Full Stack Project

E-POST

POSTAL SERVICE

OBJECTIVES

- Modernize Postal Operations with QR-based tracking and automation.

- Enable Real-Time Tracking for efficient deliveries.

- Optimize Efficiency by reducing errors and delays.

- Leverage Data Analytics for performance monitoring.

PROBLEM STATEMENT

To develop a system that automates postal tracking and sorting using QR codes, reducing delays, errors, and inefficiencies while enhancing transparency and operational efficiency.

TECHNOLOGICAL STACK

- Frontend: React.js (for UI)

- Backend: Node.js, Express.js (for API handling)

- Database: MongoDB (for storing tracking data)

- QR Code Handling: qrcode.js (for generation & scanning)

- Authentication: JWT (for secure access control)

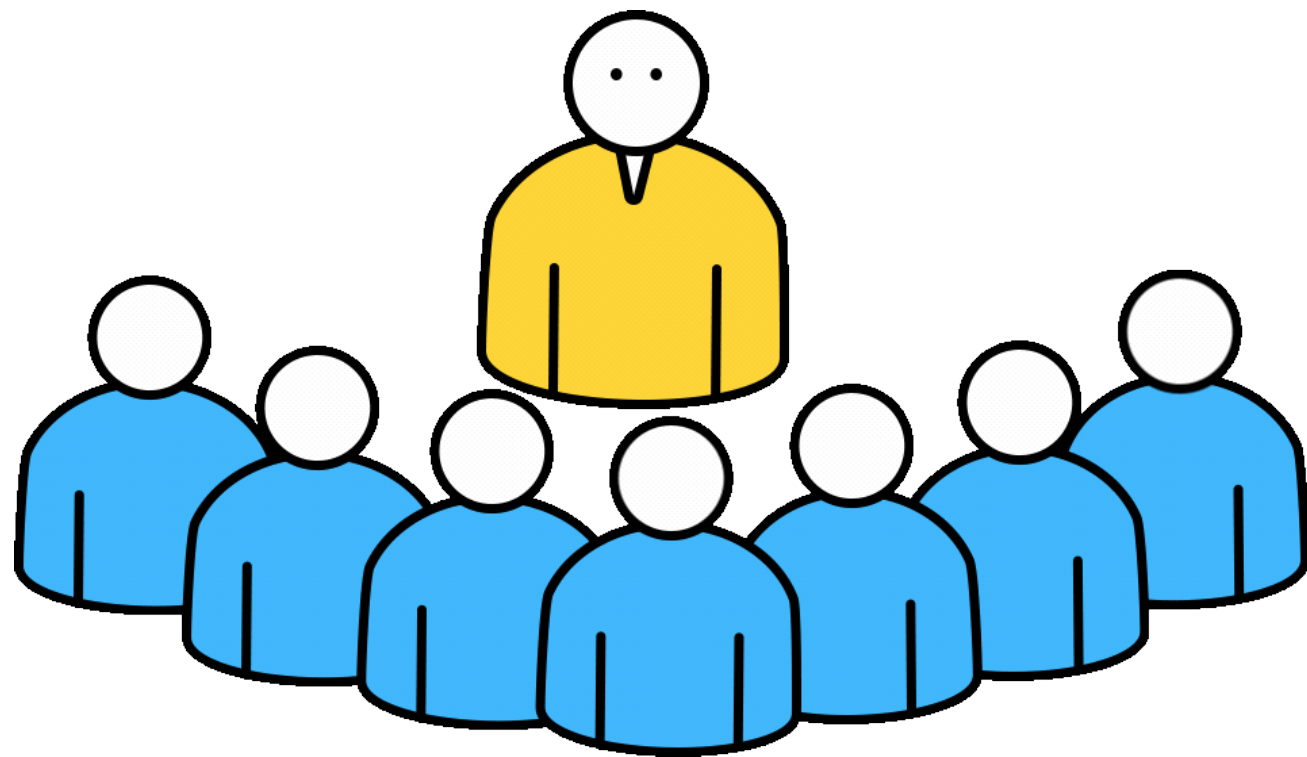- Deployment: AWS (EC2 for backend, S3 for storage, MongoDB Atlas for database)

JUSTIFICATION

- React.js: Provides a dynamic and responsive UI for seamless user interaction.

- Node.js & Express.js: Ensures fast, scalable, and efficient backend processing.

- MongoDB: A flexible, schema-less database ideal for handling tracking data.

- qrcode.js: Enables quick and accurate QR code generation and scanning.

- JWT Authentication: Ensures secure, role-based access control.

- AWS (EC2, MongoDB Atlas): Offers scalable, reliable, and cloud-based deployment.

KEY FEATURES

- QR Code Tracking: Unique QR codes for every letter and parcel.

- Real-Time Location Updates: Instant tracking with every scan.

- Automated Sorting Assistance: Suggests the next destination based on postal routes.

- Role-Based Access Control: Different permissions for Postmen, Sorting Officers, and Admins.

- Analytics Dashboard: Displays delivery efficiency, processing time, and potential delays.

- Secure Authentication: Ensures data privacy using JWT-based authentication.

- Cloud-Based Deployment: Hosted on AWS for scalability and reliability.

TARGET AUDIENCE

- Postal Employees – Postmen, Sorting Officers, and Transporters for efficient tracking and delivery.
- Postal Administrators – Office Managers and Head Officers for monitoring operations.
- Customers – To track letters and parcels in real time.
- Government & Stakeholders – For data-driven decision-making and policy improvements.
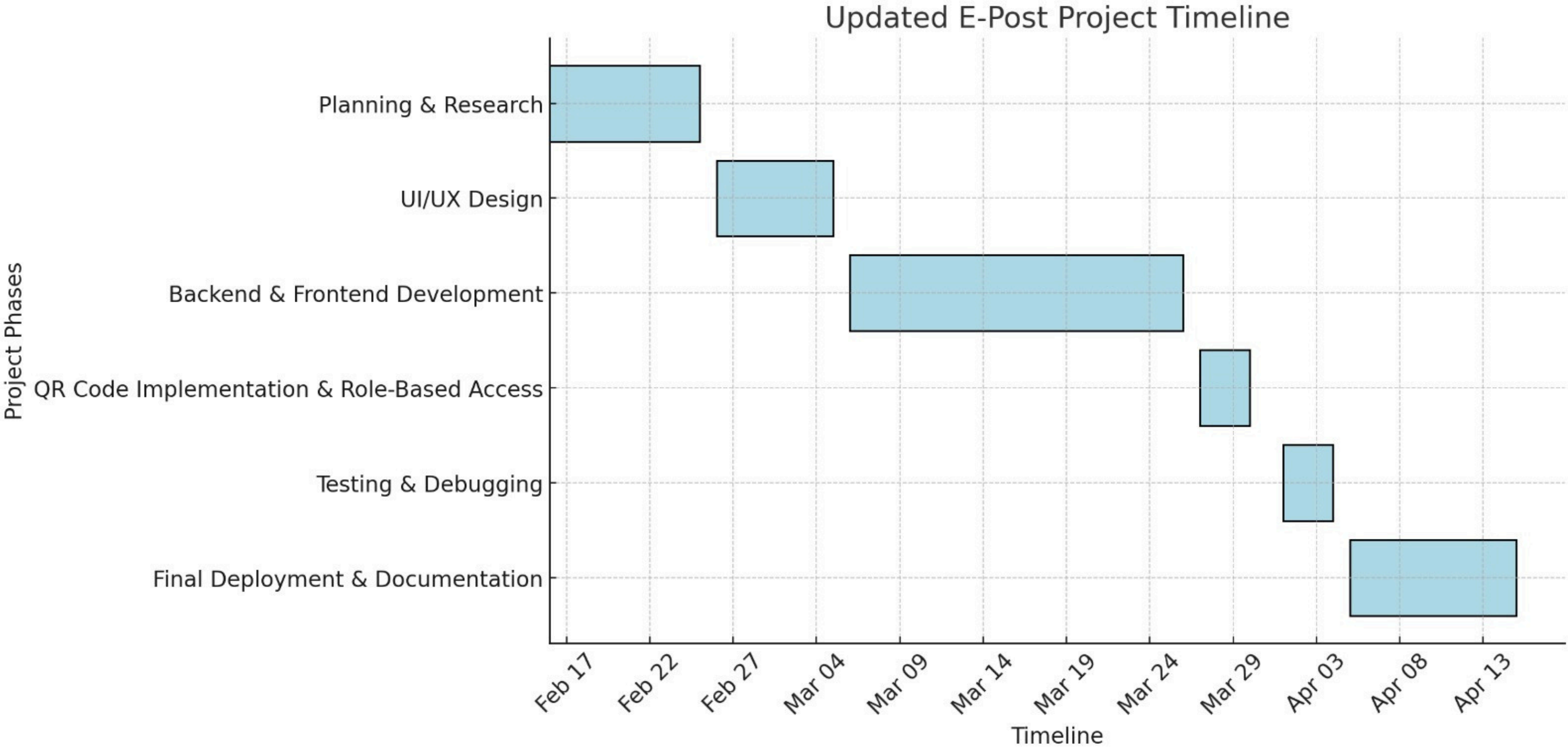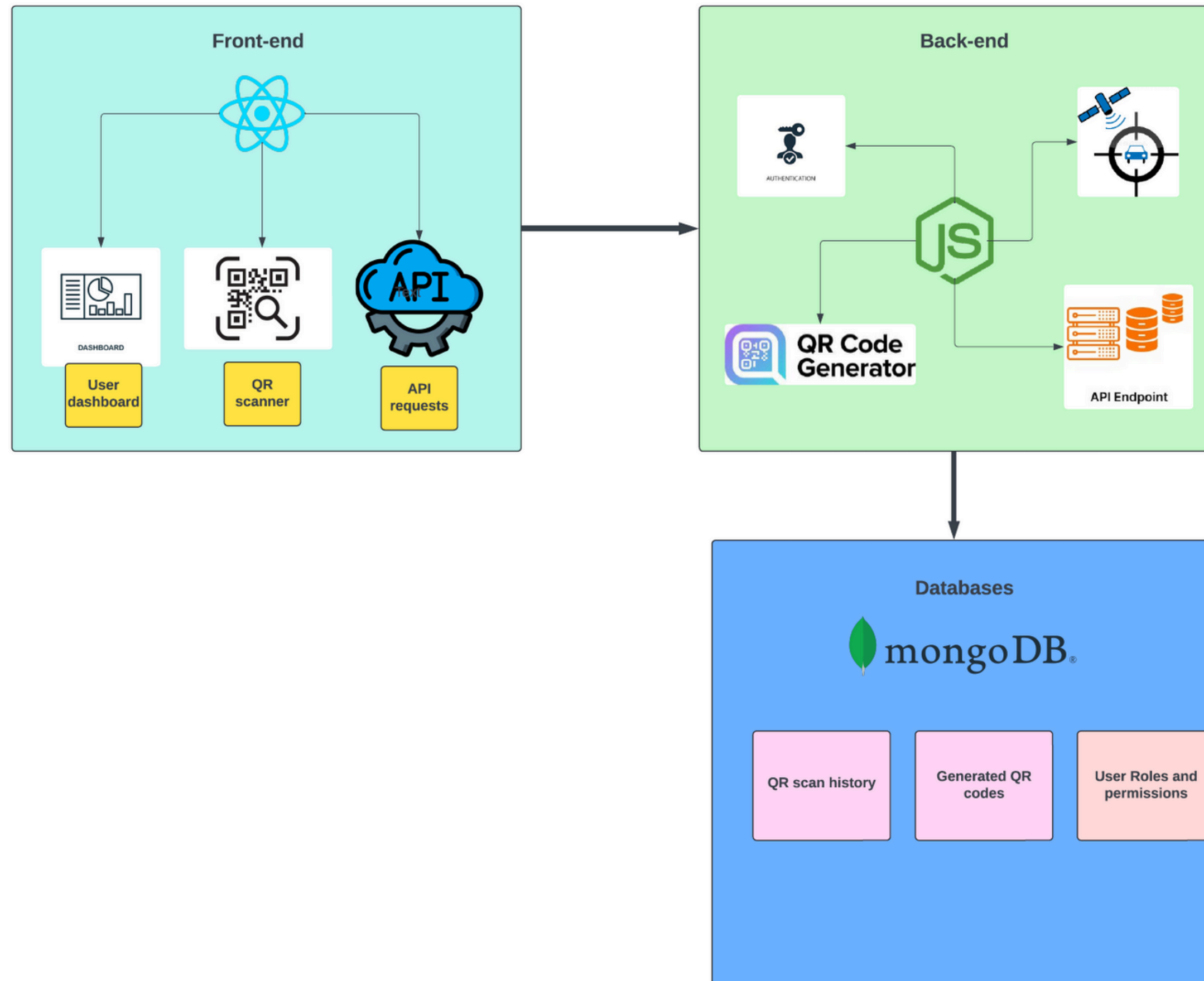
BENEFITS FOR AUDIENCE

- Postal Employees: Automated tracking & sorting reduce workload and errors.

- Postal Administrators: Real-time insights for better decision-making and efficiency.

- Customers: Transparency and real-time tracking improve user experience.

- Government & Stakeholders: Data-driven governance for optimizing postal operations.

PROJECT TIMELINE

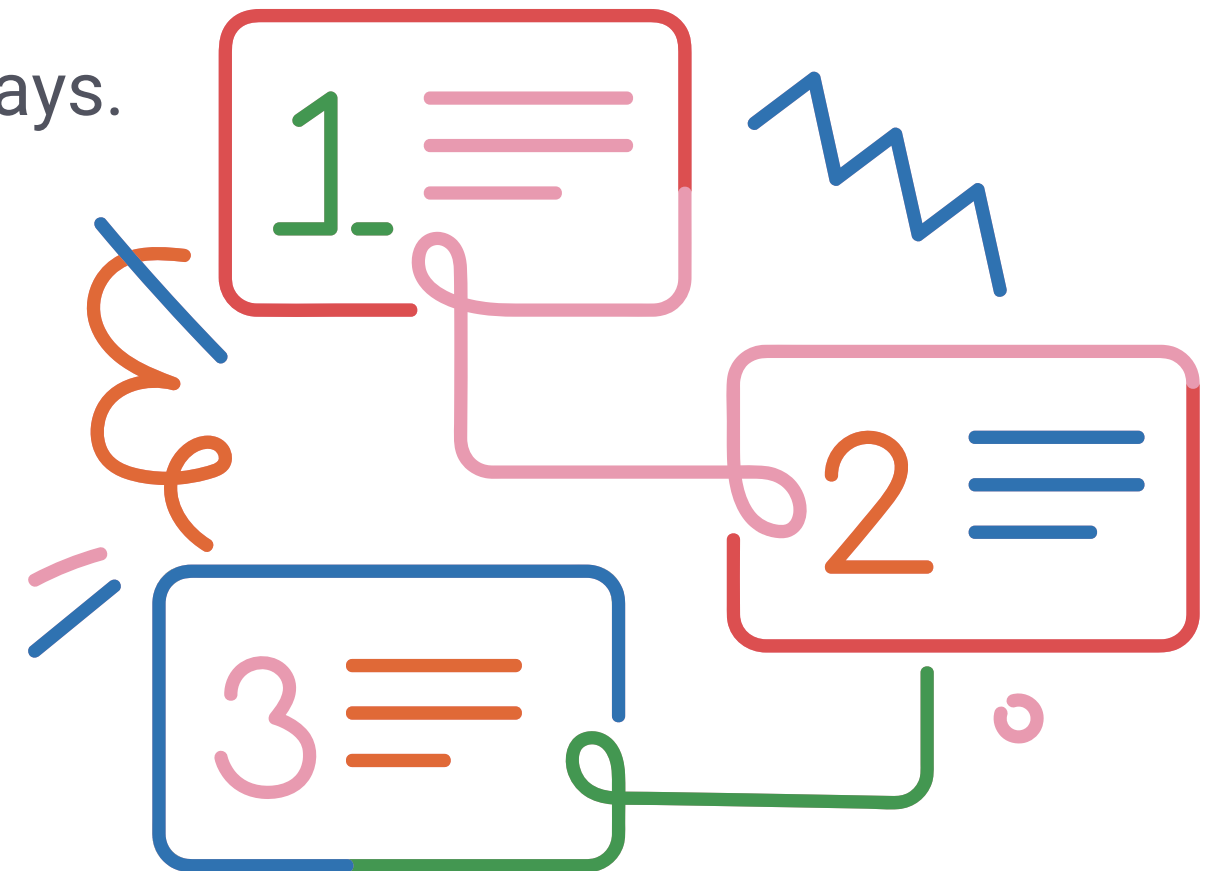Updated E-Post Project Timeline

ARCHITECTURE

WORKFLOW

- **1** Parcel/Letter Entry → QR code generated and assigned.

- **2** Scanning & Tracking → Each scan updates real-time location.

- **3** Automated Sorting → System suggests the next destination.

- **4** Transit & Delivery → Postmen update delivery status.

- **5** Real-Time Dashboard → Admins monitor performance & delays.

- **6** Customer Tracking → Users track shipments via web portal.

PROJECT TEAM & RESPONSIBILITIES

Chris Vinod Kurian
22070126028

Backend Developer
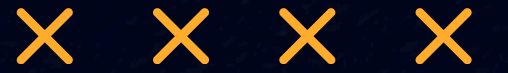
Drishtti Narwal
22070126037

Frontend Developer

Gaurav Prakash
22070126039

UI/UX Designer

THANK YOU !