Tab 1

Use Case: Waste Management Project Website

Actors:

1. **Administrator**
2. **Registered User**
3. **Guest User**
4. **Waste Collection Staff**

Use Cases:

1. Administrator:

    Manage Users: Add, update, or delete user accounts.

    Monitor System: Oversee system performance and manage data.

    Generate Reports: Create reports on waste collection, recycling rates, and user participation.

2. Registered User:

    Profile Management: Update personal information and view waste collection history.

    Request Pickup: Schedule waste collection services.

    Track Waste: Monitor the status of waste pickups and recycling.

    Earn Rewards: Participate in recycling programs and earn points or coupons.

3. Guest User:

    View Information: Access general information about waste management services.

    Sign Up: Register for an account to access more features.

    Contact Support: Reach out for help or more information.

4. Waste Collection Staff:

View Schedule: Access daily pickup schedules and routes.

Update Status: Mark pickups as completed or report issues.

Report Issues: Notify administrators of any problems encountered during collection.

Use Case Diagram:

A use case diagram visually represents these interactions. It typically includes actors (users) and their interactions with the system's various functions.

Tab 2

Sequence diagram

Sequence Diagram Overview

A sequence diagram in UML represents the interactions between different objects in a system over time. It shows how objects communicate with each other through messages in a specific sequence.

Key Components

1. **Actors**: Represent external entities interacting with the system (e.g., residents, waste collectors).
2. **Lifelines**: Represent the objects or participants in the interaction (e.g., Waste Management System, Database).
3. **Messages**: Arrows indicating communication between lifelines. Types include:
    - **Call Message**: Invokes an operation.
    - **Return Message**: Returns a value from an operation.
    - **Self Message**: An object sending a message to itself.
4. **Activation Bars**: Thin rectangles on lifelines showing the duration an object is active during an interaction.

Steps to Create a Sequence Diagram for Waste Management

1. Identify Actors and Objects:
    - **Actors**: Residents, Waste Collectors, Admin.
    - **Objects**: Waste Management System, Database, Notification System.
2. Define the Scenario:
    - Example: A resident schedules a waste pickup.
3. Outline the Interaction Flow:
    - **Resident** requests a pickup via the Waste Management System.
    - **Waste Management System** logs the request in the **Database**.
    - **Waste Management System** sends a confirmation to the **Resident**.
    - **Waste Management System** notifies the **Waste Collector**.
    - **Waste Collector** updates the status after pickup.
    - **Waste Management System** updates the **Database** and sends a completion notification to the **Resident**.
4. Draw the Diagram:
    - Place actors and objects at the top.
    - Draw lifelines vertically below each actor/object.
    - Use arrows to represent messages exchanged in the sequence of interactions.

Example Interaction Flow

1. **Resident** -> **Waste Management System**: Request Pickup
2. **Waste Management System** -> **Database**: Log Request
3. **Database** -> **Waste Management System**: Confirm Logging
4. **Waste Management System** -> **Resident**: Send Confirmation
5. **Waste Management System** -> **Waste Collector**: Notify Pickup
6. **Waste Collector** -> **Waste Management System**: Update Status
7. **Waste Management System** -> **Database**: Update Record
8. **Waste Management System** -> **Resident**: Send Completion Notification
9.