*International Journal of Research in Engineering and Science (IJRES)*
*ISSN (Online): 2320-9364, ISSN (Print): 2320-9356*
*www.ijres.org Volume 14 Issue 2 ǁ February 2026 ǁ PP. 01-11*

# Online Hospital Appointment Booking System

Aishwarya R, Anjali K S, Archana M, Bhagyeshree, Manasa Sundeep
*[*1]Department of Computer Science and Engineering, Dayananda Sagar Academy of Technology and Management, Bangalore, India*
*[*2]Department of Computer Science and Engineering, Dayananda Sagar Academy of Technology and Management, Bangalore, India*
*[*3]Department of Computer Science and Engineering, Dayananda Sagar Academy of Technology and Management, Bangalore, India*
*[*4]Department of Computer Science and Engineering, Dayananda Sagar Academy of Technology and Management, Bangalore, India*
*[*5]Department of Computer Science and Engineering, Dayananda Sagar Academy of Technology and Management, Bangalore, India*
*Corresponding Author: Anjali K S*

***Abstract***
*Nowadays hospitals are very busy and number of patients is increasing day by day. Because of this, appointment management becomes a big problem. In many hospitals, booking appointment is still done manually and this creates lot of issues. Patients have to wait long time, sometimes appointment details get wrong, and doctors also waste time. This makes hospital work slow and patients feel uncomfortable. This study talks about different research works related to hospital appointment systems. Most of the studies show that old paper-based systems are not useful anymore. So hospitals are moving to online appointment systems. These systems help patients to book appointments easily using mobile or computer. Doctors can also manage their schedule properly. Some systems even share patient load with nearby hospitals to reduce crowd. Different software tools like PHP, Java, MySQL and cloud systems are used to develop these platforms. Features like reminder messages help patients remember their appointments. During COVID time, online appointment systems helped a lot because people avoided standing in long lines and crowd. Overall, digital appointment systems make hospital work easier. They save time, reduce confusion, and improve patient satisfaction. If system is simple and secure, even old people can use it without much problem.*

***Keywords:*** *Online Hospital Appointment System, Patient Scheduling, Digital Healthcare Management, Hospital Management System (HMS), Appointment Booking, Doctor Availability, Web-based Healthcare Application, Patient Satisfaction,*

---

Date of Submission: 22-01-2026 Date of Acceptance: 04-02-2026

---

## I. INTRODUCTION

Healthcare today is changing very fast because the number of patients is increasing, people expect better quality care, and technology is improving all the time. Hospitals and clinics are under a lot of pressure to give quick and good services while dealing with limited medical staff, equipment, and too much paperwork. One big problem in healthcare is patient appointment scheduling, because it affects waiting time, use of resources, staff workload, and how satisfied patients feel. Old appointment systems that use manual registration, paper files, or separate software usually cause long waiting lines, double bookings, lost data, and human mistakes. These problems make hospital work slower and also make patients unhappy. To solve these issues, many hospitals are now using digital hospital management systems and online appointment booking. Research shows that using centralized systems, web-based platforms, cloud technology, and smart scheduling methods can make healthcare services more efficient and easier to access. These systems allow patients to register online, book appointments in real time, get automatic reminders, check doctor availability, and keep medical records safe. During the COVID-19 pandemic, studies also showed that online appointment systems helped reduce crowding in hospitals, lower the risk of infection, and make healthcare more accessible, especially for elderly and weak patients. Even people who are not very good with technology were able to use these systems easily. Because of this, automated appointment management systems are now seen as an important part of modern healthcare. This project focuses on studying how intelligent appointment systems are designed, how they work, and how they help improve hospital efficiency, better use of resources, and patient satisfaction. It also looks at how these systems can support secure, scalable, and sustainable healthcare services for different types of medical institutions.

## II. LITERATURE REVIEW

A. V. Vamshi Krishna [1] This paper talk about Hospital Management System and why it is useful in hospital. In many hospitals work is still manual, like papers, files, registers and all. Because of this work becomes slow and sometimes mistakes happen, files get missing, data not clear also. Hospital Management System helps to solve this problem. All things like patient details, doctor details, appointment, billing, departments everything kept in one system. So staff no need to search files again and again. Work becomes easy and faster. For patient side also it is helpful. Patient can login, see doctors, select department and book appointment online. No need to stand in long line. Doctor and admin also have separate login so they can manage patient data, schedules and hospital work properly.Paper also says future improvement is possible. Using AI doctors can get help in diagnosis and prediction. Using IoT devices patient can be monitored continuously. Mobile apps and patient portal help patient to see reports, appointment and consult doctor easily. Security is also important because patient data is private. System should protect data properly and follow healthcare rules. This helps to keep patient information safe. Overall this system makes hospital work better. It reduces manual work, saves time, improves patient care and makes hospital more modern and digital.

Sarah Chaudhry1, Fakhra Batool1, Abdul Hafeez Muhammad1 and Ansar Siddique[2] In many hospitals, booking appointment is still done in old style. People come early morning, stand in line for long time and still they don't know when doctor will see them. Some patients wait for hours and some even go back without meeting doctor. Because of this, hospital becomes very crowded and stressful. Patients feel tired and angry, and doctors also feel pressure because too many patients come at same time. Most of the time, appointment details are written on paper. Papers can be lost, damaged or mixed with other files. There is no clear system to control patient flow. Some doctors get too many patients in one day and some doctors sit free. Patients also face problem when doctor is not available, but they already came to hospital. This wastes time, money and energy, especially for elderly people and those coming from far places. To reduce all these problems, online appointment booking system is used. With this system, patient does not need to come to hospital just for booking. Patient can register and login using mobile or computer. After login, patient can see which doctor is available and on which day. Patient selects date and time and books appointment easily. This makes everything clear and simple. When appointment is booked online, hospital staff can see it in system and manage schedule properly. Doctors know how many patients will come, so they can plan their time better. Patients also come only at given time, so waiting becomes less. Hospital looks more calm and organized. Appointment reminders also help patients not forget their visit. This system is made in simple way, so even people who are not very good with technology can use it. Menu and forms are easy to understand. Patient and admin have separate login, so data remains safe. All information is stored digitally, so no need of too much paperwork. This reduces mistake and saves effort. Online appointment system does not treat patient or give medicine. It only helps in managing appointment and time. Doctor still checks patient directly in hospital. In future, more features like medical history, reports and notifications can be added to make system better. Overall, online appointment booking system makes hospital work easier. Patients feel relaxed because they don't need to wait for long time. Doctors can work smoothly without rush. Hospital management also benefits because system is organized and reliable. It is simple solution for big problem and helps improve healthcare service in day-to-day life.

W. Li, S. Shen, J. Yang, J. Guo, and Q. Tang[3] This paper talks about online appointment services for elderly people and how old people feel while using internet-based medical systems. Nowadays, many hospitals use online appointment booking, especially after COVID-19. This system is helpful, but for elderly people it is not always easy to use. Many older adults are not familiar with smartphones, apps, and internet. Because of this, they feel confused and scared while using online appointment systems. Some elderly people worry about pressing wrong buttons or making payment mistakes. So they depend on their children, relatives, or friends to help them book appointments. This shows the digital gap between young people and elderly people. The study compared elderly people who used online appointment systems for the first time and those who had used it earlier. The results showed that previous users were more comfortable and satisfied. First-time users felt nervous and lacked confidence. Even though online systems save time and reduce hospital crowd, many elderly people still prefer going directly to the hospital. The paper also talks about system design problems. Many apps have small text, too many steps, and confusing options. This makes elderly people lose interest quickly. If the system is simple and clear, elderly people are more likely to use it. Easy language, big buttons, and clear instructions are very important. During COVID-19, online appointment systems became more common. Some elderly people liked it because it reduced waiting time and infection risk. But still, problems like login issues, payment confusion, and lack of guidance made it difficult for many users. In conclusion, online medical appointment systems are useful, but they are not fully suitable for elderly people. Hospitals and system developers should make these systems more elderly-friendly. With proper support, simple design, and guidance, elderly people can also use online medical services comfortably.

Adebayo Peter Idowu, Olajide Olusegun Adeosun, and Kehinde Oladipo Williams [4] Hospital systems and online appointment booking. Hospitals are always crowded, people wait long time, doctors also get pressure. So online system came. But problem is, these systems are not made for normal people. Many people, especially village side and semiliterate users, don't know English properly and don't understand medical words. In many papers it is said that people get confused when they see forms, passwords, email login and too many steps. They click wrong things, make mistakes, and sometimes stop using system fully. During corona time also online booking was needed, but many people still went directly because system was hard. Some papers explain that interface design is main issue. Too much text, no local language, small buttons, no clear guidance. Because of this, users ask help from others or depend on hospital staff. Other papers talk about how this can be improved. They say system should be designed by thinking about user first. Using simple language, local language, pictures, icons, audio voice, step by step screens will help. Less typing is better. Mobile phone based system is more comfortable for people. Few papers tested new simple systems. Users finished work faster, made less errors and felt happy. They liked simple design more than old one. Finally all papers say one thing clearly: technology is useful only when common people can use it easily. If system is simple, healthcare service will become better.

J. L. Akinode and S. A. Oloruntoba [5] This paper is about patient appointment and scheduling system used in hospitals. In many hospitals, appointment booking is still done manually and this creates lot of problems. Patients need to wait long hours, sometimes appointment details get mixed, and doctors time also get wasted. Because of this, hospital work becomes slow and patients get frustrated. So this system is made to reduce all these issues and make things easy. In this system, patient can register and login, then choose department, doctor, date and time for appointment. Everything is done online so patient no need to stand in long queue. Doctors can also see their schedule and manage patient load properly. Receptionist also has role to manage appointment and patient data. The system uses simple web technologies like AngularJS for front end and PHP with MySQL or SQLite for backend. It is designed in simple way so even normal people can use it.Overall, this appointment system helps to save time, reduce crowd in hospital and improve patient satisfaction. It also helps doctors to work more efficiently. This system is very useful especially in busy hospitals where patient flow is very high.

Simeon, Izon-ebi Friday, Dr Promise Nlerum[6] This project is mainly about making a medical appointment system for hospitals. In many hospitals, appointment booking is still done in old ways, like writing in books or calling again and again. Because of this, patients face many problems like waiting for long time, confusion in appointment timing, and sometimes missing the appointment completely. Doctors also waste time because some patients do not show up. So this project was done to make this process easier. With this system, patients can take appointment using a website. They do not need to visit hospital just to fix a date. Patient can login, select doctor, choose date and time, and confirm appointment. This saves lot of time. Doctors and hospital staff also can see appointments and manage their daily schedule. Paper work is reduced and everything is stored in system. Before developing this system, some previous works were studied. Most of them talked about online booking systems and how they help hospitals. It was found that reminder messages are very helpful because patients forget appointments many times. So this system also includes reminder feature to reduce no-show cases. The system is developed using simple web tools. HTML and CSS are used for designing pages. JavaScript is used for some actions in website. PHP is used in backend and MySQL is used to store data. The design of system is kept simple so that even non-technical users can use it easily without confusion .Working of the system is also very simple. First user login to system. Patient search doctor and choose time slot. System checks doctor availability. If doctor is free, appointment is fixed. If not, another option is shown. This helps to avoid double booking and mistakes. After completing the system, testing was done by different users. Some small issues were found and corrected. Most users said the system is easy to use and saves time. Reminder option helped patients to remember appointments. In the end, this project shows that using online appointment system can improve hospital work. Waiting time is reduced and management becomes better. Patient and doctor both get benefit. In future, more features like video consultation and patient feedback can be added to improve the system.

Ms.Sanjeevani P.Avhale, Ms.Wrushali R. Ajabe, Ms pallavi A. Chinchole, Ms Puja T.[7] This system is mainly created to make doctor appointment booking easy for patients and doctors. From the screenshots shown, we can understand how the application works step by step. First, the user downloads the app and installs it on mobile. After opening the app, the login page appears. If the user is new, they must register first by giving basic details like name, mobile number, and password. If the user forgets password, there is also forgot password option where OTP is sent to mobile. After login, the dashboard screen is shown. In this dashboard, different types of doctor specialists are displayed like family physician, cardiologist, neurologist, eye specialist and many more. Patient can select any specialist based on their problem. Once a specialist is selected, list of doctors under that category is displayed. Patient can choose any doctor from the list and view doctor details. When patient clicks on a doctor, full information about that doctor is shown. This includes doctor name, experience, location, and other details. There are also options like book appointment, view location on map, call, and check reviews. Location

option opens map and shows exact place of hospital or clinic so patient can easily find it. The system also allows patients to book appointment online by selecting suitable date and time. Already booked slots are not available, so double booking does not happen. If patient wants, appointment can also be cancelled anytime. This helps patient save time and avoid standing in long queues. One important feature is feedback or review system. Patients can give ratings and comments for doctors. This helps other users to know which doctor is better based on experience of previous patients. From the reviews, patient can decide which doctor to select. Doctors also use the system. They can see their appointments, manage schedule, approve or reject appointment requests. Doctors can also adjust working hours depending on number of patients. Admin has full control of system and can monitor users, appointments, and reports. All appointment and user data is stored safely in database. The system reduces paper work and manual effort. It saves time for patients and hospital staff. Doctors can focus more on treatment instead of managing appointments. Overall, this online doctor appointment system is very useful. It makes booking simple, fast, and reliable. It improves hospital working, reduces waiting time, and gives better experience to patients as well as doctors.

AKSHAY GAWANDE,SAMEER PANAT, HARSH KUCHE, KARAN DESHMUKH [7] This project is about booking doctor appointment using mobile app so people don't have to go hospital again and again. Usually what happens, patient goes hospital, waits in line for long time, sometimes doctor not available or appointment already full. This wastes lot of time and makes people frustrated. So this app helps patient to book appointment easily from phone. Patient first register in app and login. After login, patient can see list of doctors, check which doctor is free and choose date and time as per their convenience. If that time slot already booked, system will not allow it and patient has to select different time. Once appointment is done, that slot is blocked so no confusion later. Doctor also has login in this system. Doctor can see appointment requests, accept or reject them, and manage their daily schedule. This helps doctor to plan work properly and reduces overload. Admin is there to handle system settings and manage everything in backend. One good thing is reminder feature. Many times people forget appointment, so app sends notification before appointment time. This is very useful and reduces missed appointments. Searching doctor is also easy. Patient can search by specialization like heart doctor, skin doctor, etc, and also based on availability. No need to ask anyone, everything is visible in app. All user details and appointment information are stored safely in database. Password is encrypted so data is secure. System also takes backup regularly, so even if data loss happens, it can be recovered. Overall this system makes appointment process simple and fast. It saves time for patient, reduces crowd in hospital and helps doctors manage their work better. Everything becomes easy and smooth using this application

## III. PROPOSED METHOD

This proposed method is about making a hospital appointment system that works in a simple way and removes many problems of old systems. In many hospitals, appointment work is still slow because it is done using paper or half computer systems. This creates confusion for patients and staff. So this system is made as one main online platform which can also be expanded later when hospital grows.Patients can use this system by opening a website and doing registration. They just enter basic details and then they can see doctor list and free time slots. They can book appointment easily without coming to hospital. If they want, they can also change appointment time or cancel it. The system sends message or alert so patient does not forget the appointment. This helps both patient and hospital. Doctors and hospital staff also use the same system but with different access. Doctors can see their schedule, update free time, and manage appointments. Hospital staff can also check bookings and manage daily work. This reduces paper work and manual effort. Doctors time is used in better way and crowd also gets managed. All patient details and appointment data is stored in system database. The system is kept simple so it can work on mobile phone, laptop, or computer. It is easy to understand even for people who are not very good with technology. The system uses some basic smart logic to give appointment slots. It checks doctor availability, patient importance, and time before confirming appointment. This helps reduce waiting time. This system is also made in a way that it can be connected later with other hospital systems like patient records, billing section, pharmacy, and lab. Security is also considered. Login system is used and data is protected so patient information is not misused. Overall, this method helps hospitals reduce manual work and save time. Patients also feel comfortable because booking is easy and fast. It helps hospital use resources properly and improve patient experience by using a simple and safe appointment system.

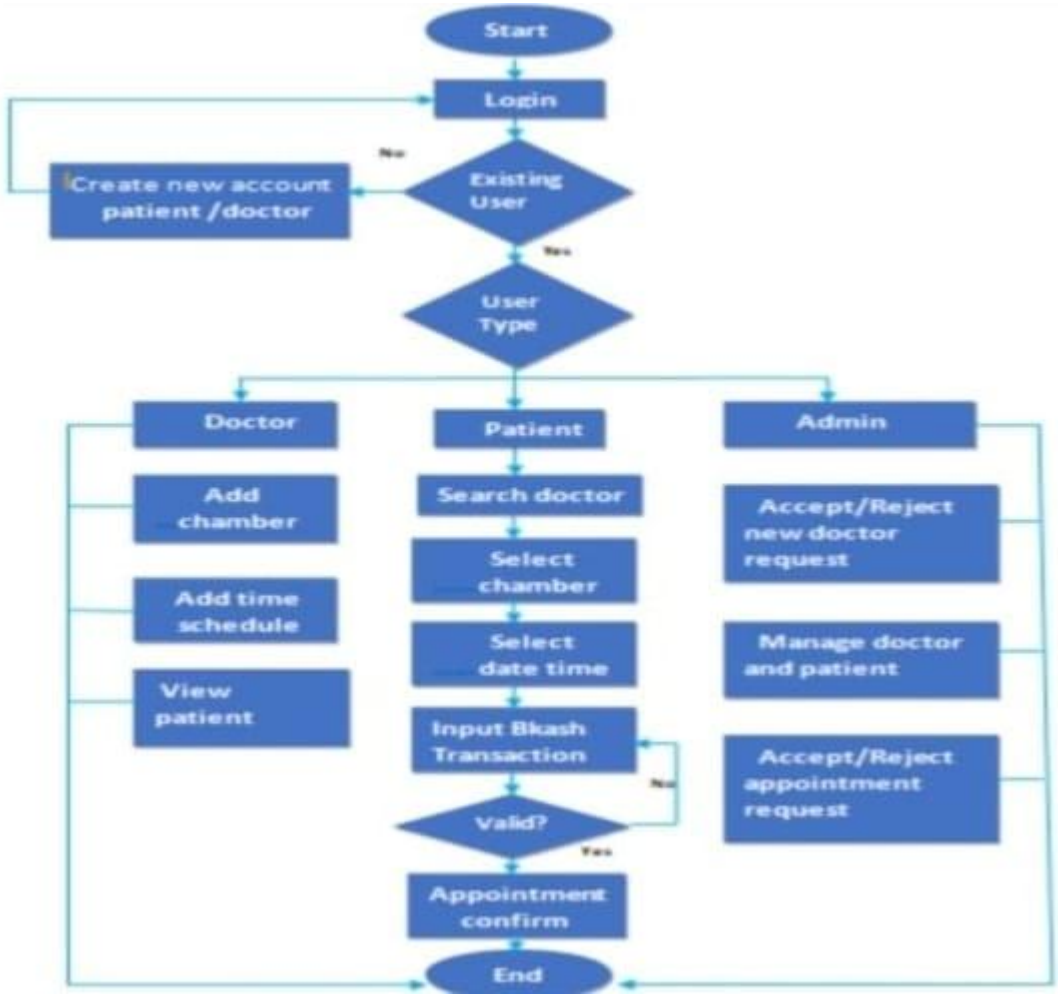



**Fig 1: Flow Chart**

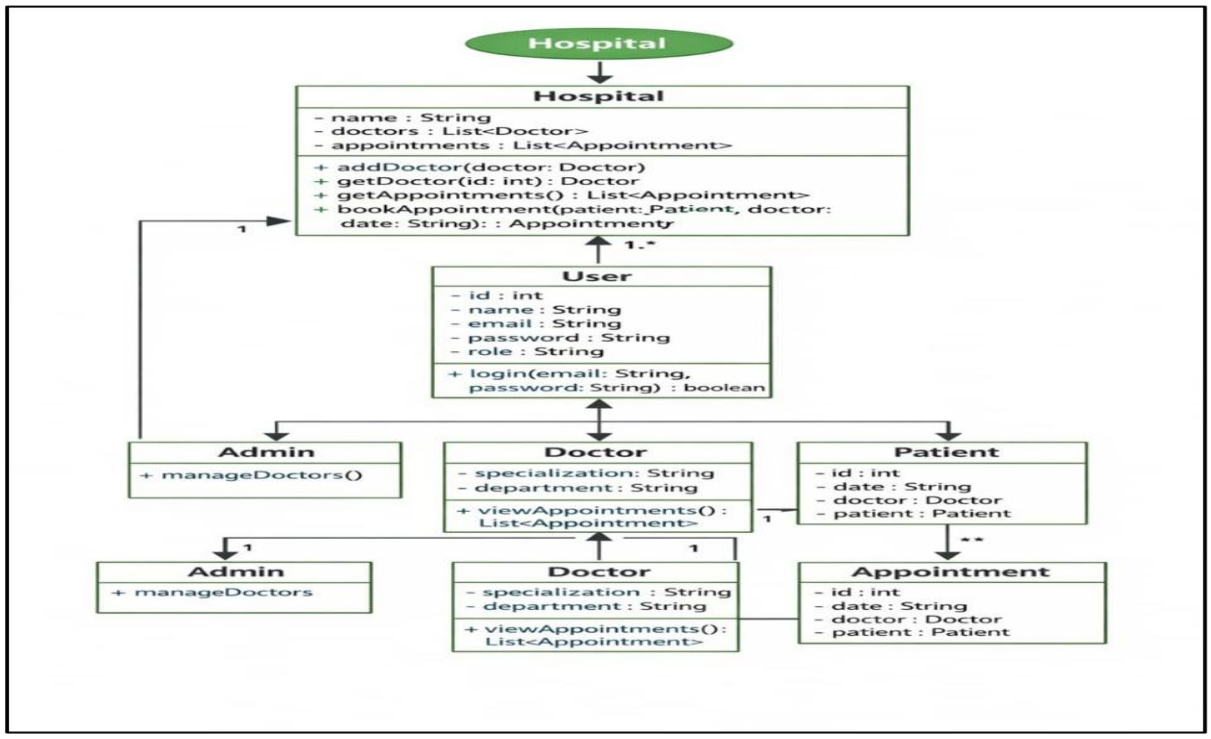
## IV. IMPLEMENTATION

This project is about a Hospital Management System and how the full appointment process works. The main file is the starting point of the program. From here only the system begins. When the program runs, hospital and doctor details are already loaded inside, so user don't need to enter them again. First thing system asks is patient name and it keeps this name for later use during booking.

After patient details are entered, the system always follows hospital first rule. Patient must select hospital first, then only system allows next steps. The flow is simple and fixed, first hospital selection, then department selection, then doctor selection, and finally appointment booking. Each step works separately, so the program is easy to understand and manage. This is similar to real hospital process and avoids wrong booking.

Hospital class stores hospital details like id, name, location and departments. Departments are stored as list so system can show only related departments after hospital is chosen. Doctor class stores doctor details like id, name, specialization and hospital id. Hospital id is important because doctors are shown only for selected hospital. Patient class stores patient name and selected hospital id, so system always stays in correct flow.

Hospital selection module shows all hospitals and patient selects one using id. After that, department module shows only available departments. Doctor module shows doctors based on hospital and department. Appointment module takes date and time and shows confirmation. Data is already stored inside program, no database is used. Overall system is made using core Java, simple design, easy to understand and suitable for college project and basic real use.




## V. TESTING

Testing is done to check whether the hospital management system works properly or not. Without testing, we cannot be sure system is correct. So different testing methods are used. Testing helps to find mistakes and fix them before final use.

First unit testing is done. In this testing, small parts of system are checked one by one. Hospital selection is tested, department list is tested, doctor selection is tested and appointment booking is tested. Wrong input and correct input both are given to see system behavior. This helps to know basic logic is working.

Then functional testing is done. Here main features are checked from patient side. Patient login, hospital selection, doctor selection and appointment booking are tested. Emergency option is also checked. This testing makes sure all features work as expected.

Integration testing is used to check whether all modules work together. Data flow between hospital, department, doctor and appointment is checked. System should always show correct hospital related data.

Performance testing checks speed and memory usage. Security testing checks patient data safety. Usability testing checks if system is easy to use. Overall testing makes system reliable and user friendly.

| Test case ID | Scenario | Input condition | Expected Result |
|---|---|---|---|
| TC 01 | Book Appointment | Valid patient, doctor Available | PASS |
| TC 02 | Book Appointment | Doctor not Available | PASS |
| TC 03 | Book Appointment | Patient Details incomplete | FAIL |
| TC 04 | Appointment Check-in | Patient arrived on time | PASS |
| TC 05 | Appointment Check-in | Patient late but allowed | FAIL |
| TC 06 | Doctor Consultation | Consultation incomplete | PASS |

**TABLE 1: TEST CASE**

## VI. RESULT ANALISIS

2 Show how the MedCare hospital system looks for patient side. First screen is patient dashboard. This is main screen where patient comes after login. At top, MedCare name is shown and menu icon is there. From menu patient can go to profile, logout, appointments and other options. Welcome message is shown so patient feels good and connected. Below that, some boxes are there showing upcoming appointment, completed

appointment and doctors visited. This helps patient to know their activity quickly. Emergency option is also clearly shown so in emergency patient can use it fast without searching.

3 Is browse hospital screen. In this screen patient can search hospitals by name or place. Filters are also there like emergency hospital only. Hospital cards show hospital name, rating and address. This helps patient to choose hospital easily. When patient clicks hospital, details screen opens. In hospital details screen, hospital name, rating, address, emergency service, ambulance, bed availability and departments are shown. Contact number is also given. Patient can select hospital or book appointment from here.

4 Appointment booking screens show full process step by step. First hospital selection, then department selection, then doctor selection. Doctor details like experience, fee and availability are shown. After that patient selects date and time. At last confirmation screen comes and appointment is booked successfully.

5 Emergency service screen is very important. It is made for urgent situations. Emergency warning message is shown and call button is there. Nearby emergency hospitals are shown with distance and bed details. Emergency contact numbers are also given. Overall, system is simple, useful and easy for patient to understand and use.

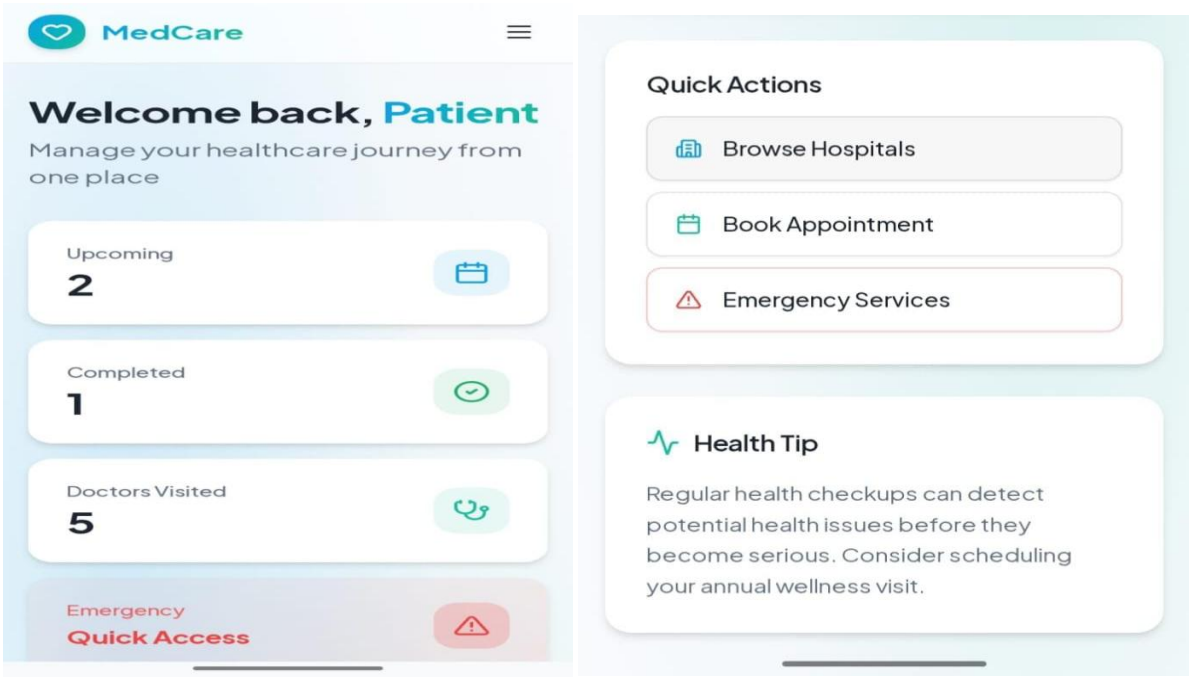



**FIGURE 2: Home page**

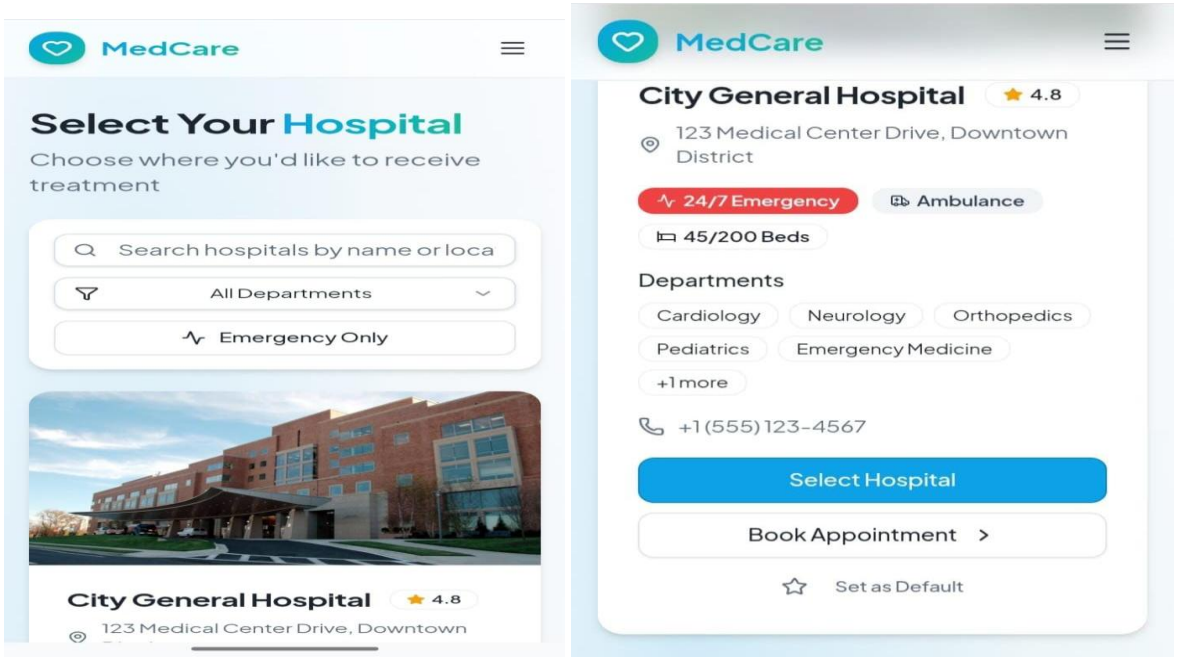
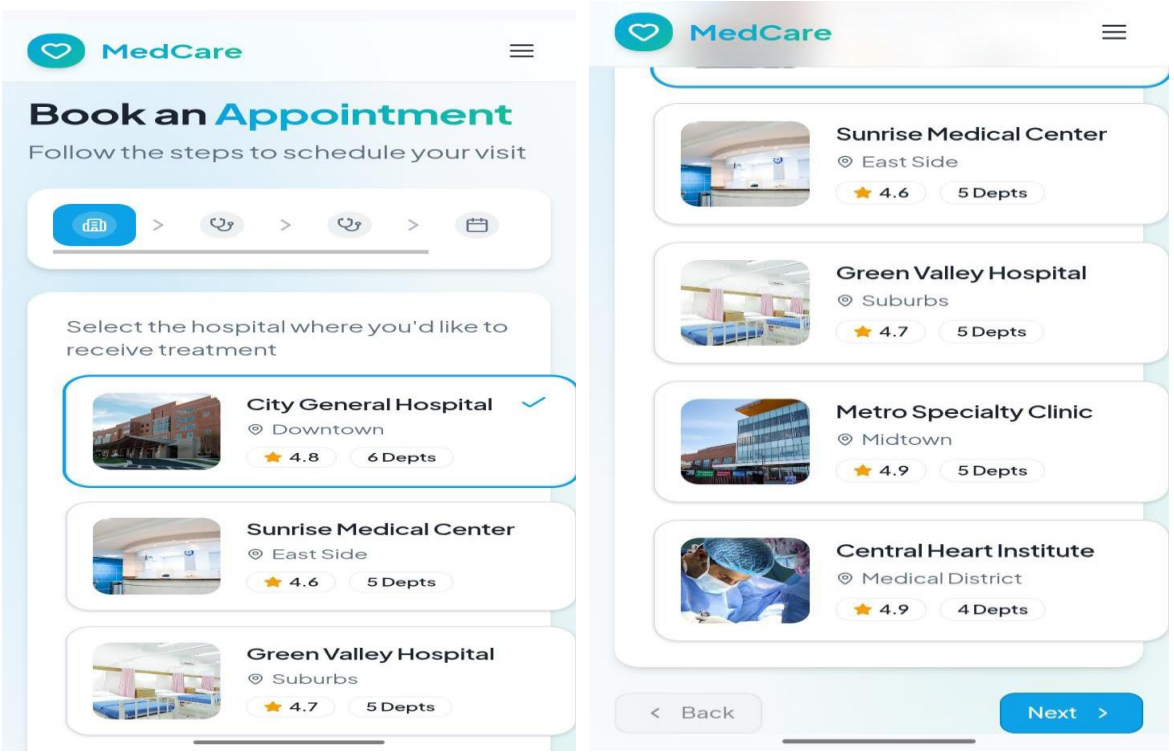
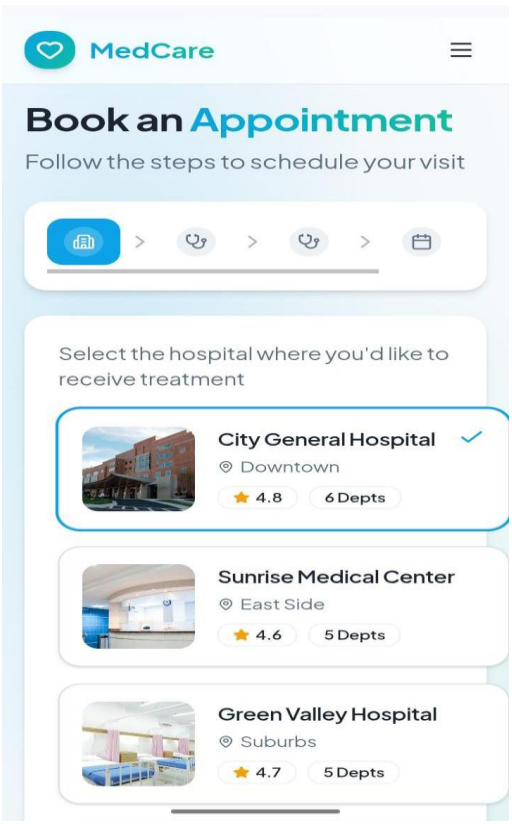
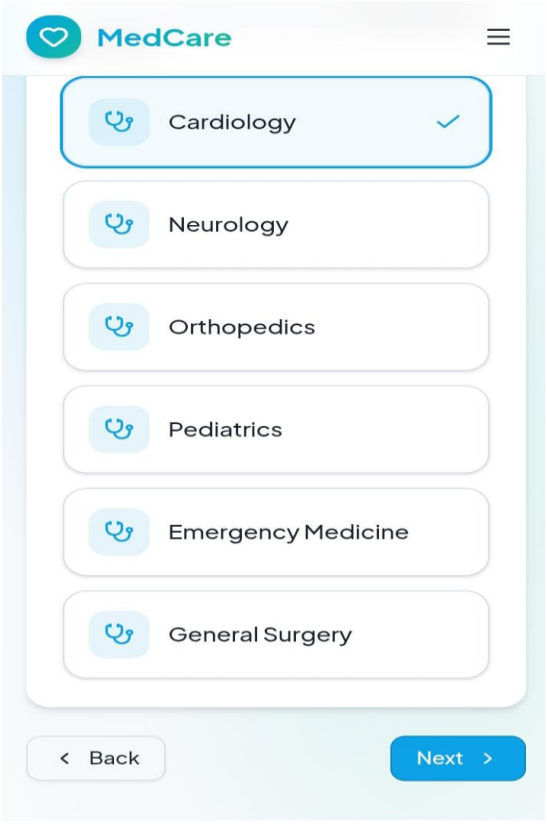
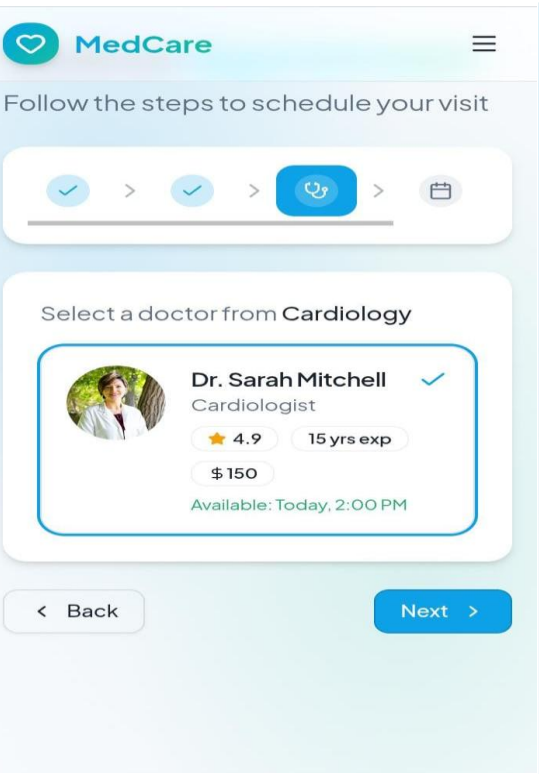


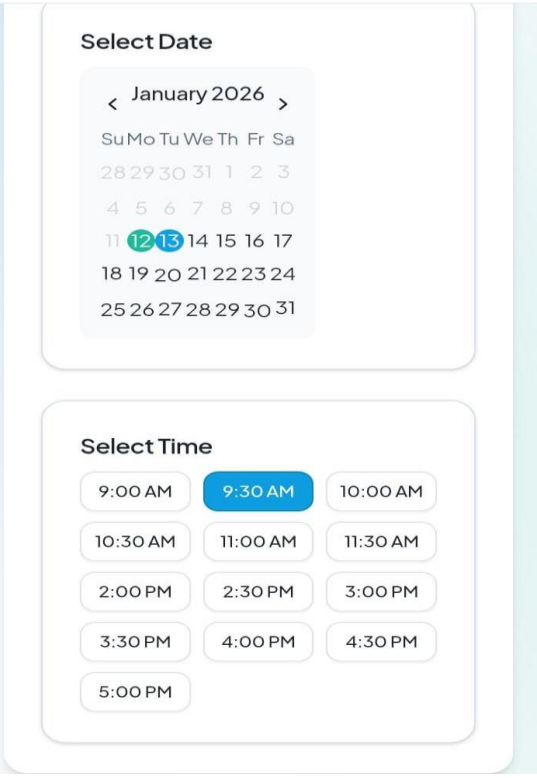

**FIGURE 3: Browse hospital**




MedCare
Book an Appointment
Follow the steps to schedule your visit
Select the hospital where you'd like to receive treatment
City General Hospital
Downtown
4.8
6 Depts
Sunrise Medical Center
East Side
4.6
5 Depts
Green Valley Hospital
Suburbs
4.7
5 Depts


MedCare
Cardiology
Neurology
Orthopedics
Pediatrics
Emergency Medicine
General Surgery
Back
Next


MedCare
Follow the steps to schedule your visit
Select a doctor from Cardiology
Dr. Sarah Mitchell
Cardiologist
4.9
15 yrs exp
$150
Available: Today, 2:00 PM
Back
Next


Select Date
January 2026
Su Mo Tu We Th Fr Sa
28 29 30 31 1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 31
Select Time
9:00 AM
9:30 AM
10:00 AM
10:30 AM
11:00 AM
11:30 AM
2:00 PM
2:30 PM
3:00 PM
3:30 PM
4:00 PM
4:30 PM
5:00 PM

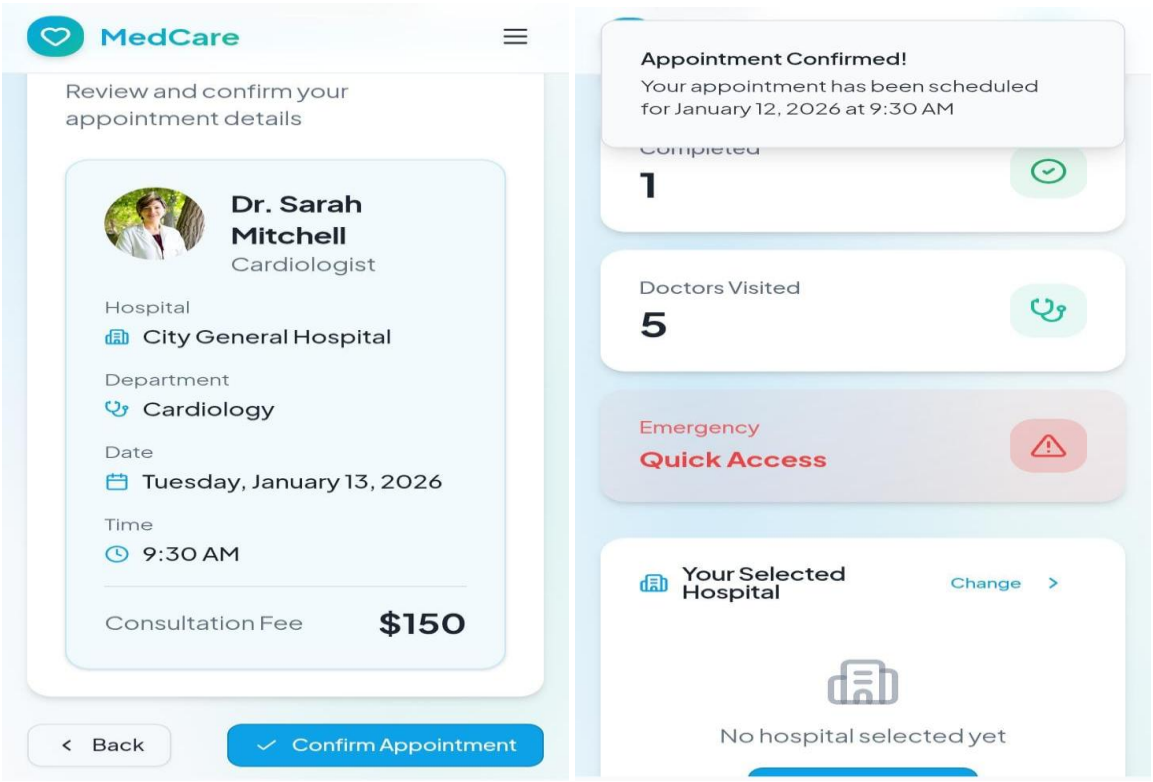



**FIGURE 4: Book an appointment**

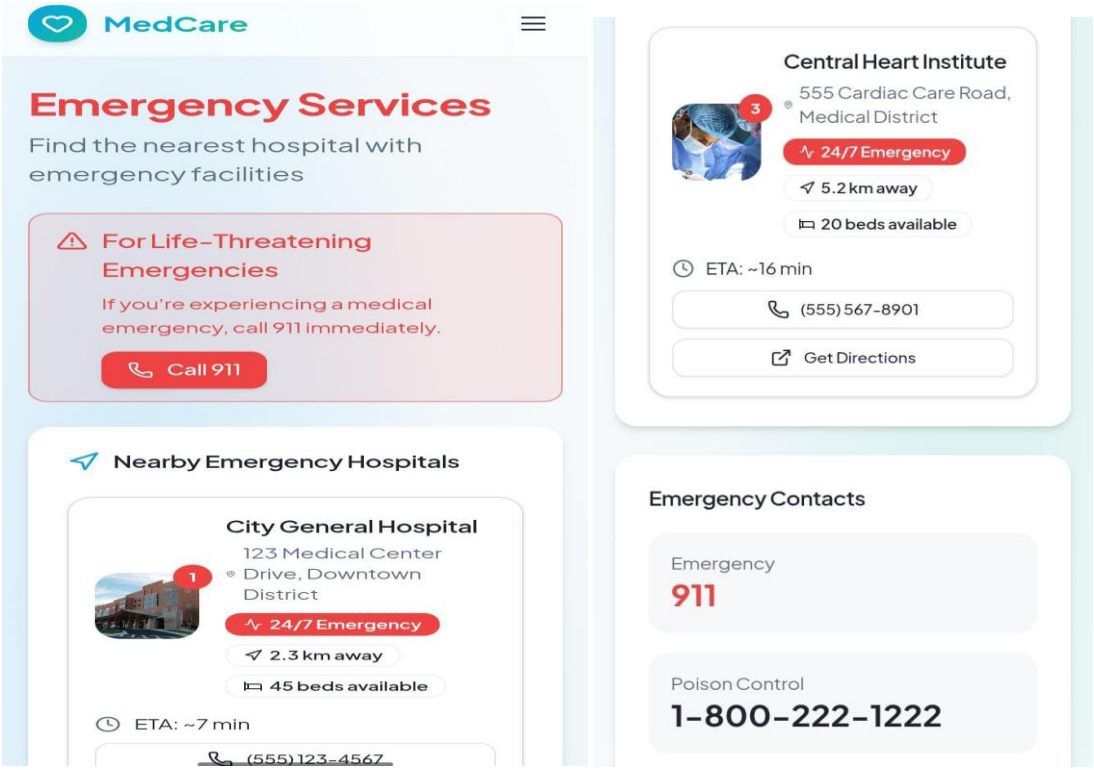



**FIGURE 5: Emergency Services**

## VII. CONCLUSION

The increasing demand for efficient healthcare services has made effective patient appointment scheduling and management a critical requirement in modern hospital environments. Traditional manual and semi-automated scheduling methods are insufficient to handle growing patient volumes, leading to long waiting times, inefficient resource utilization, and increased administrative workload. This project reviewed existing research on hospital appointment management systems and identified key limitations related to scalability, integration, adaptability, security, and user accessibility. To address these challenges, a comprehensive and intelligent appointment management system was proposed, incorporating automated scheduling, role-based access control, real-time availability management, and secure data handling. The proposed method enables patients to conveniently book and manage appointments online while allowing doctors and administrators to efficiently control schedules and resources. The inclusion of intelligent scheduling logic and structured algorithmic steps ensures optimal allocation of appointment slots, reduced waiting time, and improved operational efficiency. Furthermore, the system emphasizes usability, security, and future scalability, making it suitable for integration with broader hospital management modules such as electronic health records, billing, and laboratory systems. Overall, the proposed solution enhances patient satisfaction, optimizes healthcare resource utilization, and supports the digital transformation of healthcare services. With further enhancements such as advanced analytics, mobile integration, and artificial intelligence-driven can serve decision support, the system as a robust and sustainable platform for next-generation healthcare management.

## REFERENCES

[1]. A. V. Vamshi Krishna, G. Pavan, B. Srikanth, E. Nagaraj, and M. Akshay, "Integrated Patient Appointment Scheduling and Management System," *International Journal of Engineering Science and Advanced Technology (IJESAT)*, vol. 25, no. 05, pp. 419–427, May 2025.

[2]. Sarah Chaudhry1, Fakhra Batool1, Abdul Hafeez Muhammad1 and Ansar Siddique2, Department of Computer Science, Bahria University Lahore Campus, Punjab 54600, Pakistan

[3]. W. Li, S. Shen, J. Yang, J. Guo, and Q. Tang, "Determinants of Satisfaction With Hospital Online Appointment Service Among Older Adults During the COVID-19 Pandemic: A Cross-Sectional Study," *Frontiers in Public Health*, vol. 10, Article 853489, Feb. 2022, doi: 10.3389/fpubh.2022.853489.

[4]. Adebayo Peter Idowu, Olajide Olusegun Adeosun, and Kehinde Oladipo Williams Department of Computer Science and Engineering Obfemi Awolowo University, Ile-Ife, nigeria

[5]. J. L. Akinode and S. A. Oloruntoba, "Design and Implementation of a Patient Appointment and Scheduling System," *International Advanced Research Journal in Science, Engineering and Technology (IARJSET)*, vol. 4, no. 12, pp. 16–23, Dec. 2017, doi: 10.17148/IARJSET.2017.41203.

[6]. Simeon, Izon-ebi Friday, Dr Promise Nlerum DOI: 10.56201/ijcsmt.v11.no1.2025.pg68.83

[7]. Ms.Sanjeevani P.Avhale, Ms.Wrushali R. Ajabe, Ms pallavi A. Chinchole, Ms Puja T. Changade

[8]. Prof. N.K.Bhil Computer science Anuradha Engineering College , Chikhali. Sant Gadge Baba Amravti University,India

[9]. AKSHAY GAWANDE,SAMEER PANAT, HARSH KUCHE, KARAN DESHMUKH ,PROF. (DR). P. P. DESHMUKH Information Technology,Department, Prof. Ram Meghe Institute of Technology & Research Badnera,Amravati, India