Project Documentation

1. Project Overview:

What's the Goal?

The primary objective of this project is to develop an automated, digital *Waste Management System* that simplifies and streamlines waste collection processes. By enabling users to easily request, schedule, and track waste pickups, this system aims to enhance efficiency, transparency, and user satisfaction in waste management. Key goals include improving service speed, maintaining clear lines of communication, and providing a user-friendly experience for all stakeholders involved.

Features Included:

- **User Registration and Authentication:** Users can create accounts and securely log in to the platform.
- **Request Scheduling:** Users can submit waste collection requests and specify convenient pickup dates.
- **Real-time Tracking**: Users have the ability to monitor the status of their requests, fostering transparency and peace of mind.
- **Automated Notifications:** The system sends timely updates to users regarding the progress of their requests.
- **Admin Dashboard:** A centralized dashboard for administrators allows efficient management of requests, scheduling, and communication.

Excluded Features:

- **Advanced Analytics:** While useful for analyzing waste generation trends, this feature is beyond the scope of the project.
- **Third-Party Integrations:** Integration with external waste processing facilities is not included in this project.

Why is it Important?

To address existing inefficiencies in waste management, this project focuses on three main objectives:

- **Timely Service:** Automation reduces delays in waste collection by facilitating quick request submission, scheduling, and real-time notifications, ensuring punctual and reliable service.
- **Enhanced Communication:** Real-time tracking and automated notifications keep users informed and build trust, eliminating the need for manual updates from administrators.

- **Efficient Resource Management:** The admin dashboard allows streamlined request handling, effective scheduling, and optimized resource allocation, enhancing the service's capacity to meet demand efficiently.

Who's Involved?

- **Narayan Sreeram (Project Leader):** Responsible for overseeing the project's milestones, timelines, and ensuring alignment with the company's goals. Narayan coordinates tasks among team members and ensures project progression.
- **Chintakunta Pranay Teja (Frontend Developer):** Specializes in creating an intuitive, user-friendly interface, designing and implementing features like user registration, request submission, and real-time tracking.
- **Dharsika (Backend Developer and Presenter):** Manages backend functionality, ensuring seamless system performance and efficient data management. Dharsika also develops the admin dashboard, allowing administrators to manage requests effectively, and serves as the presenter to communicate the project's objectives and progress to stakeholders.

This team's combined expertise ensures the Waste Management System will meet its goals, providing a streamlined experience for users and effective management tools for administrators.

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2. Requirements Documentation

What Does it Need to Do?

The system is designed to fulfill the following core functions, tailored to meet the needs of both users and administrators:

- **User Features:**
    - **Registration & Login:** Users can create an account and securely access the platform.
    - **Request Submission:** Users can submit a waste collection request with relevant details, such as address and preferred pickup time.
    - **Real-time Tracking:** Users can monitor the progress of their requests in real time, from submission to completion.
    - **Cancellation Option:** Users have the flexibility to cancel requests if needed, providing control over their interactions with the service.
- **Admin Features:**
    - **Dashboard Access:** Administrators have access to a secure dashboard where they can view all requests in a consolidated format.
    - **Request Management:** Admins can approve or reject requests based on availability, resources, and scheduling feasibility.

    - **Status Monitoring:** The system provides administrators with tools to update and monitor the status of collection requests in real time.

How Well Does it Need to Work?

To ensure an effective and reliable platform, the following quality standards are prioritized:

- **Performance:** The system must handle simultaneous access by multiple users without performance lags, ensuring smooth operation even under heavy load.
- **Security:** User data must be protected with secure login processes, encrypted storage, and restricted access to sensitive admin functions.
- **Usability:** The interface should be intuitive, allowing users to navigate, submit requests, and track their status with ease.

Why is it Needed?

The Waste Management System aligns with several key business objectives:

- **Improved Service Efficiency:** By automating waste collection processes, the system supports the company's mission to provide prompt, organized, and reliable waste management services.
- **Enhanced User Engagement:** By offering transparent access to waste management services, the platform increases user satisfaction and encourages active engagement with the service.

How Will Users Use It?

User Stories:

- **As a User:** I want to quickly register, log in, submit my waste collection requests, track their status, and cancel requests if needed.
- **As an Admin:** I want to view all incoming requests, approve or reject them based on availability, and monitor each request's status to ensure timely and reliable waste collection.

These user stories illustrate the practical applications of the system for both users and administrators, showcasing its functionality and benefits.