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Complaint Management System

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Problem Statement

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- Organizations often struggle with fragmented, informal, or paper-based systems for managing user complaints. This inefficiency leads to a lack of transparency for the complainant, difficulty in tracking and prioritizing issues for staff, and slow resolution times.
- This systemic bottleneck results in high operational costs, poor accountability, and significant user dissatisfaction due to unresolved or untracked issues.

Introduction

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Introducing the Simple Complaint Management System

The Simple Complaint Management System is a modern, full-stack application designed to centralize, track, and resolve user complaints efficiently, eliminating manual bottlenecks and boosting user satisfaction.

Methodology

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Our methodology followed an Agile, full-stack strategy, ensuring system robustness through cutting-edge technology and rigorous testing.

Tech Stack

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This project is built on a modern Full-Stack, Serverless architecture, prioritizing speed, scalability, and developer experience.

1. Frontend & User Interface (The Client)

Category	Technology	Role in Project
Core Library	React (TypeScript)	The foundation for building a dynamic, component-based user interface and handling frontend state.
Build Tool	Vite	Used as the fast development server and optimized build bundler, significantly improving performance and development speed.
Routing	React Router DOM	Manages navigation and view transitions within the single-page application (SPA).
Form Management	React Hook Form	Used for efficient and flexible form handling, minimizing component re-renders.

Tech Stack

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2. Styling and Design System

Category	Technology	Role in Project
CSS Framework	Tailwind CSS	A utility-first framework used for rapid, low-level styling and responsive design.
Component Library	shadcn/ui & Radix UI	Provides a set of highly customizable, accessible, and professional-grade UI components (tables, forms, buttons).

3. Backend, Database & Deployment (The Serverless Stack)

Category	Technology	Role in Project
Backend/Database	Supabase (BaaS)	Acts as the entire backend: provides a fully managed PostgreSQL database, handles user authentication, and offers instant, real-time APIs.
Database Type	PostgreSQL	The robust, open-source relational database underpinning Supabase, chosen for data integrity and complex querying capabilities.
Deployment	Vercel	The platform used for production deployment, offering automatic scaling, continuous integration, and global edge network delivery.

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4. Development and Testing Tools

Category	Tool	Role in Project
API Testing	Postman	Used for testing the API endpoints provided by Supabase (CRUD operations) to ensure backend stability and reliability.
Language	TypeScript/TSX	The primary language used for all logic and UI development.

The system is built on a modern, high-performance Full-Stack architecture combining React and Vercel for the front end, a robust Supabase (PostgreSQL) backend, and a professional UI styled with Tailwind CSS, with quality guaranteed by Zod validation and Postman API testing.

UML Diagrams

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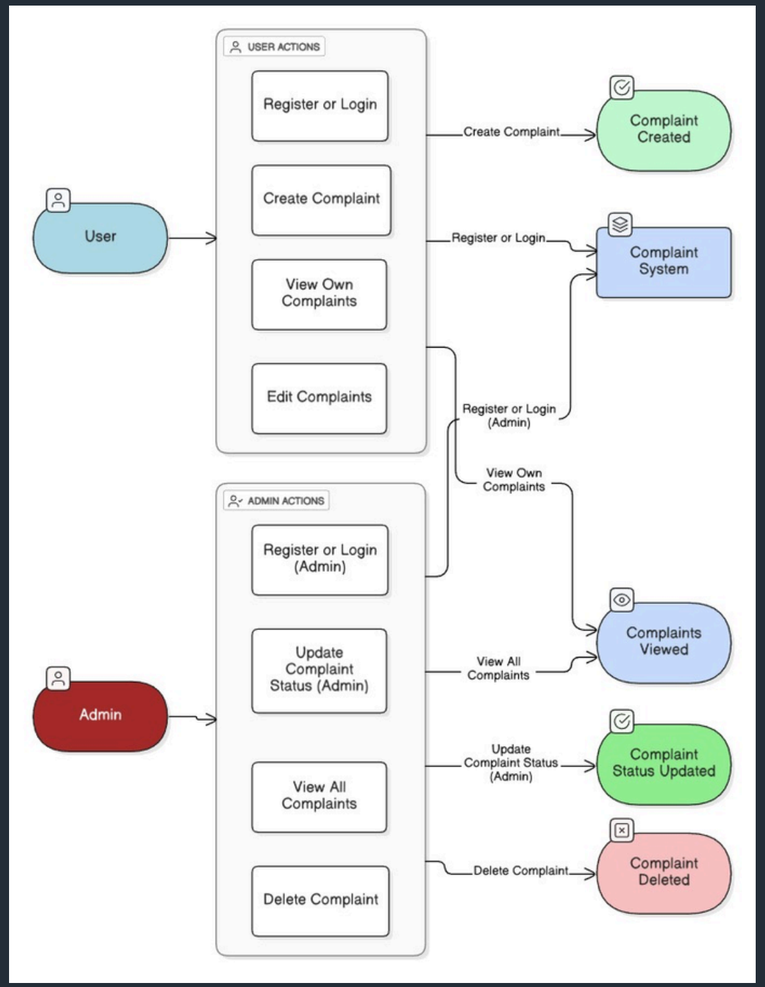
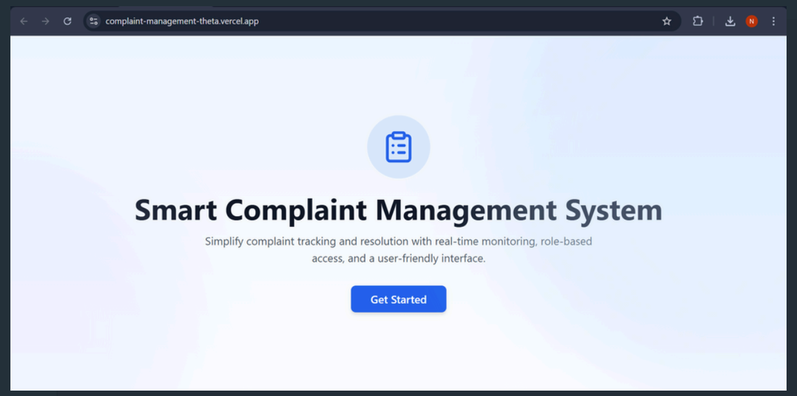
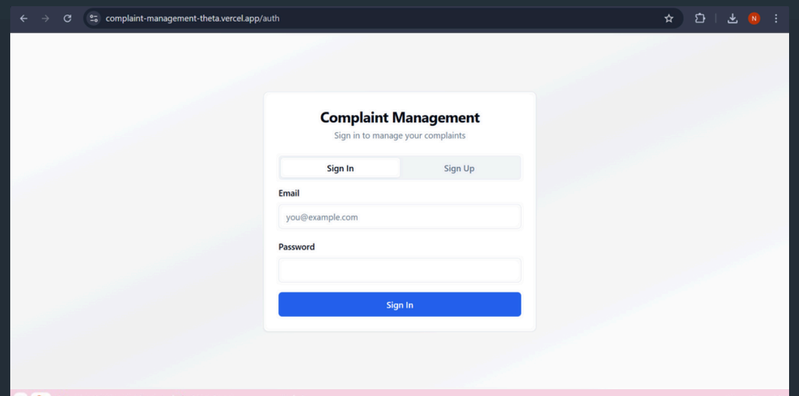
Database Schema

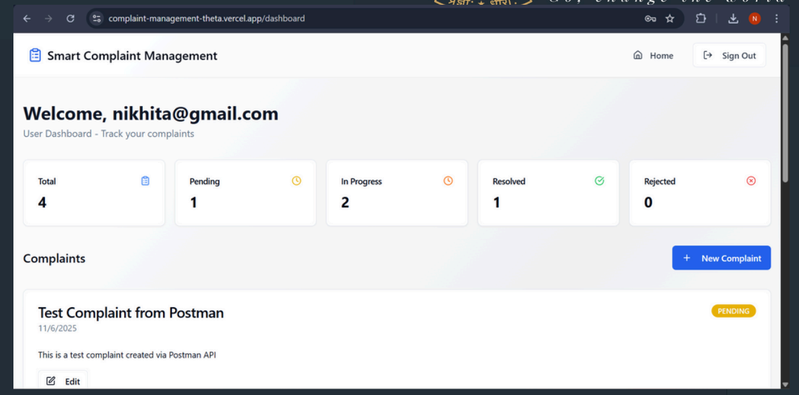
Use-case Diagram

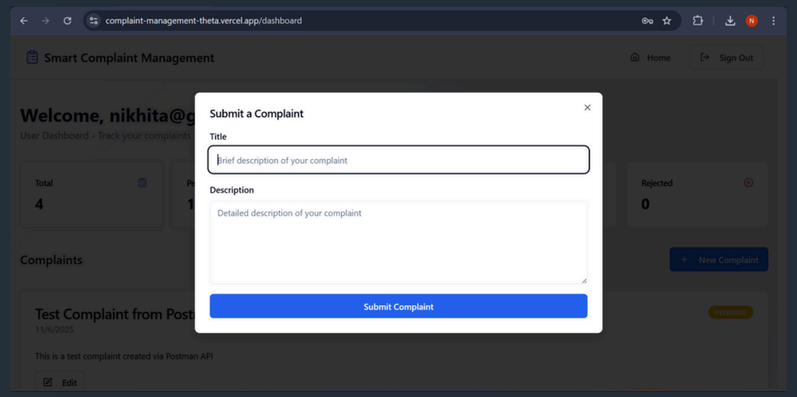


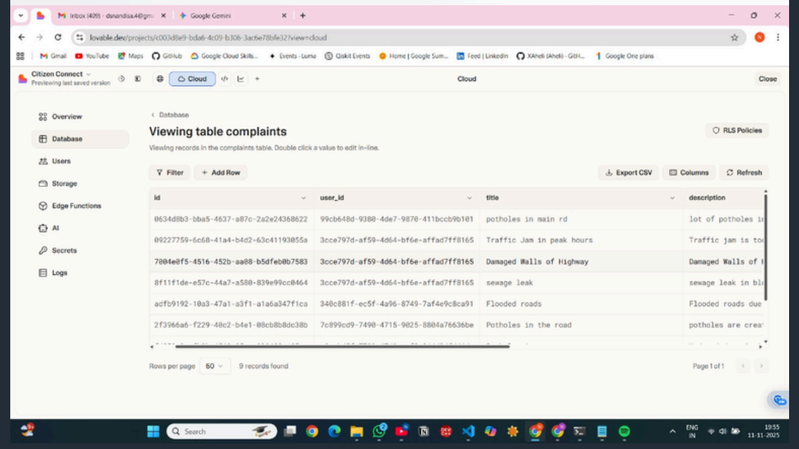
Results and Output

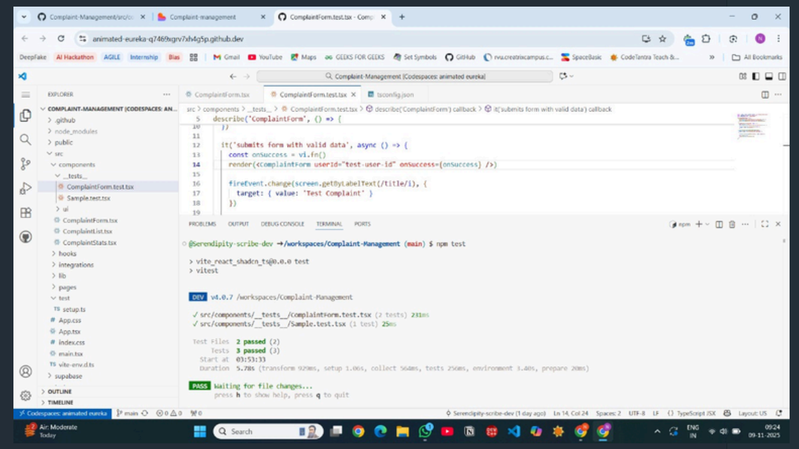


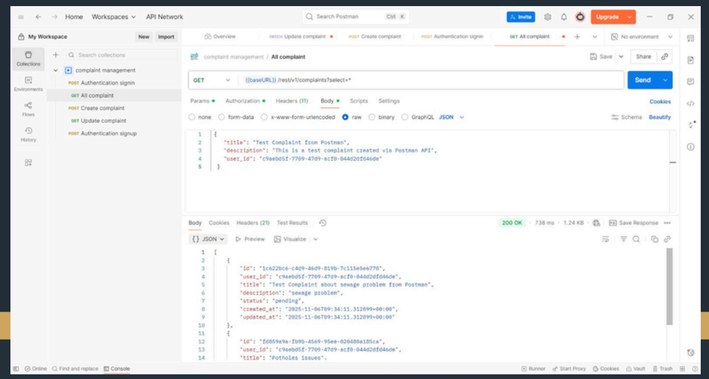


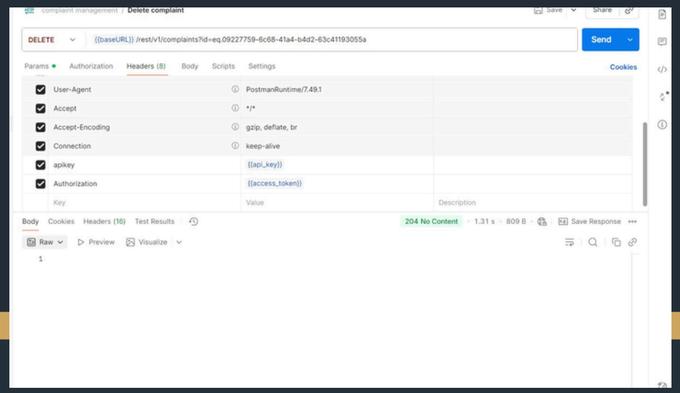












Conclusion and Future Scope

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Key Conclusions

- **System Success**: Successfully delivered a modern, full-stack Complaint Management System that centralizes feedback and ensures process transparency.
- **Technical Achievement**: Demonstrated skill in using high-performance technologies: React, Supabase (PostgreSQL), and robust testing (Postman, Zod).
- **Key Impact:** Solved the problem of inefficiency by dramatically improving tracking, accountability, and user satisfaction.

Future Scope

- **Advanced Features:** Implement Role-Based Access Control (RBAC) to manage user permissions.
- Real-time Communication: Add instant email or in-app Real-Time Notifications for status updates.
- **File Handling:** Integrate Supabase Storage to allow users to attach files (images/documents) to complaints.
- **Analytics:** Develop a dedicated dashboard for administrators to track trends and resolution metrics.

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