Full-Stack Complaint Management System

I'll help you design a comprehensive complaint management system using Flutter, Node.js, Express, and MongoDB. Let's break down the project scope and create a complete implementation plan.

Project Scope

Core Features

1. **User Authentication**
   * Registration and login for users and admins
   * Role-based access (user, admin, support agent)
   * JWT-based authentication
2. **Complaint Management**
   * Submit complaints with categories, descriptions, and attachments
   * Track complaint status (Pending, In Progress, Resolved, Rejected)
   * View complaint history and updates
3. **Admin Dashboard**
   * Manage users and permissions
   * View and assign complaints to support agents
   * Generate reports and analytics
4. **Notifications**
   * Email notifications for status updates
   * In-app notifications

Technical Stack

* **Frontend**: Flutter (iOS, Android, Web)
* **Backend**: Node.js with Express
* **Database**: MongoDB with Mongoose ODM
* **Authentication**: JWT
* **File Storage**: Multer for file uploads
* **Notifications**: Nodemailer for emails, Firebase for push notifications

Use Cases

1. Authentication Use Cases

* **User Registration**: New users can create an account with email, password, and basic information
* **User Login**: Registered users can authenticate with credentials
* **Role-based Access**: System restricts features based on user roles (user, agent, admin)
* **Password Reset**: Users can request password reset via email

2. Complaint Management Use Cases

* **Submit Complaint**: Users can create complaints with title, category, description, and optional attachments
* **View Complaints**: Users can view their complaint history and current status
* **Update Complaint Status**: Admins/Agents can change complaint status and add comments
* **Search/Filter Complaints**: Users can search and filter their complaints by various criteria

3. Admin Dashboard Use Cases

* **User Management**: Admins can view, edit, and manage user accounts and roles
* **Complaint Assignment**: Admins can assign complaints to support agents
* **Analytics Viewing**: Admins can view reports and statistics about complaints
* **System Configuration**: Admins can configure system settings and categories

4. Notification Use Cases

* **Status Change Notification**: System sends email/in-app notifications when complaint status changes
* **Assignment Notification**: Agents receive notifications when assigned new complaints
* **System Announcements**: Admins can send broadcast notifications to users