

Project Title:

Project Laundry - NFC-Enabled Laundry Management System (MERN Stack)

Objective:

To build a laundry management system that uses NFC-enabled laundry bags to track garments through various processing stages (washing, ironing, ready for pickup) with real-time updates for users and admins.

Key Functional Requirements

User Side:

- Register/login to the app (JWT auth)
- Drop off clothes into NFC-tagged laundry bags - generate a tracking ticket
- View live tracking of laundry status (e.g. Yet to Wash, Washed, Ironing, Ready for Pickup)
- Get push notifications + SMS updates at each stage
- View history of past laundry transactions
- Receive thank-you animations + coupons on pickup

Admin Side:

- Login to admin panel
- View laundry items on shelves: Yet to Wash, Yet to Iron, Ready for Pickup
- Update status via NFC tag scans (automated via middleware)
- Assign shelf numbers (e.g. W\_A2, I\_B4, R\_C1)
- View process reports, logs, and customer history

## Technology Requirements (MERN)

- Frontend: React.js + Tailwind CSS / Material UI
- Backend: Node.js + Express.js
- Database: MongoDB (Mongoose)
- NFC Integration: Node NFC libraries (e.g. nfc-pcsc, node-nfc)
- Notifications: Firebase Cloud Messaging (push), Twilio (SMS)
- PDF Generation: Puppeteer or PDFKit
- Hosting: Vercel (frontend) + Render / DigitalOcean / Heroku (backend)

## Non-functional Requirements

- Responsive and mobile-friendly UI
- Data security: JWT tokens, HTTPS endpoints
- Scalable architecture (microservices-ready if needed)
- Logging: Winston/Morgan