

MEDICARE PRO



TEAM NAME : TEAM V7

TEAM MEMBERS :

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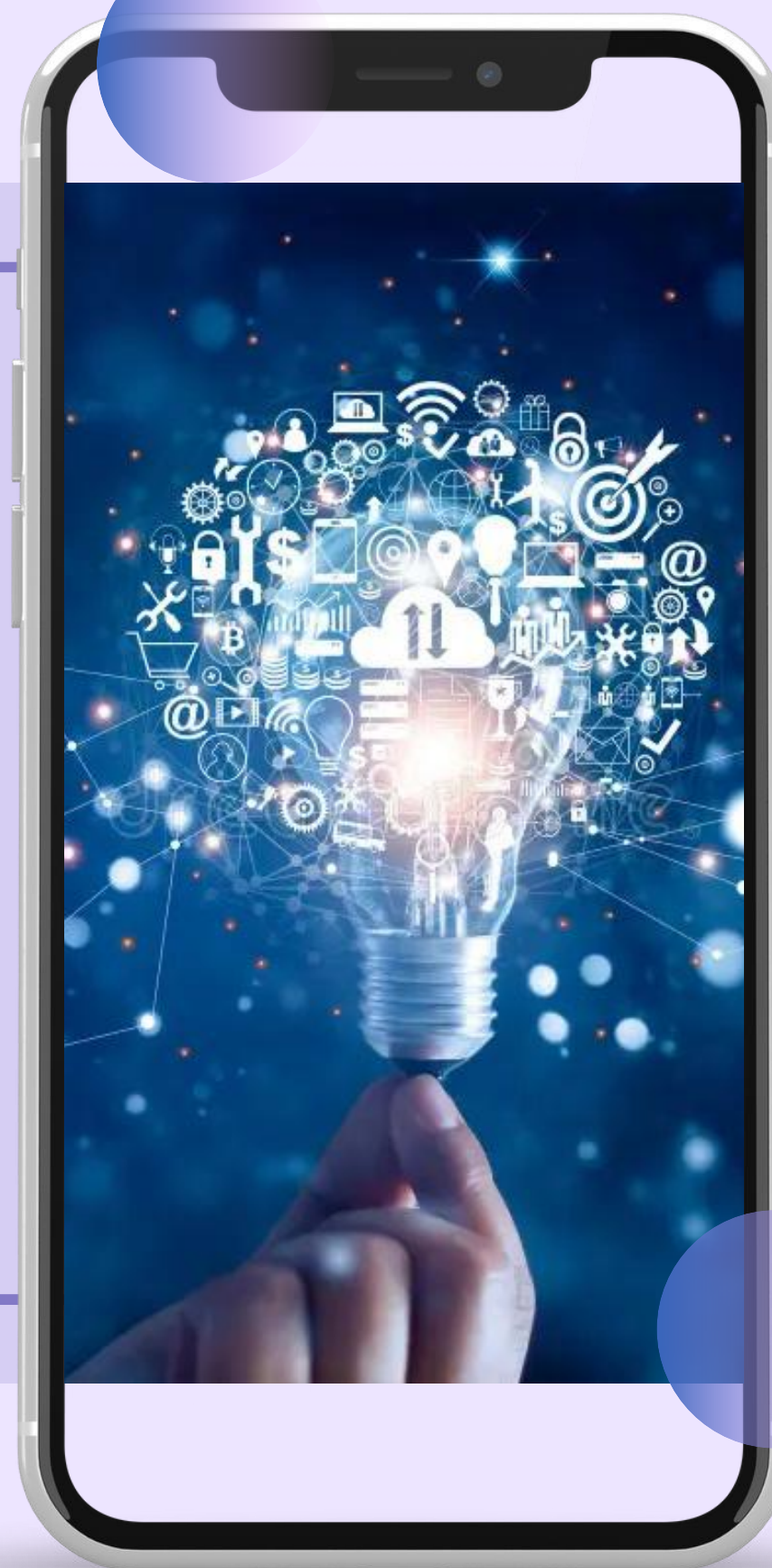


PROBLEM STATEMENT

- Hospitals relying on manual processes face:
- Time-consuming patient registration and appointment scheduling.
- Frequent data entry errors and mismanagement of records.
- Limited transparency in tracking doctor availability and appointment status.
- Security vulnerabilities in handling sensitive patient data.
- A digital, role-based platform is needed to ensure efficiency, security, and accuracy.



SOLUTION



- A web-based Hospital Management System developed with the latest MERN-inspired technologies.
- Enables:
 - Patients to self-register, manage profiles, and book appointments.
 - Doctors to view and respond to appointment requests.
 - Admins to perform full CRUD operations for patients, doctors, and appointments.
- Features secure JWT authentication, real-time updates, and a seamless user experience.

INTRODUCTION

- The Hospital Management System (HMS) is a web-based platform designed to digitize and simplify hospital operations.
- It provides a secure, role-based environment for patients, doctors, and administrators to manage healthcare interactions efficiently.
- The system aims to reduce manual processes, minimize errors, and improve the overall patient experience.

KEY FEATURES

● Patients

- Self-register securely and create personal profiles.
- Book, reschedule, or cancel appointments in real time.
- Track appointment status with live updates.

● Doctors

- Admin-created accounts ensure secure onboarding.
- View scheduled appointments and patient details.
- Accept or reject appointment requests.

● Administrators

- Full CRUD operations for managing patients and doctors.
- Monitor and delete appointments when necessary.
- Maintain system security and data integrity.

SYSTEM ARCHITECTURE

Frontend (Client)

- Tech: React + Vite + Bootstrap
- Role: User interface for Admin, Doctor, Patient.
- Handles login/register, role-based dashboards, and API calls via Axios.

Backend (Server)

- Tech: Node.js + Express
- Role: REST API with JWT authentication & role-based access.
- Handles CRUD for users, profiles, and appointments.

Database

- Tech: MySQL with Prisma ORM
- Role: Stores users, profiles, and appointment data with migrations.

Security

- JWT for sessions, bcrypt for password hashing, strict role-based permissions.

Deployment

- Dev: Local Node & Vite servers.



TECHNOLOGY STACK

Frontend

- React (with Vite) → Fast, modern frontend framework.
- Bootstrap 5 → UI styling and responsive design.
- Axios → For making API requests to the backend.
- NPM → Dependency management.



TECHNOLOGY STACK

Backend

- Node.js → JavaScript runtime environment.
- Express.js → Backend web framework for APIs.
- JWT (JSON Web Token) → Authentication & role-based access control.
- bcrypt.js → Password hashing and security.
- Prisma ORM → Database ORM (Object Relational Mapper).
- MySQL → Relational Database for storing patients, doctors, users, appointments.

Other Tools

- ESLint → Code linting and quality check.
- Vite → Fast development build tool for frontend.
- GitHub → Version control and project hosting.



DATABASE DESIGN

- Users Table: Stores patient and doctor credentials with roles.
- Appointments Table: Maintains appointment details (patient, doctor, status, time).
- Relationships:
 - One-to-many mapping between Doctors and Appointments.
 - Foreign keys ensure data consistency and easy queries.



SCREENSHOTS



localhost:5173/doctor

MediCare Pro Dashboard Logout

Doctor Dashboard

Filter: All

Jack Smith — 17/9/2025, 12:24:00 am
History: No known chronic conditions ACCEPTED

localhost:5173/patient

MediCare Pro Dashboard Logout

Patient Dashboard

Appointment requested

Profile

Name: Lanth Newman

Age: 33

Gender: M

Medical History: No Medical History

Save

Your Appointments

Doctor	Date	Status	
Dr. Aisha Khan (Cardiology)	17/9/2025, 7:09:00 pm	PENDING	Delete

Request Appointment

localhost:5173/register

MediCare Pro Login Patient Register

Patient Registration

Email: new@medicare.pro Password: *****

Name: Lanth Newman Age: 33 Gender: Male

Medical History: No Medical History

Register

localhost:5173/admin

MediCare Pro Dashboard Logout

Admin Dashboard

Create Doctor

one@medicare.pro

12345678

Dr. Matt Damon

Neurology

Add Doctor

Doctors

Name	Specialization	Email	
Dr. Aisha Khan	Cardiology	doctor1@medicare.pro	Delete
Dr. Meera Roy	Dermatology	doc2@medicare.pro	Delete

Patients

Name	Email	Age	
Jack Smith	P2@medicare.pro	29	Delete
Ling Lang	nice@medicare.pro	33	Delete
Lanth Newman	new@medicare.pro	33	Delete

Appointments

Patient	Doctor	Date	Status
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CHALLENGES & SOLUTIONS

- **Challenge 1: Role-Based Access**
Challenge: Restricting Admin, Doctor, and Patient permissions.

- Solution: Used JWT + middleware to verify roles before route access.

- **Challenge 2: Frontend-Backend Separation**
Challenge: Deployment confusion from separate folders.

- Solution: Managed with two package.json files and clear .env setup.

- **Challenge 3: Password Security**
Challenge: Secure password storage.

- Solution: bcrypt.js hashing with secure login verification.

FUTURE ENHANCEMENTS

- Payment Gateway Integration: Online payments for consultations.
- Automated Notifications: SMS/email alerts for appointment reminders.
- Analytics Dashboard: Hospital performance and patient trend reporting.
- Telemedicine Features: Virtual consultations and video calls.



CONCLUSION

- Developing this Hospital Management System gave hands-on experience in building a full-stack web app with RBAC, JWT+bcrypt authentication, and clear frontend-backend separation.
- Overcoming challenges like role permissions, database relations, and integration improved our problem-solving and structuring skills.
- Future scope includes real-time notifications, medical history tracking, and cloud deployment, making it a strong foundation for healthcare solutions.





Thank You.