pape | ed to Taylor's Ed | ducation Grou | p 2 ₉ |
| 4 WWW.CO | oursehero.com | | 1,9 |
| Maaz Su "IoT-Ena Body Te | ini, HR Yogesh, uhail, V Madhun abled Smart Doc emperature and Transitions Proc | nitha, Archana ors for Monito Face Mask De | Sasi. |
| 6 develop | ers.generativea | i.google | <19 |
| 7 www.ch | anginghands.co | om | <19 |

APPENDIX – C SUSTAINABLE DEVELOPMENT GOALS







































• Goal: Industry, Innovation and Infrastructure:

Sustainable Development Goals (SDGs) focuses on industry, innovation, and infrastructure. It aims to build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.

Ensure healthy lives and promote well-being for all at all ages.

The app can contribute to this goal by improving access to healthcare services, facilitating timely appointments, and promoting preventive care.

Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. The app can be considered an innovative solution to streamline healthcare processes, making it more efficient and accessible.

Reduce inequality within and among countries. Ensure that the app is

accessible to diverse populations, considering factors such as language, disability, and socio-economic status.

Make cities and human settlements inclusive, safe, resilient, and sustainable. The app can contribute to creating sustainable healthcare practices in urban areas by reducing unnecessary travel and optimizing resource allocation.

Ensure sustainable consumption and production patterns.

Implement features in the app that reduce paper usage, optimize energy consumption, and promote eco-friendly practices.

Take urgent action to combat climate change and its impacts.

Consider incorporating features that reduce the carbon footprint of healthcare services, such as telemedicine options to reduce travel.

Develop and implement innovative technologies to enhance healthcare delivery. Integrate features like telemedicine, virtual consultations, and AI-driven tools for personalized health recommendations to promote innovative healthcare solutions.