■ Hotel Booking System – MERN Stack Project Overview

1■■ Authentication & RBAC

• Roles: Customer and Admin

• Authentication: JWT + bcrypt

• Role-Based Access Control (RBAC): Protect routes depending on user role.

Example Code Snippet (RBAC Middleware):

```
const roleMiddleware = (role) => (req, res, next) => { if (req.user.role !==
role) { return res.status(403).json({ message: "Access denied" }); } next(); };
```

2■■ Database Design (MongoDB + Mongoose)

Main Collections: Users, Hotels, Bookings

Collection	Fields
User	name, email, password, role, phone
Hotel	name, location, description, pricePerNight, roomsAvailable, amenities, images
Booking	userId, hotelId, roomType, checkIn, checkOut, guests, totalPrice, status, paymentStatus

3■■ Frontend Pages (React)

• Public: Home, Hotel List, Hotel Detail

• Customer Dashboard: My Bookings, Profile

• Admin Dashboard: Manage Hotels, Manage Bookings, Manage Rooms

4■■ Booking Flow

1. User searches hotel → sees results

2. User selects hotel → views details

3. User books room → status set to Pending

4. Admin reviews → Approves/Rejects

5. Confirmation/ Rejection email sent automatically

5■■ Email Notifications (Nodemailer / SendGrid)

• When booking is created → Status = Pending

• Admin Approves → Send confirmation email

• Admin Rejects → Send rejection email

Example Code Snippet (Nodemailer):

```
const nodemailer = require("nodemailer"); const transporter =
nodemailer.createTransport({ service: "gmail", auth: { user: process.env.EMAIL,
pass: process.env.PASSWORD } }); const sendMail = (to, subject, text) => {
transporter.sendMail({ from: process.env.EMAIL, to, subject, text }); };
```

6■■ REST API Endpoints

Endpoint	Method	Role	Description
/api/register	POST	Public	Register new user
/api/login	POST	Public	Login user & get JWT
/api/hotels	GET	Customer/Admin	Fetch all hotels
/api/hotels	POST	Admin	Add new hotel
/api/bookings	POST	Customer	Make a booking
/api/bookings/:id/approve	PUT	Admin	Approve booking & send email
/api/bookings/:id/reject	PUT	Admin	Reject booking & send email
/api/mybookings	GET	Customer	Get user bookings

7■■ Tech Stack

• Frontend: React, React Router, Redux/Context API

• Backend: Node.js, Express.js

• Database: MongoDB + Mongoose

• Authentication: JWT, bcrypt

• Email: Nodemailer, SendGrid, Mailgun