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**BEACONHOUSE NATIONAL UNIVERSITY**

**SaafPakistan**

**PRJ-F23/329**

**PROJECT PROPOSAL REPORT**

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# Problem Statement:

Pakistan, like many other countries, has a problem when it comes to recycling. There's no organized system with separate bins for recyclable materials. This means people and businesses often just throw all their waste together, which is not great for the environment. It leads to more pollution and piles of recyclables in landfills. This kind of messy waste management doesn't just hurt the environment; it also prevents us from making the most of valuable recyclable materials.

In Lahore, Pakistan, the way recyclable waste is handled is a bit of a mess. It relies heavily on informal and inconsistent practices. The collected waste is usually picked through by local scavengers or municipal workers who only manage to sort out a small fraction of the recyclable materials. However, a significant number of recyclables often end up getting wasted in landfills. These landfills are frequently poorly managed and lack proper regulation, leading to increased pollution and health risks.

Even if we just started with basic waste separation, by separating inorganic recyclable materials from the organic waste, we could cut down on the amount of garbage going to landfills in Lahore. But, without a proper recycling system, individuals do not see the reason to separate their waste for recycling.

Currently, there aren't many incentives for people in Lahore to manage their waste responsibly. This means individuals and businesses aren't too motivated to get involved in recycling efforts. These challenges make it clear that we need a well-organized waste disposal and recycling system in Lahore, like SaafPakistan.

# Literature Survey

In our pursuit of cutting-edge insights and innovative approaches to foster positive behaviors and outcomes, we have thoroughly explored a myriad of research papers and articles. Among the compelling concepts that have captivated our attention is gamification, a strategy that seamlessly integrates game elements and techniques into non-gaming contexts. Additionally, the surging interest in tools like carbon footprint calculators, designed to evaluate one's environmental impact, has been a focal point of our research endeavors. Our extensive review of the literature has illuminated the confluence of these two domains and their potential to shape a more sustainable future.

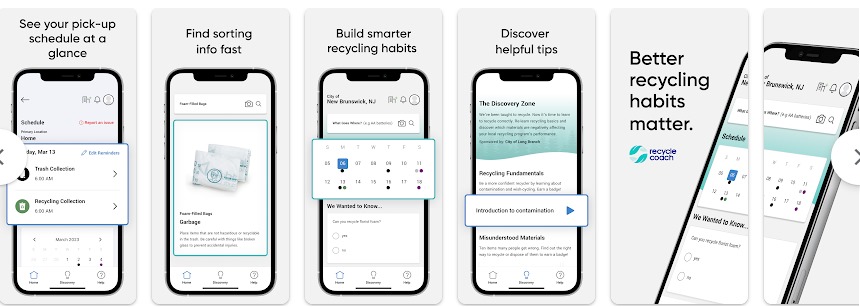
* A study "Gamification for Recycling: A Review of the Literature" by the University of California, Berkeley (2020) found that gamification can also be effective at increasing recycling rates. The study found that a program that rewarded people with points for recycling led to a 15% increase in the recycling rate.[1]
* A study "Financial Incentives and Gamification to Increase Recycling Rates" by the World Bank (2021) found that financial incentives and gamification are most effective at increasing recycling rates in countries with high levels of income and education.[2]
* The article "The state of carbon footprint calculators: An evaluation of calculator design and user interaction feature" by "John Mulrow" is about the state of carbon footprint calculators. It discusses the growing interest in these tools and the variety of calculators available. The authors note that there is no standardization in the way calculators are designed or the data they use. This makes it difficult to compare results from different calculators. The authors also discuss the importance of user engagement and how calculators can be used to educate people about their carbon footprint.[3]
* Gamification is a promising approach to promoting tourist recycling behavior, as shown in the article "Gamification as An Approach to Promote Tourist Recycling Behavior" by Lidia Aguiar-Castillo et al. (2019). It can make recycling more fun and engaging for tourists, and encourage them to recycle more often. Some examples of gamification for tourist recycling include awarding points and badges, using leaderboards, and creating challenges.[4]

In light of these research findings, it becomes evident that targeted strategies, such as gamification and financial incentives, hold the power to significantly enhance recycling rates. Furthermore, standardizing the design and features of carbon footprint calculators remains crucial. This not only facilitates precise environmental impact assessment but also functions as an educational instrument, guiding individuals toward more responsible and sustainable behaviors. Collectively, these approaches offer a promising pathway toward a more sustainable and environmentally-conscious future.

# Existing Systems

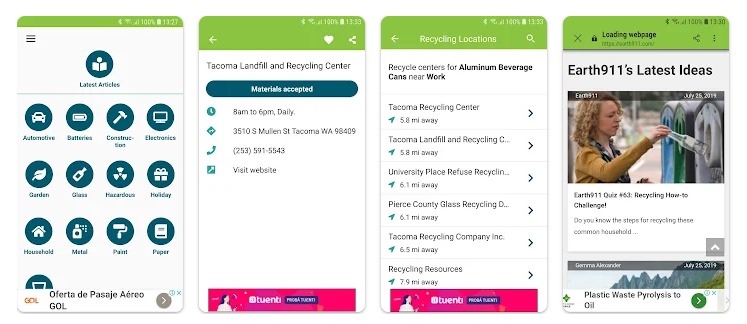
1. **Recycle Coach Mobile App** **[5]**

Recycle Coach is a mobile app and website that helps users recycle and compost correctly. It provides information on what materials can be recycled or composted in their area, as well as tips on reducing waste. Recycle Coach also has a feature that allows users to set reminders for their recycling and composting pickup days.



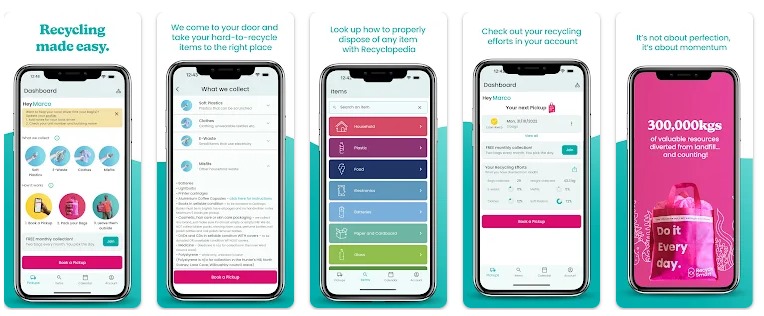
1. **iRecycle Mobile App [6]**

iRecycle is another mobile app that helps users recycle and compost correctly. It provides similar information to Recycle Coach, but it also has a few additional features, such as a barcode scanner that can be used to identify recyclable materials. iRecycle also has a rewards program that gives users points for recycling and composting, which can be redeemed for prizes.



1. **Recycle Smart Mobile App [7]**

Recycle Smart is a mobile app that provides information on what materials can be recycled, as well as tips on reducing waste. Recycle Smart also has a feature that allows users to find the nearest recycling drop-off location.



The problem with these systems is that they are not available in Pakistan.

# Solution:

SaafPakistan is a revolutionary mobile application designed to transform waste management and recycling practices in Pakistan. It tackles the challenges posed by unstructured waste disposal while promoting responsible recycling habits among both individuals and businesses. Here are the key features of this innovative solution:

1. **Recycling Pickup Scheduling:** The app empowers users to effortlessly schedule pickups for recyclable materials, making it convenient and accessible for everyone to participate in recycling.
2. **Gamification - Leaderboard System:** To inspire a sense of competition and engagement, the app integrates a dynamic leaderboard system for both individuals and businesses. Users earn points and rankings based on their recycling activities, and real-time updates keep them motivated and involved.
3. **Add Friends and Friends Leaderboard:** Users can connect with others on the platform by sending and accepting friend requests. Once connected, they can view a separate "Friends Leaderboard" to compare their recycling achievements with their friends.
4. **Rewards and Compensation:** To incentivize ongoing participation, users receive compensation for their contributions to recycling. The app provides a transparent and real-time tracking of users' earnings, keeping them informed about their achievements.
5. **Corporate Onboarding:** Companies can register to participate in the recycling program, extending the gamification aspect to the corporate sector. This feature allows businesses to showcase their environmental initiatives and commitment to sustainability through the app.
6. **Advertisement as a Green Company:** Businesses actively participating in the program receive recognition as eco-friendly and socially responsible partners. This heightened visibility can attract environmentally conscious consumers, potentially leading to increased customer engagement.
7. **Dashboard Summary:** Users are presented with a motivating summary on their dashboard, which encourages them to earn more points and recycle more. The summary includes details such as the total amount they have earned, the total number of waste items recycled, and the total reduction in carbon emissions, offering a clear view of their positive environmental impact.

Our aim is to develop an app that not only streamlines waste management and recycling but also raise awareness about responsible waste disposal and show the importance of sustainability practices.

# User Roles

SaafPakistan app involves the following user roles

**Customer:** A user who is an individual or organization looking to recycle waste.

**Rider:** A user who uses the system as a rider to manage and complete recycling pickups.

**Warehouse Manager:** A user who uses the system as a warehouse manager to oversee recycling pickups at the warehouse.

**Admin:** A user with administrative privileges who manages and oversees the entire system.

# User Stories

**User Story 1:** Scheduling a Pickup for Recycling

As an environmentally-conscious customer, I want the ability to schedule a pickup for recycling from my desired address, so that I can conveniently and responsibly dispose of my waste materials.

**Acceptance Criteria:**

* + When I access the Recycling App, I should find a user-friendly option on the main screen that allows me to schedule a pickup.
  + I can select a "Schedule Pickup" button, which prompts me to enter details for the pickup request.
  + The app should prompt me to specify my pickup address, either by manually entering the address or selecting it from a list of saved addresses.
  + I should have the option to specify the types of materials I want to recycle, such as paper, plastic, glass, or other recyclables.
  + I should be able to choose a convenient pickup date and time that aligns with my schedule.
  + After entering the details and confirming my pickup request, the app should provide a confirmation notification.
  + If I need to cancel the pickup request, I should have the option to do so within the app.

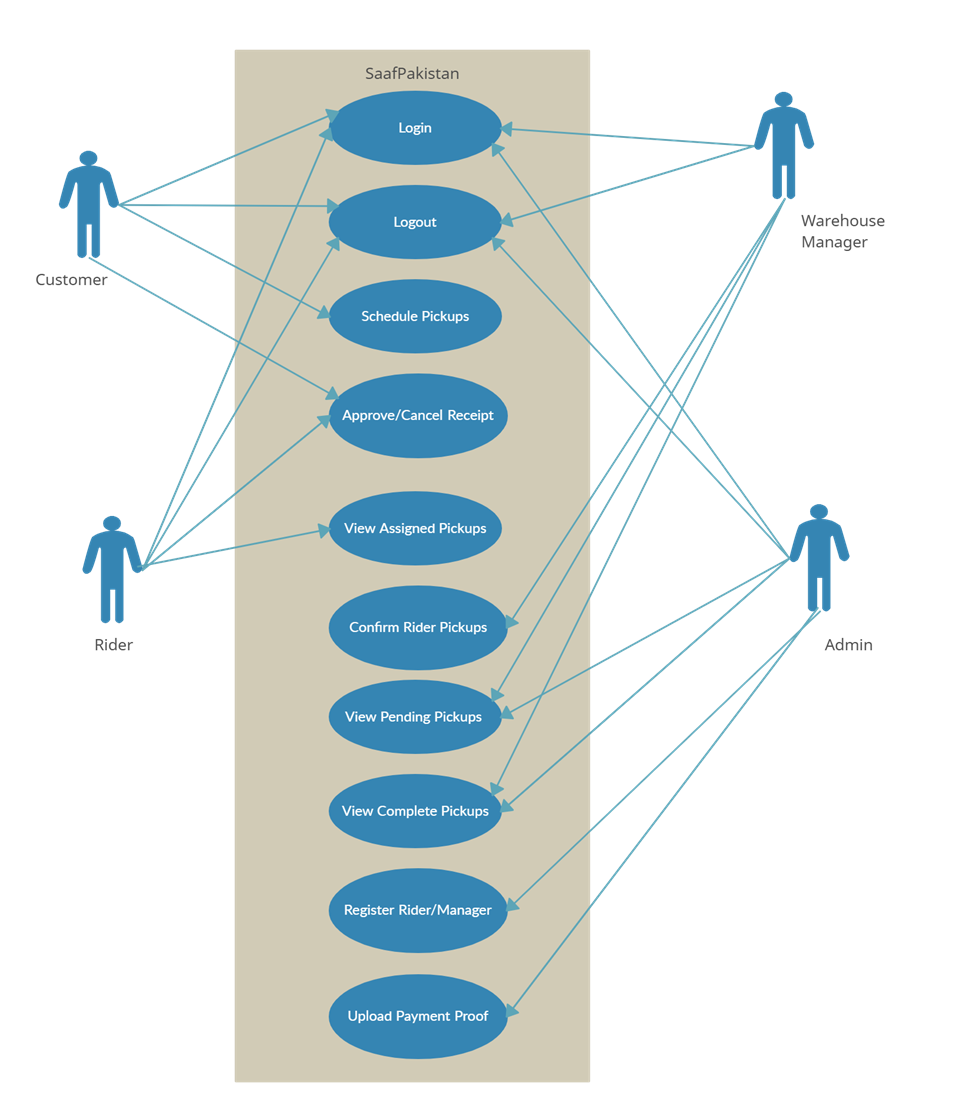
**User Story 2:** Collecting Recyclable Waste from Customers' Homes

As a dedicated recycling rider, I want a smooth and efficient process for picking up recycling waste from customers' homes, ensuring that I can provide a valuable service while maintaining a positive customer experience.

**Acceptance Criteria:**

* When I log in to the Rider App, I should see a list of assigned pickup orders on the main screen, organized by proximity to my current location.
* I should be able to select an order from the list to view more details, including the customer's name, address, and contact information.
* After selecting an order, the app should display a map with directions from my current location to the customer's address for easy navigation.
* I should be able to contact the customer, if necessary, for example, if I have trouble locating their address.
* Once all recyclables are collected and weighed, I should be able to generate an order receipt, which lists the individual items, their exact weights, and the total estimated price for the customer's records.
* If the customer does not respond or there is any issue, the app should provide options to handle the situation such as cancelling the pickup.

# Use Case Diagram

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# Functional Requirements

# Customer Requirements:

1. The system shall allow the customer to register an account.
2. The system shall allow the customer to sign in to account.
3. The system shall allow the customer to logout of account.
4. The system shall allow the customer to view their account profile.
5. The system shall allow the customer to update credentials.
6. The system shall allow the customer to schedule pickups for recycling.
7. The system shall allow the customer to view current order.
8. The system shall allow the customer to cancel current order.
9. The system shall allow the customer to view their recycling pickup history.
10. The system shall allow the customer to view pending/paid payments.
11. The system shall allow the customer to view their recycling statistics on the home page.
12. The system shall allow the customer to view top 3 organizations that recycle on the home page.
13. The system shall allow the customer to access educational content related to recycling.
14. The system shall allow the customer to view city leaderboard.
15. The system shall allow the customer to view organization leaderboard.
16. The system shall allow the customer to view friend’s leaderboard.
17. The system shall allow the customer to add friends.
18. The system shall allow the customer to accept/delete friend requests.
19. The system shall allow the customer to approve/cancel order receipt.

# Rider Requirements:

1. The system shall allow the rider to sign in to the account.
2. The system shall allow the rider to logout of account.
3. The system shall allow the rider to view a list of assigned pickups.
4. The system shall allow the rider to select an order from the list.
5. The system shall allow the rider to view detailed information about the order.
6. The system shall allow the rider to view a map to assist rider in reaching the customer's location.
7. The system shall allow the rider to generate the pickup receipt.
8. The system shall allow the rider to get approval/cancel the receipt.
9. The system shall allow the rider to enter reason for pickup cancelation.

# Warehouse Manager Requirements:

1. The system shall allow the warehouse manager to sign in to the account.
2. The system shall allow the warehouse manager to logout of account.
3. The system shall allow the warehouse manager to view pending pickups.
4. The system shall allow the warehouse manager to view completed pickups.
5. The system shall allow the warehouse manager to confirm completed pickups by rider.
6. The system shall allow the warehouse manager to view cancel pickups.

# Admin Requirements:

1. The system shall allow the admin to sign in to account.
2. The system shall allow the admin to logout of account.
3. The system shall allow the admin to register warehouse manager.
4. The system shall allow the admin to register new riders in the system.
5. The system shall allow the admin to suspend rider account.
6. The system shall allow the admin to view rider details.
7. The system shall allow the admin to view pending pickups.
8. The system shall allow the admin to view completed pickups.
9. The system shall allow the admin to view customers details.
10. The system shall allow the admin to view pending payments.
11. The system shall allow the admin to upload payment proof.
12. The system shall allow the admin to view inventory.
13. The system shall allow the admin to update rates of recycling materials.

# **Use Cases**

# Customer Use Cases:

## Use Case 1: Customer Registration

* **Description**: The system allows the customer to register an account .
* **Actors**: Customer
* **Precondition**: Customer is not registered in the system.
* **Postcondition**: Customer is registered in the system and directed to the home page.
* **Main Flow:**

1. Customer provides valid registration information, including name, email, phone number, and selects whether the account is personal or for a company.
2. The system validates the information and ensures it is unique.
3. User account information, including the chosen account type (personal or company), is securely stored in the database.

* **Alternate Flow**: Registration information is invalid or not unique, and the system provides an error message.

## Use Case 2: Customer Sign In

* **Description**: The system allows the customer to sign in to their account.
* **Actors**: Customer
* **Precondition**: Customer is not logged in.
* **Postcondition**: Customer is logged in and gains access to their account.
* **Main Flow:**

1. Customer provides valid email and password.
2. The system validates the customer's credentials.
3. Upon successful validation, the customer is granted access to their account.

* **Alternate Flow**: Customer provides invalid credentials, and the system denies access.

## Use Case 3: Customer Logout

* **Description**: The system allows the customer to log out of their account.
* **Actors**: Customer
* **Precondition**: Customer is logged in.
* **Postcondition**: Customer is logged out of their account.
* **Main** **Flow**:

1. Customer selects the logout option.
2. The system logs the customer out and redirects them to the login screen.

* **Alternate Flow:** None

## Use Case 4: View Account Profile

* **Description**: The system allows the customer to view their account profile.
* **Actors**: Customer
* **Precondition**: Customer is logged in.
* **Postcondition**: Customer can view their name, phone number, email, and address in their account profile.
* **Main Flow:**

1. Customer selects the profile icon.
2. The system displays the customer's account profile information, including:
   * Name
   * Phone number
   * Email
   * Address

* **Alternate Flow:** None

## Use Case 5: Update Credentials

* **Description**: The system allows the customer to view and update their account profile.
* **Actors**: Customer
* **Precondition**: Customer is logged in.
* **Postcondition**: Customer can edit their account information, including name, email, phone number, and password.
* **Main Flow**:

1. Customer selects the profile icon.
2. The system displays the customer's current profile information.
3. Customer selects the “Edit Profile” option.
4. The system allows the customer to update their name, email, phone number, and password.
5. Customer makes the desired changes.
6. The system validates the changes and updates the customer's account information.

* **Alternate Flow 1:** The customer provides invalid information, and the system displays an error message.
* **Alternate Flow 2:** The customer decides not to make any changes and cancels the editing process.

## Use Case 6: Schedule Pickups for Recycling

* **Description**: The system allows the customer to schedule pickups for recycling.
* **Actors**: Customer
* **Precondition**: Customer is logged in.
* **Postcondition**: The pickup is scheduled, and the order is recorded.
* **Main Flow**:

1. Customer clicks the “Schedule Pickup” button.
2. Customer is presented with a list of recyclable items.
3. Customer enters the estimated weight of each recyclable item that they want to recycle.
4. The system calculates the estimated total price for the recyclables based on the recyclable items and their weights.
5. The system shows the estimated pickup time and the customer's address.
6. Customer confirms the pickup by clicking “Confirm pickup”.
7. The system records the pickup order and provides a confirmation to the customer.

* **Alternate Flow 1**: the total weight is less than 5 kg, the system displays an appropriate message indicating that the minimum weight requirement for pickup is not met, and the pickup is not scheduled.
* **Alternate Flow 2**: Customer decides not to proceed with the pickup scheduling.

## Use Case 7: View Current Order

* **Description**: The system allows the customer to view their current recycling order.
* **Actors**: Customer
* **Precondition**: Customer has a scheduled recycling order.
* **Postcondition**: Customer can view details of the current order.
* **Main Flow**:
  1. Customer selects the “View Current Order” option.
  2. The system displays details of the current recycling order.
* **Alternate Flow:** None

## Use Case 8: View Pickup History

* **Description**: The system allows the customer to view their recycling pickup history.
* **Actors**: Customer
* **Precondition**: Customer is logged in.
* **Postcondition**: Customer can view their pickup history.
* **Main Flow**:

1. Customer selects the “Recycling History” option.
2. The system displays a list of past recycling pickups.

* **Alternate Flow:** None

## Use Case 9: View Pending/Paid Payments

* **Description**: The system allows the customer to view their pending and paid payments for recycling services.
* **Actors**: Customer
* **Precondition**: Customer is logged in.
* **Postcondition**: Customer can view payment status.
* **Main Flow**:

1. Customer selects the “Recycling History” option.
2. The system displays a list of recycling orders in the customer's history, and for each order, it indicates the payment status, whether it's pending or paid.

* **Alternate Flow:** None

## Use Case 10: View Recycling Statistics on Home Page

* **Description**: The system displays recycling statistics on the home page.
* **Actors**: Customer
* **Precondition**: Customer is logged in and on the home page.
* **Postcondition**: Customer can view recycling statistics.
* **Main Flow**:

1. Customer visits the home page.
2. The system displays recycling statistics, including:
   * Amount of waste recycled
   * Cash earned through recycling
   * Carbon emissions reduced through recycling

* **Alternate Flow:** None

## Use Case 11: View Top 3 Organizations on Home Page

* **Description**: The system displays the top 3 organizations that recycle on the home page.
* **Actors**: Customer
* **Precondition**: Customer is logged in and on the home page.
* **Postcondition**: Customer can view top recycling organizations.
* **Main Flow**:

1. Customer visits the home page.
2. The system displays the top 3 recycling organizations.

* **Alternate Flow:** None

## Use Case 12: Access Educational Content on Recycling

* **Description**: The system allows the customer to access educational content related to recycling.
* **Actors**: Customer
* **Precondition**: Customer is logged in.
* **Postcondition**: Customer can access educational content.
* **Main Flow**:

1. Customer selects the “Why recycle” option.
2. The system provides access to articles and resources related to recycling.

* **Alternate Flow:** None

## Use Case 13: View City Leaderboard

* **Description**: The system allows the customer to view a leaderboard waste recycled by individuals in the city.
* **Actors**: Customer
* **Precondition**: Customer is logged in.
* **Postcondition**: Customer can view the city leaderboard.
* **Main Flow**:

1. Customer clicks the “Leaderboard” option.
2. In Leaderboard customer clicks the “City” option
3. The system displays a leaderboard of waste recycled by individuals in the customer's city.

* **Alternate Flow:** None

## Use Case 14: View Organization Leaderboard

* **Description**: The system allows the customer to view a leaderboard of recycling organizations based on various criteria.
* **Actors**: Customer
* **Precondition**: Customer is logged in.
* **Postcondition**: Customer can view the organization leaderboard.
* **Main Flow**:

1. Customer clicks the “Leaderboard” option.
2. Customer clicks the "Organization" option.
3. The system displays a leaderboard of recycling organizations.

* **Alternate Flow:** None

## Use Case 15: View Friend's Leaderboard

* **Description**: The system allows the customer to view a leaderboard of their friends' recycling efforts.
* **Actors**: Customer
* **Precondition**: Customer is logged in and has friends on the platform.
* **Postcondition**: Customer can view the leaderboard of their friends' recycling efforts.
* **Main Flow:**

1. Customer clicks the “Leaderboard” option.
2. Customer clicks the "Friends" option.
3. The system displays a leaderboard of the recycling efforts of the customer's friends, providing insight into their achievements in recycling.

* **Alternate Flow:** None

## Use Case 16: Add Friends

* **Description**: The system allows the customer to add friends to their network.
* **Actors**: Customer
* **Precondition**: Customer is on the Friends leaderboard screen.
* **Postcondition**: Customer can add friends to their network.
* **Main Flow**:

1. Customer clicks the “Add Friends” option.
2. Customer searches for friend using phone number.
3. Customer clicks “Send Request”.
4. The system sends friend requests to the selected users.

* **Alternate Flow:** None

## Use Case 17: Accept/Delete Friend Requests

* **Description**: The system allows the customer to accept or delete friend requests.
* **Actors**: Customer
* **Precondition**: Customer is logged in and has pending friend requests.
* **Postcondition**: Friend requests are accepted or deleted.
* **Main Flow**:

1. Customer receives friend requests.
2. Customer can accept or delete friend requests.
3. The system updates the friend list accordingly.

* **Alternate Flow:** None

## Use Case 18: Approve/Cancel Order Receipt

* **Description**: The system allows the customer to approve or cancel the order receipt.
* **Actors**: Customer
* **Precondition**: Customer has a completed order and a receipt pending approval.
* **Postcondition**: Order receipt is approved or canceled.
* **Main Flow**:

1. Customer views the order receipt.
2. Customer can approve or cancel the receipt.
3. The system updates the order status based on the customer's choice.

* **Alternate Flow:** None

# Rider Use Cases:

## Use Case 1: Rider Sign in

* **Description**: The system allows the rider to sign in to their account.
* **Actors**: Rider
* **Precondition**: Rider is not logged in.
* **Postcondition**: Rider is logged in and gains access to their account.
* **Main Flow**:

1. Rider provides valid email and password.
2. The system validates the rider's credentials.
3. Upon successful validation, the rider is granted access to their account.

* **Alternate Flow**: Rider provides invalid credentials, and the system denies access.

## Use Case 2: Rider Logout

* **Description**: The system allows the rider to log out of their account.
* **Actors**: Rider
* **Precondition**: Rider is logged in.
* **Postcondition**: Rider is logged out of their account.
* **Main Flow:**

1. Rider selects the logout option.
2. The system logs the rider out and redirects them to the login screen.

* **Alternate Flow:** None

## Use Case 3: View Assigned Orders

* **Description**: The system allows the rider to view a list of orders assigned to them.
* **Actors**: Rider
* **Precondition**: Rider is logged in.
* **Postcondition**: Rider can view the list of assigned orders.
* **Main Flow**:

1. The system displays a list of orders assigned to the rider, ordered by proximity to the rider.

* **Alternate Flow:** None

## Use Case 4: Select Order

* **Description**: The system allows the rider to select an order from the list of assigned orders.
* **Actors**: Rider
* **Precondition**: Rider is viewing the list of assigned orders.
* **Postcondition**: Rider selects an order for further action.
* **Main Flow:**

1. Rider selects an order from the list.
2. The system provides information about the selected order.

* **Alternate Flow 1:** If the customer does not pick up the call for the selected order, the rider has the option to skip that order and choose the next one in the list.

## Use Case 5: View Detailed Order Information

* **Description**: The system allows the rider to view detailed information about the selected order.
* **Actors**: Rider
* **Precondition**: Rider has selected an order from the list.
* **Postcondition**: Rider can view order details.
* **Main Flow:**

1. Rider selects an order from the list.
2. The system displays detailed information about the order, including customer location, contact and estimated weight to pick.

* **Alternate Flow:** None

## Use Case 6: View Map for Navigation

* **Description**: The system allows the rider to view a map to assist in reaching the customer's location.
* **Actors**: Rider
* **Precondition**: Rider has selected an order and needs navigation assistance.
* **Postcondition**: Rider can view a map for navigation.
* **Main Flow**:

1. Rider selects an order.
2. The system displays a map with directions from the rider's current location to the customer's location.

* **Alternate Flow:** None

## Use Case 7: Generate Order Receipt

* **Description**: The system allows the rider to generate the order receipt.
* **Actors**: Rider, Customer
* **Precondition**: Rider has picked up the order and needs to create a receipt.
* **Postcondition**: The order receipt is generated.
* **Main Flow**:

1. Rider enters the exact weight of each recyclable item.
2. Rider clicks the “Generate Receipt” option.
3. The system generates the order receipt, which includes:
   * A detailed list of recyclable items with their exact weights.
   * The total price for these recyclables.
4. The system sends the order receipt to the customer's app for approval.

* **Alternate Flow:** None

## Use Case 8: Rider Actions on Receipt Approval

* **Description**: The system allows the rider to take actions regarding the generated order receipt while waiting for customer approval. The rider can choose to either wait for the customer to approve the receipt or cancel it.
* **Actors**: Rider, Customer
* **Precondition**: Rider has generated an order receipt.
* **Postcondition**: Rider either continues to wait for customer approval or cancels the receipt.
* **Main Flow**:

1. Rider views the generated order receipt.
2. Rider has the option to:
   1. Wait for customer approval, choosing to remain in a pending state.
   2. Cancel the receipt, which updates the order status to "Canceled."

* **Alternate Flow 1**: If the customer neither approves nor rejects the receipt the rider has the option to cancel the receipt, updating the order status to "Canceled."

## Use Case 9: Enter Reason for Pickup Cancellation

* **Description**: The system allows the rider to enter a reason for canceling a scheduled pickup.
* **Actors**: Rider
* **Precondition**: Rider is viewing the list of assigned orders and chooses to cancel a scheduled pickup.
* **Postcondition**: The reason for the pickup cancellation is recorded.
* **Main Flow**:

1. Rider selects an assigned order from the list.
2. The system displays detailed information about the selected order, including customer location and pickup details.
3. Rider decides to cancel the pickup and clicks the "Cancel Pickup" option.
4. The system prompts the rider to provide a reason for the cancellation.
5. Rider enters a text description of the reason.
6. Rider submits the reason.
7. The system records the provided reason for the canceled pickup.

* **Alternate Flow:** If the rider changes their mind and decides not to cancel the pickup, they can go back to the order details without providing a reason and continue with the pickup.

# Warehouse Manager Use cases:

## Use Case 1: Warehouse Manager Sign In

* **Description**: The system allows the warehouse manager to sign in to their account.
* **Actors**: Warehouse Manager
* **Precondition**: Warehouse manager is not logged in.
* **Postcondition**: Warehouse manager is logged in and gains access to their account.
* **Main Flow:**

1. Warehouse manager provides valid email and password.
2. The system validates the manager's credentials.
3. Upon successful validation, the warehouse manager is granted access to their account.

* **Alternate Flow**: Warehouse manager provides invalid credentials, and the system denies access.

## Use Case 2: Warehouse Manager Logout

* **Description**: The system allows the warehouse manager to log out of their account.
* **Actors**: Warehouse Manager
* **Precondition**: Warehouse manager is logged in.
* **Postcondition**: Warehouse manager is logged out of their account.
* **Main Flow**:

1. Warehouse manager selects the logout option.
2. The system logs the warehouse manager out and redirects them to the login screen.

* **Alternate Flow**: None

## Use Case 3: View Pending Pickups

* **Description**: The system allows the warehouse manager to view a list of pending pickups.
* **Actors**: Warehouse Manager
* **Precondition**: Warehouse manager is logged in.
* **Postcondition**: Warehouse manager can view the list of pending pickups.
* **Main Flow**:

1. The system displays a list of pending pickups, including details such as order information and rider details.

* **Alternate Flow**: None

## Use Case 4: View Completed Pickups

* **Description**: The system allows the warehouse manager to view a list of completed pickups.
* **Actors**: Warehouse Manager
* **Precondition**: Warehouse manager is logged in.
* **Postcondition**: Warehouse manager can view the list of completed pickups.
* **Main Flow**:

1. The system displays a list of completed pickups, including details such as order information, rider details, and pickup confirmation.

* **Alternate Flow**: None

## Use Case 5: Confirm Completed Shift by Rider

* **Description**: The system allows the admin to manage and confirm the completion of a rider's shift, including verifying that the total weight of recycling items picked up by the rider matches the total weight of recyclables delivered to the warehouse.
* **Actors**: Admin, Rider
* **Precondition**: Admin has access to the list of riders and a rider has returned to the warehouse after completing their pickups.
* **Postcondition**: Admin confirms the completion of the rider's shift and verifies the accuracy of the total weight of recycling items.
* **Main Flow**:

1. Admin accesses the list of riders and selects a specific rider who has returned to the warehouse after completing their pickups.
2. The system displays details of the selected rider's shift, including the list of completed pickups and the total weight of recyclables picked up by the rider.
3. Admin checks the accuracy of the total weight of recycling items picked up by the rider.
4. If the total weight of recycling items picked up by the rider matches the total weight of recyclables delivered to the warehouse, the admin confirms the rider's shift as "Completed and Verified."

* **Alternate Flow**:

1. If the total weight of recycling items picked up by the rider does not match the total weight of recyclables delivered to the warehouse:
2. Admin marks the shift as "Completed with Discrepancies."
3. The system notifies the rider and warehouse manager about the discrepancy for resolution.
4. The resolution may involve rechecking the recyclables, addressing any potential discrepancies or issues in the collection process, and taking appropriate actions to ensure accurate records.
5. Once resolved, the system updates the shift status accordingly.

## Use Case 6: View Cancelled Pickups

* **Description**: The system allows the warehouse manager to view cancelled pickups.
* **Actors**: Warehouse Manager
* **Precondition**: Warehouse manager is viewing a pending pickup.
* **Postcondition**: Warehouse manager cancels the pending pickup.
* **Main Flow**:

1. The system displays a list of cancelled pickups, including details such as order information, rider details, and reason of cancellation.

* **Alternate Flow**: None

# Admin Use cases:

## Use Case 1: Admin Sign In

* **Description**: The system allows the admin to sign in to their admin account.
* **Actors**: Admin
* **Precondition**: Admin is not logged in.
* **Postcondition**: Admin is logged in and gains access to the admin dashboard.
* **Main Flow**:

1. Admin provides valid admin credentials (username and password).
2. The system validates the admin's credentials.
3. Upon successful validation, the admin gains access to the admin dashboard.

* **Alternate Flow**: Admin provides invalid credentials, and the system denies access.

## Use Case 2: Admin Logout

* **Description**: The system allows the admin to log out of their admin account.
* **Actors**: Admin
* **Precondition**: Admin is logged in.
* **Postcondition**: Admin is logged out of their admin account.
* **Main Flow:**

1. Admin selects the logout option.
2. The system logs the admin out and redirects them to the login screen.

* **Alternate Flow**: None

## Use Case 3: Register Warehouse Manager

* **Description**: The system allows the admin to register a new warehouse manager.
* **Actors**: Admin
* **Precondition**: Admin is logged in.
* **Postcondition**: A new warehouse manager is registered in the system.
* **Main Flow**:

1. Admin selects the "Register Warehouse Manager" option.
2. Admin provides the required information for the new warehouse manager, including name, contact details, and username.
3. The system validates the information.
4. Upon successful validation, the new warehouse manager account is created.

* **Alternate Flow**: Information provided is invalid, and the system displays an error message.

## Use Case 4: Register New Rider

* **Description**: The system allows the admin to register a new rider.
* **Actors**: Admin
* **Precondition**: Admin is logged in.
* **Postcondition**: A new rider is registered in the system.
* **Main Flow**:

1. Admin selects the "Register New Rider" option.
2. Admin provides the required information for the new rider, including name, contact details, and username.
3. The system validates the information.
4. Upon successful validation, the new rider account is created.

* **Alternate Flow**: Information provided is invalid, and the system displays an error message.

## Use Case 5: Suspend Rider Account

* **Description**: The system allows the admin to suspend a rider's account.
* **Actors**: Admin
* **Precondition**: Admin is logged in.
* **Postcondition**: The rider's account is suspended.
* **Main Flow**:

1. Admin selects the "Suspend Rider Account" option.
2. Admin identifies the rider account to be suspended.
3. Admin enters the reason of suspension.
4. The system suspends the rider's account.

* **Alternate Flow**: None

## Use Case 6: View Rider Details

* **Description**: The system allows the admin to view details of a rider.
* **Actors**: Admin
* **Precondition**: Admin is logged in.
* **Postcondition**: Admin can view rider details.
* **Main Flow**:

1. Admin clicks the "Riders" option.
2. Admin specifies the rider for whom they want to view details.
3. The system displays the rider's information, including name, contact details, and performance statistics.

* **Alternate Flow**: Rider details are not found, and the system provides an appropriate message.

## Use Case 7: View Pending Pickups

* **Description**: The system allows the admin to view a list of pending pickups.
* **Actors**: Admin
* **Precondition**: Admin is logged in.
* **Postcondition**: Admin can view a list of pending pickups.
* **Main Flow**:

1. Admin selects the "Pending Pickups" option.
2. The system displays a list of pickups that are pending, along with relevant details.

* **Alternate Flow**: No pending pickups are found, and the system provides an appropriate message.

## Use Case 8: View Completed Pickups

* **Description**: The system allows the admin to view a list of completed pickups.
* **Actors**: Admin
* **Precondition**: Admin is logged in.
* **Postcondition**: Admin can view a list of completed pickups.
* **Main Flow**:

1. Admin selects the "Completed Pickups" option.
2. The system displays a list of completed pickups, including details such as rider, customer, and materials collected.

* **Alternate Flow**: No completed pickups are found, and the system provides an appropriate message.

## Use Case 9: View Customer Details

* **Description**: The system allows the admin to view details of a customer.
* **Actors**: Admin
* **Precondition**: Admin is logged in.
* **Postcondition**: Admin can view customer details.
* **Main Flow:**

1. Admin clicks the "Customers" option.
2. Admin specifies the customer for whom they want to view details.
3. The system displays the customer's information, including name, contact details, and recycling history.

* **Alternate Flow**: Customer details are not found, and the system provides an appropriate message.

## Use Case 10: View Pending Payments

* **Description**: The system allows the admin to view a list of pending payments.
* **Actors**: Admin
* **Precondition**: Admin is logged in.
* **Postcondition**: Admin can view a list of pending payments.
* **Main Flow**:
  1. Admin selects the "Pending Payments" option.
  2. The system displays a list of payments that are pending, along with relevant details.
* **Alternate Flow**: No pending payments are found, and the system provides an appropriate message.

## Use Case 11: Upload Payment Proof

* **Description**: The system allows the admin to upload payment proof for completed payments.
* **Actors**: Admin
* **Precondition**: Admin is logged in and a payment is marked as completed.
* **Postcondition**: Payment proof is uploaded for the completed payment.
* **Main Flow:**

1. Admin selects a completed payment.
2. Admin uploads payment proof.
3. The system associates the payment proof with the completed payment.

* **Alternate Flow**: None

## Use Case 12: View Inventory

* **Description**: The system allows the admin to view the inventory of recyclable materials.
* **Actors**: Admin
* **Precondition**: Admin is logged in.
* **Postcondition**: Admin can view the current inventory.
* **Main Flow:**

1. Admin clicks the "Inventory" option.
2. The system displays the current inventory of recyclable materials, including quantities and types.

* **Alternate Flow**: None

## Use Case 13: Update Rates of Recycling Materials

* **Description**: The system allows the admin to update the rates for recycling materials.
* **Actors**: Admin
* **Precondition**: Admin is logged in.
* **Postcondition**: Rates for recycling materials are updated.
* **Main Flow:**

1. Admin selects the "Update Rates" option.
2. Admin updates the rates for various recyclable materials.
3. The system saves the updated rates.

* **Alternate Flow**: None

# Test Cases:

**Test Case 1**: Customer Registration

* **Test Scenario**: A new customer registers in the system.
* **Preconditions**: The customer is not registered in the system.
* **Test Steps**:

1. Open the SaafPakistan app.
2. Tap on the "Register" button.
3. Enter valid registration information, including name, email, phone number, and select "Personal" or "Company" account.
4. Enter full address and select main area and sub area.
5. Confirm the registration.

* **Expected Result**: The customer is registered, and the system directs them to the home page. An email confirmation is sent to the customer's registered email address.
* **Alternate Flow** 1: If the email address is already registered:
  + **Test Steps**:
    - In step 3, enter an email address that is already registered in the system.
  + **Expected Result**: The system displays an error message indicating that the email is already in use, and the customer is prompted to use a different email.
* **Alternate Flow** 2: If the phone number is already registered:
  + **Test Steps**:
    - In step 3, enter phone number that is already registered in the system.
  + **Expected Result**: The system displays an error message indicating that the phone number is already in use, and the customer is prompted to use a different phone number.

**Test Case 2: Customer Sign In**

* **Test Scenario**: A registered customer logs into the system.
* **Preconditions**: The customer is not logged in.
* **Test Steps:**
  1. Open the SaafPakistan app.
  2. Tap on the "Login" button.
  3. Enter a valid phone number and password.
  4. Tap the "Login" button.
* **Expected Result**: The customer is logged in and gains access to their account.
* **Alternate Flow** 1: If the entered email or password is incorrect:
  + **Test Steps:**
    - In step 3, enter an incorrect phone number or password.
  + **Expected Result**: The system displays an error message indicating that the login credentials are incorrect, and the customer is prompted to enter valid credentials.

**Test Case 3: Customer Logout**

* **Test Scenario**: The customer logs out of their account.
* **Preconditions**: The customer is logged in.
* **Test Steps:**

1. Select the logout option.

* **Expected Result**: The customer is logged out of their account, and the system redirects them to the login screen.
* **Alternate Flow**: None

**Test Case 4: View Account Profile**

* **Test Scenario**: The customer views their account profile.
* **Preconditions**: The customer is logged in.
* **Test Steps**:

1. Select the profile icon.

* **Expected Result**: The system displays the customer's account profile information, including their name, phone number, email, and address.
* **Alternate Flow**: None

**Test Case 5: Update Credentials**

* **Test Scenario**: The customer updates their account information.
* **Preconditions**: The customer is logged in.
* **Test Steps**:

1. Select the profile icon.
2. The system displays the customer's current profile information.
3. Select the “Edit Profile” option.
4. The system allows the customer to update their name, email, phone number, and password.
5. The customer makes the desired changes.
6. The system validates the changes and updates the customer's account information.

* **Expected Result**: The customer's account information is updated with the changes made by the customer. If any errors occur during the process, the system displays appropriate error messages.

**Test Case 6: Schedule Pickups for Recycling**

* **Test Scenario**: The customer schedules a pickup for recycling.
* **Preconditions**: The customer is logged in.
* **Test Steps**:

1. Click the “Schedule Pickup” button.
2. Provide estimated weights for recyclable items.
3. Confirm the pickup.

* **Expected Result**: The pickup is scheduled, and the system records the order. The customer receives a confirmation notification.
* **Alternate Flow 1**: The total weight is less than 5 kg
  + **Expected Result:** The system displays an appropriate message indicating that the minimum weight requirement for pickup is not met, and the pickup is not scheduled.

**Test Case 7: View Current Order**

* **Test Scenario**: The customer views their current recycling order.
* **Preconditions**: The customer has a scheduled recycling order.
* **Test Steps:**
  1. Select the “Current Order” option.
* **Expected Result**: The system displays details of the current recycling order.
* **Alternate Flow**: None

**Test Case 8: View Pickup History**

* **Test Scenario**: The customer views their recycling pickup history.
* **Preconditions**: The customer is logged in.
* **Test Steps:**

1. Select the “Recycling History” option.

* **Expected Result**: The system displays a list of past recycling pickups in the customer's history.
* **Alternate Flow**: None

**Test Case 9: View Pending/Paid Payments**

* **Test Scenario**: The customer views their pending and paid payments for recycling services.
* **Preconditions**: The customer is logged in.
* **Test Steps:**

1. Select the “Recycling History” option.

* **Expected Result**: The system displays a list of recycling orders in the customer's history and indicates the payment status (pending or paid) for each order.
* **Alternate Flow**: None

**Test Case 10: View Recycling Statistics on Home Page**

* **Test Scenario**: The customer views recycling statistics on the home page.
* **Preconditions**: The customer is logged in and on the home page.
* **Test Steps:**

1. Visit the home page.

* **Expected Result**: The system displays recycling statistics, including the amount of waste recycled, cash earned through recycling, and carbon emissions reduced through recycling.
* **Alternate Flow**: None

**Test Case 11: View Top 3 Organizations on Home Page**

* **Test Scenario**: The customer views the top 3 organizations that recycle on the home page.
* **Preconditions**: The customer is logged in and on the home page.
* **Test Steps**:

1. Visit the home page.

* **Expected Result**: The system displays the top 3 recycling organizations.
* **Alternate Flow**: None

**Test Case 12: Access Educational Content on Recycling**

* **Test Scenario**: The customer accesses educational content related to recycling.
* **Preconditions**: The customer is logged in.
* **Test Steps:**

1. Select the “Why recycle” option.

* **Expected Result**: The system provides access to articles and resources related to recycling.
* **Alternate Flow**: None

**Test Case 13: View City Leaderboard**

* **Test Scenario**: The customer views a leaderboard of waste recycled by individuals in the city.
* **Preconditions**: The customer is logged in.
* **Test Steps:**

1. Click the “Leaderboard” option.
2. In Leaderboard customer clicks the “City” option.

* **Expected Result**: The system displays a leaderboard of waste recycled by individuals in the customer's city.
* **Alternate Flow**: None

**Test Case 14: View Organization Leaderboard**

* Test Scenario: The customer views a leaderboard of recycling organizations based on various criteria.
* Preconditions: The customer is logged in.
* Test Steps:

1. Click the “Leaderboard”option.
2. Click the "Organization" option.

* Expected Result: The system displays a leaderboard of recycling organizations.
* Alternate Flow: None

**Test Case 15: View Friend's Leaderboard**

* **Test Scenario**: The customer views a leaderboard of their friends' recycling efforts.
* **Preconditions**: The customer is logged in and has friends on the platform.
* **Test Steps:**

1. Click the “Leaderboard” option.
2. Click the "Friends" option.

* **Expected Result**: The system displays a leaderboard of the recycling efforts of the customer's friends, providing insight into their achievements in recycling.
* **Alternate Flow**: None

**Test Case 16: Add Friends**

* **Test Scenario**: The customer adds friends to their network.
* **Preconditions**: The customer is on the Friends leaderboard screen.
* **Test Steps:**
  1. Click the “Add Friends” option.
  2. Search for friends using phone numbers.
  3. Click “Send Request”.
  4. The system sends friend requests to the selected users.
* **Expected Result**: Friend requests are sent to the selected users.
* **Alternate Flow**: None

**Test Case 17: Accept/Delete Friend Requests**

* **Test Scenario**: The customer accepts or deletes friend requests.
* **Preconditions**: The customer is logged in and has pending friend requests.
* **Test Steps:**
  1. The customer receives friend requests.
  2. The customer can accept or delete friend requests.
* **Expected Result**: The system updates the friend list accordingly.
* **Alternate Flow**: None

**Test Case 18: Approve/Cancel Order Receipt**

* **Test Scenario**: The customer approves or cancels the order receipt.
* **Preconditions**: The customer has a completed order and a receipt pending approval.
* **Test Steps:**
  1. The customer views the order receipt.
  2. The customer can approve or cancel the receipt.
* **Expected Result**: The system updates the order status based on the customer's choice.
* **Alternate Flow**: None

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