VIVEKANAND EDUCATION SOCIETY' S INSTITUTE OF TECHNOLOGY

Department of Information Technology

Mini Project Report on

CityCare – Smart Complaint & Service Management

Empowering Citizens, Enhancing City Services

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Abstract

CityCare is a full-stack web-based municipal management system designed to provide seamless communication between **citizens** and **municipal authorities**.
The platform enables citizens to **report civic issues** such as garbage overflow, road damage, water leakage, and electricity faults with photo evidence and location details.

On the other hand, municipal officers or administrators can **view, assign, and track** complaints efficiently through a centralized dashboard.
The system ensures **transparency, accountability, and real-time interaction** using cutting-edge technologies such as **React.js, Node.js, MongoDB, Tailwind CSS, JWT authentication, and Socket.io** for real-time communication.

CityCare bridges the communication gap between the community and local governance, creating a **smarter, cleaner, and more connected city.**

Introduction

Urban areas today face increasing challenges in maintaining efficient civic services due to rapid population growth and rising demands on municipal authorities. Citizens often encounter delays in reporting and resolving issues such as garbage overflow, road damage, water leakage, and electricity faults. Traditional manual systems are prone to inefficiency, lack of transparency, and delayed communication between citizens and local government departments.

To address these challenges, **CityCare** has been developed as a full-stack web-based municipal management system that bridges the gap between citizens and municipal authorities. The platform enables citizens to report civic issues online with detailed information, including images and location data, while municipal officers can monitor, assign, and resolve complaints through a centralized admin dashboard.

By integrating modern technologies such as **React.js, Node.js, MongoDB, Tailwind CSS, JWT authentication, and Socket.io**, CityCare ensures real-time communication, secure access, and a responsive user interface. The system aims to enhance transparency, accountability, and operational efficiency, contributing to the vision of a **smart, connected, and citizen-friendly city**.

Objective

The primary objectives of CityCare are:

1. Develop a digital platform that allows citizens to easily connect with municipal authorities.
2. Enable citizens to register complaints online with image and location support.
3. Provide an admin dashboard for monitoring, assigning, and resolving complaints.
4. Implement secure authentication and role-based access for users and administrators.
5. Ensure real-time updates and communication between users and departments.
6. Deploy a production-ready full-stack web application using **CI/CD** and **Docker**.

System Overview

Project Vision

To create a smart, transparent, and citizen-friendly platform that simplifies municipal complaint handling and improves urban service efficiency.

Modules

1. Citizen Module

- User Registration & Login (JWT authentication)
- Report a Complaint with title, description, photo, category, and location
- Track Complaint Status (Pending, In Progress, Resolved)
- View City Announcements and Notices
- Provide Feedback or Rating after complaint resolution

2. Admin Module

- Secure Admin Login with role-based access
- View and Manage Complaints submitted by citizens
- Assign Complaints to Departments (e.g., sanitation, roads, water)
- Update Complaint Status and add remarks
- Access Analytics Dashboard with complaint statistics and charts

3. Real-Time Communication Module

- Citizens receive instant notifications when complaint status is updated using Socket.io
- Enhances responsiveness and transparency in the system

System Architecture & Tools & Technologies

Component	Technology Used	Description
Frontend	React.js + Tailwind CSS	User interface for citizens and admin
Backend	Node.js + Express.js	RESTful API handling business logic
Database	MongoDB + Mongoose	Stores users, complaints, and feedback
Authentication	JWT	Secure login and role-based access
Real-Time Communication	Socket.io	Sends instant updates and notifications
Deployment	GitHub Actions, Render/Vercel, Docker	CI/CD and cloud deployment

System Design

a) Data Flow Diagram (DFD)

Level 1 (High-Level Flow):
Citizen → Complaint Submission → Backend API → Database → Admin Review → Status Update → Citizen Notification

Level 2 (Detailed Flow):

- Input: Complaint form with photo, category, and location
- Processing: Stored in MongoDB; Admin retrieves via API
- Output: Real-time update sent to user interface

b) ER Diagram

Entities:

- User (Citizen)
- Complaint
- Admin
- Department

Relationships:

- One User → Many Complaints
- One Admin → Many Departments
- Each Complaint → One Department

Functional Requirements

- User registration and login functionality
- Complaint submission with description, image, and location
- Real-time tracking of complaint status
- Admin role for viewing and managing complaints
- Dashboard showing complaint distribution and performance stats
- Feedback submission after resolution
- Notification system using WebSocket

Non-Functional Requirements

- **Performance:** Quick response time and optimized database queries
- **Security:** JWT authentication, password hashing with bcrypt
- **Scalability:** Support multiple users and departments simultaneously
- **Reliability:** Stable API response and backup database structure
- **Usability:** Responsive and accessible UI (Tailwind CSS)
- **Maintainability:** Clean modular codebase for easy updates
- **Portability:** Docker-based containerized environment

Advantages

- Promotes **transparency** between citizens and authorities
- Reduces **manual paperwork** and delays in complaint resolution
- Enables **real-time communication** and instant updates
- Provides **data-driven insights** through analytics dashboard
- Offers a **secure, responsive, and easy-to-use interface**

Future Scope

- Integration with **AI Chatbot** for faster complaint registration
- **Google Maps API** for real-time location tracking
- **SMS and Email notifications** for status updates
- **Online Bill Payment** (property tax, water tax, etc.)
- **Mobile Application** version using React Native

Conclusion

The **CityCare – Smart Complaint & Service Management** project demonstrates the development of a complete full-stack system that enhances **citizen engagement and municipal efficiency**.
By integrating **modern web technologies, real-time communication, and secure authentication**, the system provides a **scalable, transparent, and user-friendly solution** to address civic issues efficiently.

CityCare stands as a step toward the vision of a **digitally empowered smart city** that values citizen participation and data-driven governance.

References

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