ResolveNow: Your Platform for Online Complaints

- **TEAM ID: LTVIP2026TMIDS24121**
- **Team leader : Gujjula Ramya**
- **Team member : Pulivarthi Sirisha**
- **Team member : Yeddu Teja**
- **Team member : Kola Raja**

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1. Introduction

1.1 Project Overview

In today's digital era, customers expect fast, transparent, and reliable grievance redressal systems. Traditional complaint handling methods are often manual, time-consuming, and lack proper tracking mechanisms, which leads to dissatisfaction and poor service quality. Organizations require a structured and centralized system that can efficiently record, manage, and resolve complaints while maintaining transparency and accountability.

ResolveNow: Your Platform for Online Complaints is a web-based complaint registration and management system developed to address these challenges. The system allows users to create accounts, submit complaints, upload supporting documents, and track the status of their complaints in real time. It ensures that every complaint is recorded systematically and assigned to the appropriate department or agent for resolution.

The platform also enables seamless communication between users and assigned agents through a built-in messaging system. Administrators can monitor all registered complaints, assign them based on workload or expertise, and oversee the overall functioning of the system. Automated notifications via email or SMS keep users informed about status updates, assignments, and resolutions.

By integrating modern web technologies and secure database management, ResolveNow provides a reliable, scalable, and user-friendly solution for complaint management. The system enhances operational efficiency, reduces manual effort, and ensures that customer grievances are handled in a structured and timely manner.

1.2 Purpose

The primary purpose of ResolveNow is to design and implement a centralized digital platform that simplifies the complaint registration and resolution process. The system aims to eliminate inefficiencies associated with manual complaint handling methods and provide a streamlined workflow for both users and administrators.

Another key objective of the platform is to improve transparency in complaint management. Users can track their complaint status at every stage—from submission to resolution—thereby increasing trust in the organization. Real-time updates and communication channels ensure that users remain informed throughout the process.

The system also aims to enhance organizational productivity by automating complaint routing and assignment. By categorizing complaints and allocating them to the appropriate agents, the platform reduces workload imbalance and speeds up resolution time. This structured approach improves service quality and ensures compliance with operational guidelines.

Ultimately, the purpose of this project is to improve customer satisfaction by providing a secure, efficient, and user-friendly complaint management system. It empowers organizations to handle grievances effectively while maintaining data security, accountability, and high performance standards.

2. Ideation Phase

2.1 Problem Statement

In many organizations, complaint handling is still managed through manual registers, emails, or disconnected systems, which often results in delays, data mismanagement, and lack of transparency. Customers frequently face difficulties in tracking the progress of their complaints and do not receive timely updates. This creates frustration and reduces trust in the organization's ability to resolve issues effectively.

Additionally, without a centralized system, complaints may be lost, misrouted, or handled inefficiently due to poor coordination among departments. There is also limited accountability, as it becomes difficult to monitor who is responsible for resolving a particular complaint. These challenges highlight the need for a structured, automated, and secure complaint management solution.

Therefore, the problem is to design and implement a web-based platform that enables users to register complaints online, track their status in real time, communicate with assigned agents, and receive timely resolutions, while ensuring transparency, accountability, and data security.

2.2 Empathy Map Canvas

To better understand user needs, an empathy map was created focusing on customers who wish to file complaints. Users typically **think** about whether their issue will be resolved quickly and whether their data is secure. They expect a simple and transparent process that provides continuous updates.

Users often **feel** frustrated, disappointed, or concerned when facing product or service issues. They want assurance that their complaint is being handled seriously and efficiently. Lack of communication or delayed responses increases their dissatisfaction.

Users **say** that they need quick responses, proper acknowledgment, and a clear resolution timeline. They also expect respectful communication from support agents.

Users **do** actions such as registering on the platform, submitting complaints with necessary details and attachments, tracking complaint status, and interacting with assigned agents. Understanding these behaviors helped in designing a user-friendly and efficient complaint management system.

2.3 Brainstorming

During the brainstorming phase, multiple ideas were generated to build an effective complaint management system. The primary focus was to create a centralized platform that ensures smooth communication between users, agents, and administrators. Features such as user authentication, complaint categorization, and real-time tracking were considered essential.

The team also discussed implementing automated complaint routing to assign complaints to the appropriate department or agent based on category and workload. Notification systems via email or SMS were proposed to keep users informed about updates and resolution status.

Security was identified as a critical aspect, leading to the inclusion of encrypted data storage, role-based access control, and secure login mechanisms using authentication tokens. Additionally, a feedback and rating system was proposed to evaluate service quality and improve future performance. These ideas collectively shaped the foundation of the ResolveNow platform.

3. Requirement Analysis

3.1 Customer Journey Map

The customer journey in the ResolveNow system begins when a user visits the website to register or log in. If the user is new, they create an account by providing basic details such as name, email address, and password. After successful registration and verification, the user logs into the dashboard where various options are available, including complaint submission and tracking.

Once logged in, the user submits a complaint by filling out a detailed form. The form includes fields such as complaint title, description, category, contact details, and optional document or image uploads. After submission, the system generates a unique complaint ID and sends a confirmation notification to the user.

The complaint is then routed to the appropriate department or assigned agent by the administrator. The assigned agent reviews the complaint, communicates with the user if necessary, and updates the complaint status accordingly. The user can track the progress in real time through the “My Complaints” section and receive notifications about any updates.

Finally, after the issue is resolved, the user receives a resolution notification. The user can then provide feedback on the complaint handling experience. This complete journey ensures transparency, accountability, and improved customer satisfaction.

3.2 Solution Requirements

Functional Requirements

The system must allow users to register and log in securely using authentication mechanisms. It should enable users to submit complaints with detailed descriptions and supporting documents. The platform

must generate unique complaint IDs and store complaint information in the database.

The system should provide real-time complaint tracking functionality, allowing users to view the status of their complaints. It must support communication between users and assigned agents through a messaging feature. Administrators should have the ability to assign complaints, monitor progress, and manage users and agents efficiently.

Additionally, the system should send automated notifications via email or SMS whenever there are updates regarding complaint status, assignment, or resolution. A feedback system should be included to collect user opinions after complaint resolution.

Non-Functional Requirements

The system must ensure high security standards, including encrypted passwords and secure authentication. It should support scalability to handle multiple users and complaints simultaneously without performance degradation.

The platform must provide a user-friendly interface that is simple and easy to navigate for users, agents, and administrators. It should maintain high availability and reliability with minimal downtime. The system must also ensure data integrity and confidentiality to comply with data protection standards.

3.3 Data Flow Diagram

The Level 0 Data Flow Diagram of the ResolveNow system includes three main external entities: User, Agent, and Admin. The user interacts with the system to register, log in, and submit complaints. The system processes the complaint data and stores it in the database.

The backend server acts as the central processing unit that handles authentication, complaint registration, status updates, and communication between users and agents. The database (MongoDB)

stores all user details, complaint records, messages, and status updates securely.

The admin accesses the system to monitor complaints and assign them to agents. Agents update complaint statuses and communicate with users. The updated information flows back to the user through notifications and dashboard updates, completing the data cycle.

3.4 Technology Stack

The frontend of the ResolveNow system is developed using HTML, CSS, Bootstrap, and Material UI to provide an interactive and responsive user interface. Axios is used to establish communication between the frontend and backend through RESTful APIs.

The backend is developed using Node.js and Express.js, which handle server-side logic, request processing, and API routing. Express middleware ensures secure authentication and role-based access control within the system.

MongoDB is used as the database for storing user information, complaint records, and communication logs. Its NoSQL structure allows flexible and scalable data storage. Additional tools such as JWT (JSON Web Token) are used for authentication, and Socket.io can be integrated for real-time messaging functionality.

4. Project Design

4.1 Problem-Solution Fit

The primary problem identified was the inefficiency and lack of transparency in traditional complaint handling systems. Manual processes often lead to delayed responses, lost complaints, poor tracking, and lack of accountability. Customers frequently remain unaware of the progress of their complaints, which results in dissatisfaction and reduced trust in the organization.

ResolveNow addresses these issues by providing a centralized digital platform where complaints are systematically recorded, tracked, and resolved. The system ensures that every complaint receives a unique identification number and is assigned to the appropriate agent or department. Real-time updates and notifications enhance transparency and keep users informed at every stage of the complaint lifecycle.

The integration of automated routing, secure authentication, and role-based access ensures that complaints are handled efficiently and securely. By replacing manual processes with an automated web-based system, the solution directly fits the identified problem and improves overall service quality.

4.2 Proposed Solution

The proposed solution is a web-based Online Complaint Registration and Management System built using modern web technologies. The system follows a client-server architecture where the frontend handles user interaction and the backend processes business logic and data management.

Users can create accounts, log in securely, and submit complaints through a structured complaint form. Once submitted, the complaint is stored in the database and automatically routed to the appropriate department or agent by the administrator. The assigned agent reviews

the complaint, communicates with the user if required, and updates the complaint status.

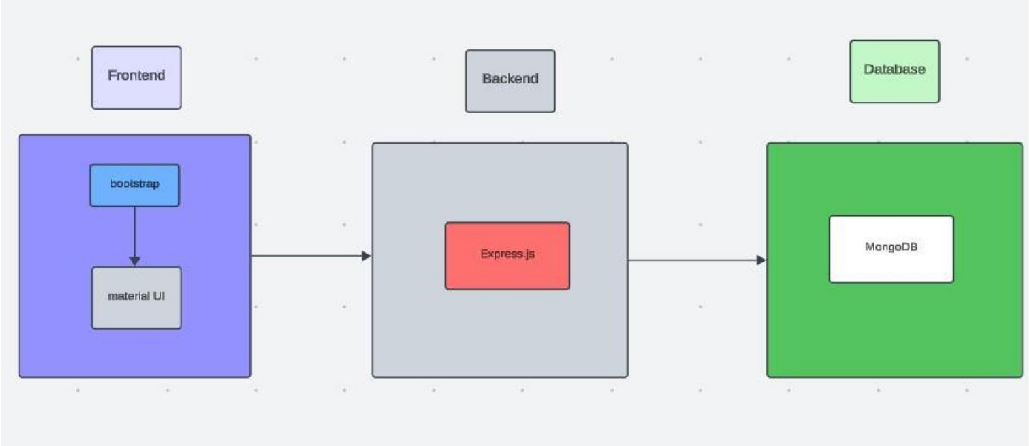
The system also includes a notification mechanism to inform users about complaint registration, assignment, status updates, and final resolution. An admin dashboard is provided to monitor all complaints, manage users and agents, and oversee the entire complaint management process. This structured workflow ensures efficiency, accountability, and improved customer satisfaction.

4.3 Solution Architecture

The technical architecture of ResolveNow follows a three-tier client-server model consisting of the Presentation Layer (Frontend), Application Layer (Backend), and Data Layer (Database).

The Presentation Layer includes the user interface developed using HTML, CSS, Bootstrap, and Material UI. It provides separate dashboards for users, agents, and administrators. Axios is used to send HTTP requests to the backend through RESTful APIs.

The Application Layer is built using Node.js and Express.js. It handles request processing, authentication, complaint routing, business logic implementation, and communication between different user roles.



Middleware ensures secure authentication using JWT tokens and role-based access control.

The Data Layer consists of MongoDB, which stores user profiles, complaint records, status updates, and communication logs. MongoDB provides flexible schema design and scalability, making it suitable for handling large volumes of complaint data. Together, these components create a robust, scalable, and secure architecture for the complaint management system.

5. Project Planning & Scheduling

The project development was divided into systematic phases to ensure proper execution and timely completion.

1. Requirement Gathering Phase

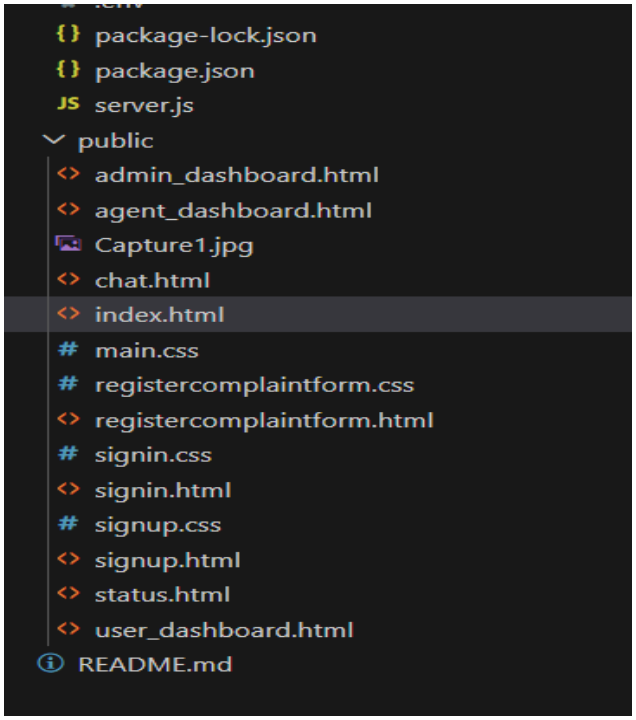
- Identify the problem statement
- Understand user needs and expectations
- Define functional and non-functional requirements
- Finalize project scope

2. System Design Phase

- Design system architecture (Client-Server Model)
- Prepare Data Flow Diagrams (DFD)
- Design database schema
- Create UI wireframes and layout designs
- Select technology stack

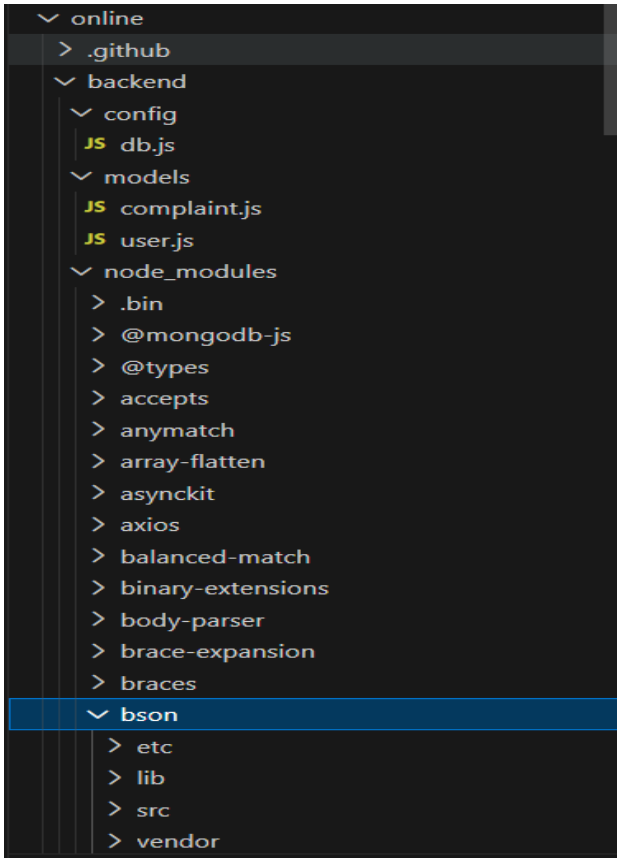
3. Frontend Development Phase

- Develop user interface using HTML, CSS, Bootstrap, and Material UI
- Implement login and registration pages
- Develop complaint submission form
- Create dashboards for user, agent, and admin
- Integrate Axios for API communication



4. Backend Development Phase

- Set up Node.js and Express.js server
- Develop RESTful APIs
- Implement authentication using JWT
- Connect MongoDB database
- Implement complaint routing logic



5. Integration Phase

- Connect frontend with backend APIs
- Test data flow between client and server
- Verify database operations
- Fix integration issues

6. Testing Phase

- Perform functional testing
- Conduct performance testing
- Identify and fix bugs
- Verify system stability

7. Deployment Phase

- Host the application on server
- Configure database and environment variables
- Perform final testing
- Monitor system performance after deployment

6. Functional and Performance Testing

6.1 Functional Testing

Functional testing was conducted to ensure that all features of the system work according to the specified requirements.

User Module Testing

- Verify user registration with valid and invalid inputs
- Test email verification process
- Check login and logout functionality
- Validate password encryption and authentication

Complaint Module Testing

- Test complaint submission with required fields
- Verify file upload functionality (images/documents)
- Check generation of unique complaint ID
- Validate complaint storage in database

Tracking and Notification Testing

- Verify complaint status updates

- Test real-time tracking functionality
- Check email/SMS notification delivery
- Validate notification for assignment and resolution

Agent Module Testing

- Verify agent login functionality
- Test complaint viewing and updating status
- Check messaging feature between user and agent

Admin Module Testing

- Verify admin login functionality
- Test complaint assignment to agents
- Check monitoring dashboard
- Validate user and agent management features

6.2 Performance Testing

Performance testing was conducted to ensure system reliability, scalability, and efficiency under different conditions.

Load Testing

- Test system performance with multiple users simultaneously
- Measure response time under heavy traffic
- Ensure no server crashes during high load

Stress Testing

- Evaluate system behavior beyond normal workload
- Identify breaking point of server performance

Database Performance Testing

- Test query execution speed
- Verify quick retrieval of complaint records
- Check database scalability

Security Testing

- Test authentication and authorization mechanisms
- Verify role-based access control
- Check data encryption for passwords
- Prevent SQL/NoSQL injection attacks

Usability Testing

- Ensure user-friendly interface
- Verify easy navigation across dashboards
- Confirm clarity of complaint tracking process.

7. Results

The implementation of the ResolveNow Online Complaint Registration and Management System produced the following results:

7.1 System Implementation Results

- Successfully developed a web-based complaint management platform.
- Users are able to register and log in securely.
- Complaints can be submitted with detailed descriptions and attachments.
- Each complaint is assigned a unique complaint ID.
- Real-time complaint tracking is functioning properly.
- Automated notifications are sent for status updates and resolution.
- Agents can view, update, and communicate regarding assigned complaints.
- Admin dashboard allows monitoring and assignment of complaints efficiently.

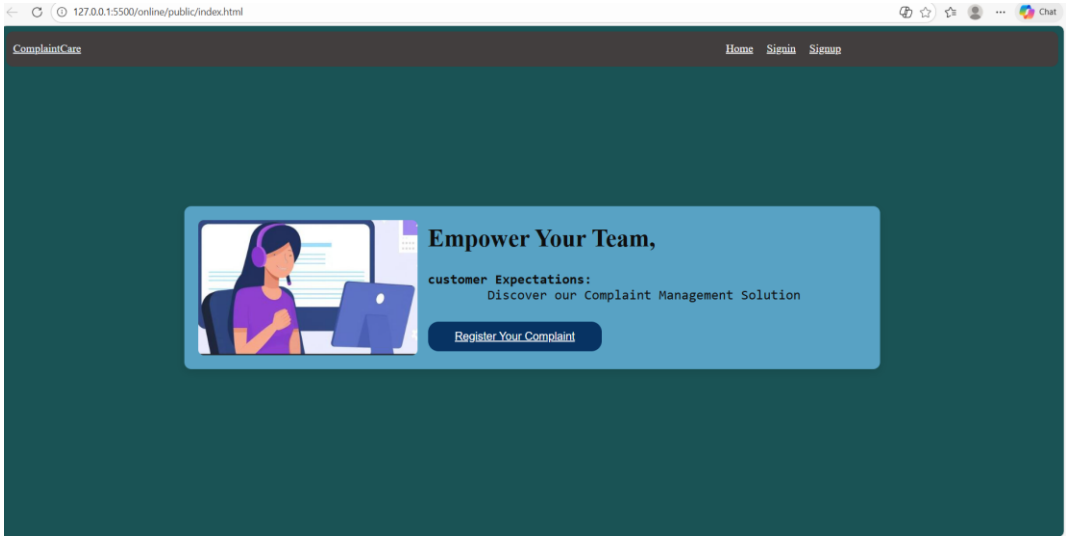
7.2 System Performance Results

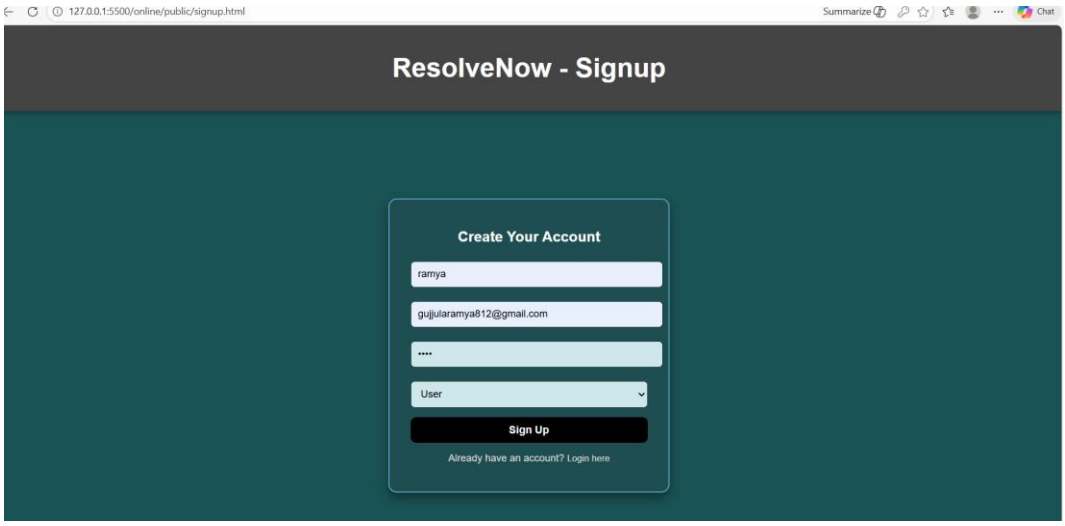
- The system handles multiple users simultaneously without performance degradation.
- Database operations (insert, update, retrieve) are performed efficiently.
- API response time remains within acceptable limits.
- Secure authentication ensures protected access to user data.

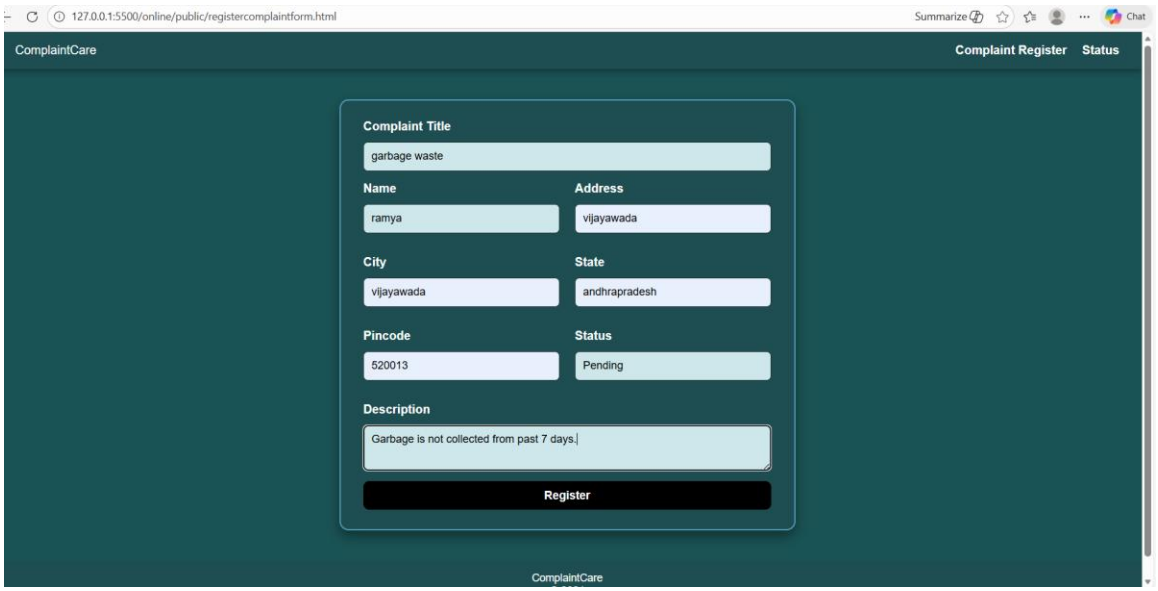
7.3 User Experience Results

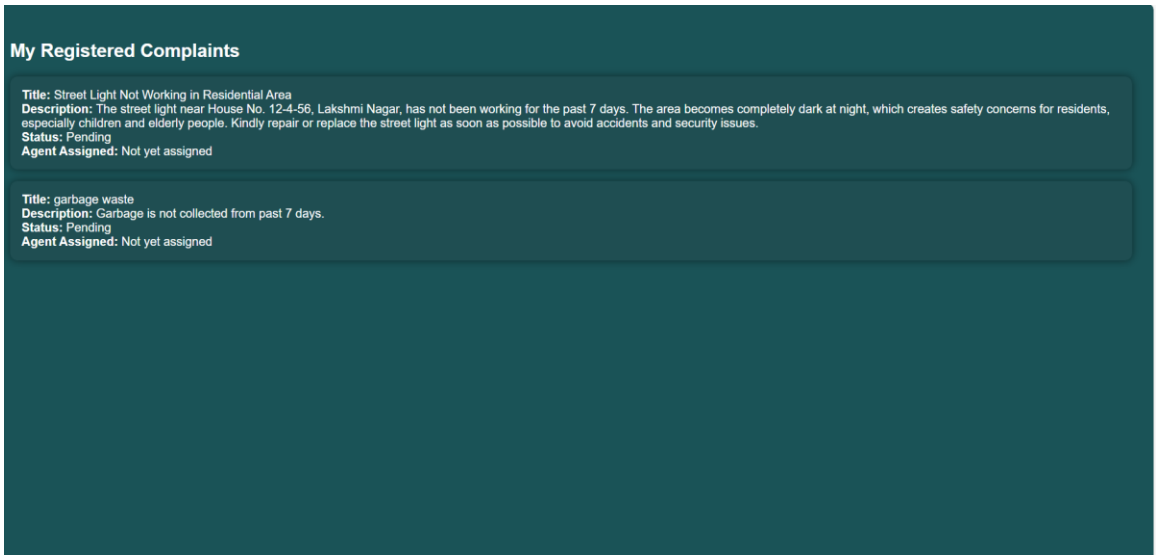
- The interface is user-friendly and easy to navigate.
- Users can track complaint status transparently.
- Communication between user and agent improves clarity and satisfaction.
- Feedback system helps evaluate service quality.

Overall, the system achieved its objective of providing a centralized, secure, and efficient complaint management platform that enhances transparency and customer satisfaction.






127.0.0.1:5500/online/public/registercomplaintform.html
Summarize
Chat
ComplaintCare
Complaint Register
Status
Complaint Title
garbage waste
Name
ramya
Address
vijayawada
City
vijayawada
State
andhrapradesh
Pincode
520013
Status
Pending
Description
Garbage is not collected from past 7 days.
Register
ComplaintCare


My Registered Complaints
Title: Street Light Not Working in Residential Area
Description: The street light near House No. 12-4-56, Lakshmi Nagar, has not been working for the past 7 days. The area becomes completely dark at night, which creates safety concerns for residents, especially children and elderly people. Kindly repair or replace the street light as soon as possible to avoid accidents and security issues.
Status: Pending
Agent Assigned: Not yet assigned
Title: garbage waste
Description: Garbage is not collected from past 7 days.
Status: Pending
Agent Assigned: Not yet assigned

8. Advantages & Disadvantages

8.1 Advantages

- Provides a centralized platform for complaint management.
- Enables real-time complaint tracking.
- Improves transparency in the complaint resolution process.
- Reduces manual paperwork and administrative workload.
- Ensures secure storage of user and complaint data.
- Facilitates direct communication between users and agents.
- Allows efficient complaint routing and assignment.
- Enhances customer satisfaction through timely updates.
- Supports scalability to handle large numbers of complaints.
- Provides admin monitoring and reporting capabilities.

8.2 Disadvantages

- Requires stable internet connectivity for access.
- Initial development and deployment costs may be high.
- Requires regular maintenance and updates.
- System performance depends on server reliability.
- Users with low digital literacy may face difficulties initially.
- Data security risks if not properly maintained.

9. Conclusion

The ResolveNow Online Complaint Registration and Management System successfully addresses the challenges associated with traditional complaint handling processes. By providing a centralized digital platform, the system ensures that complaints are systematically recorded, tracked, and resolved in an organized manner. The implementation of secure authentication, structured complaint workflows, and real-time tracking improves transparency and builds trust between users and the organization.

The platform enhances operational efficiency by automating complaint routing and enabling direct communication between users and assigned agents. Administrators can monitor complaints effectively, manage workloads, and ensure accountability at every stage of the complaint lifecycle. The integration of modern technologies such as Node.js, Express.js, and MongoDB ensures scalability, performance, and secure data handling.

Overall, ResolveNow contributes to improved customer satisfaction by offering timely updates, efficient issue resolution, and a user-friendly interface. The system not only benefits customers but also helps organizations streamline their complaint management processes, reduce manual effort, and maintain high service standards in a competitive digital environment.

10. Future Scope

The ResolveNow system can be further enhanced by integrating Artificial Intelligence and Machine Learning techniques for automatic complaint categorization and prioritization. AI-based sentiment analysis can be used to identify urgent or critical complaints and route them to the appropriate department instantly. Additionally, implementing a chatbot can provide instant responses to common queries, reducing response time and improving user engagement.

Another major enhancement could be the development of a dedicated mobile application for Android and iOS platforms. A mobile app would provide greater accessibility and convenience, allowing users to submit and track complaints anytime and anywhere. Push notifications can be integrated to provide instant updates regarding complaint status, assignments, and resolutions.

Furthermore, advanced analytics and reporting features can be added to help administrators analyze complaint trends, identify recurring issues, and make data-driven decisions. Integration with Customer Relationship Management (CRM) systems and multi-language support can make the platform more scalable and adaptable for large organizations. These future improvements will enhance the system's efficiency, usability, and overall impact.

11. Appendix

Source Code: (Add GitHub Link)

Project Demo Link: (https://drive.google.com/file/d/1oPoxQmNxYXgOLRaElnc2A0unadjpRIcf/view?usp=sharing)