

GARBAGE COLLECTION MANAGEMENT SYSTEM - ENVICLEAN

Assignment 1 – CSCI 5709 Advanced Web Services



JUNE 6, 2021

GROUP 6
CSCI 5709

Contents

The Team.....	4
Team Name	4
Team Members	4
Tools Used.....	4
EnviClean	4
Project purpose, goals and feature	4
User persona	6
Sitemap.....	8
User Profile Management.....	9
Create user account.....	9
Scenario	9
Use Case	9
Task Flow Diagram	11
Login to account	11
Scenario	11
Use Case	12
Task Flow Diagram	13
Update user account	14
Scenario	14
Use Case	15
Task Flow Diagram	16
Delete user account.....	17
Scenario	17
Use Case	17
Task Flow Diagram	17
Prototype.....	18
Notification Management System	23
Enable email notifications related to the upcoming pickup for the user.	23
Scenario	23
Use Case	23
Task Flow Diagram	24
Disable email notifications related to the upcoming pickup for the user	25
Scenario	25

Use Case	26
Task Flow Diagram	26
Enable notification for the collector via email about his upcoming pickup task.....	27
Scenario	27
Use Case	28
Task Flow Diagram	28
Disable notification for the collector via email about his upcoming pickup task.....	29
Scenario	29
Use Case	30
Task Flow Diagram	30
Prototype.....	32
Social Clean Reporter Management – EnviClean Patron.....	33
Register as a social reporter and become an EnviClean Patron.....	33
Scenario	33
Use Case	34
Task Flow	34
Create a post regarding the garbage found.	35
Scenario	35
Use Case	36
Task Flow	36
View posts created by other users in the vicinity	37
Scenario	37
Use Case	38
Task Flow	38
View posts created by users themselves.	39
Scenario	39
Use Case	40
Task Flow	40
Prototype.....	40
Garbage Depositor Management	42
To Schedule a Deposit.....	42
Scenario	42
Use case	43
Task Flow	43
To view the created Deposit request for the user	44
Scenario	44

Use case	45
Task Flow	45
To Modify the Scheduled Deposit Request	45
Scenario	45
Use case	46
Task Flow	46
To Delete the Scheduled Deposit Request	47
Scenario	47
Use case	48
Task Flow	48
Prototype.....	49
Garbage Collection Management System	50
View the garbage collection requests	50
Scenario	50
Use Case	51
Task Flow	51
Pick-up the garbage collection request.....	51
Scenario	51
Task Flow	52
Discard the already taken task	53
Scenarios.....	53
Use case	54
Task Flow	54
Prototype.....	55
References	56

The Team

Team Name: Group 6

Team Members

1. Dhrumil Amish Shah (dh416386@dal.ca)
2. Parth Dinesh Thummar (parth.thummar@dal.ca)
3. Sriram Attanti (sr601872@dal.ca)
4. Srikrishnan Sengottai Kasi (srikrishnan.sk@dal.ca)
5. Vishal Dipak Parmar (vs301167@dal.ca)

Tools Used

[Adobe XD](#), [Adobe Illustrator](#), [Microsoft Word](#), [Microsoft Teams](#), [Adobe Photoshop](#), [Figma](#), [Google Chrome](#), [Balsamiq](#).

EnviClean

Keeping the environment clean is our motive. Hence the project name EnviClean. It is a garbage collection management system developed by Group 6.

Project purpose, goals, and feature

In many regions of developing nations like India, the visibility of trash lying in the public spaces is high. This is because of various factors, including the unavailability of periodic trash collections from residential houses. There is no service provider to pick up the trash based on the user's convenient time. Sometimes the Trash bins are not accessible to the persons in the residential area. On the other hand, there are many private firms and NGOs actively working towards making the public areas clean. One such famous initiative is "Swachh Bharath Abhiyan". This project aims to solve the above scenario by developing a web application that acts as an intermediary between the residential users and the NGO organization, and trash collecting agencies. To motivate the users to deposit the trash periodically, a reward point system is built along with the application. These reward points in the future can be redeemed to purchase products from international brands. By doing the above, this project addresses one of the major United Nations Sustainable Development Goal 6. It facilitates a clean environment for humans to live in India. The initial launch of the application facilitates free trash pickups by targeting

government organizations and Non-Profitable Organizations which volunteer in activities for the Clean India movement. Later a proper pricing model can be implemented in the project.

The potential features identified for the implementation of the above project are as follows:

1. User Profile Management (Vishal Dipak Parmar)

This feature gives the user ability to manage their profile as per their requirements. It allows the user to create an account with EnviClean and use all the underlying features to make their garbage disposal easy. The tasks under this feature, corresponding user scenarios, use cases, and diagram of task flow have been explained briefly later in the document.

2. Social Clean Reporter Management – EnviClean Patron (Dhrumil Amish Shah)

This feature provides an interface for the EnviClean patron members to seamlessly identify all the trash they find when they are outside and upload it on the EnviClean website. Organizations and garbage collectors are intimated to make sure that the reported garbage is taken care of properly. The implementation details, user scenarios, use cases, and task flow diagrams for this feature are explained in detail in the later parts of this document.

3. Notification Management System (Srikrishnan Sengottai Kasi)

It provides an interface for both the Garbage depositors and collectors to tweak the notification based on their preferences. The detailed implementation, scenarios, task flow diagrams for this feature is explained in detail in the later parts of the document.

4. Frequently Asked Questions (Srikrishnan Sengottai Kasi)

This functionality in the website addresses the helpful articles that need to be provided to the user on how to get benefited by using the application. It also covers the description of various features offered by the platform. It allows the various users of the website to get in touch with the application developers.

5. Garbage Collection Management System (Parth Dinesh Thummar)

With this feature, a user (Collector) can view and get the garbage collection requests made by other users depending on the pin code. Furthermore, this ability allows the user to inspect the pickup requests made by the user in the private task list and dismiss them, causing the removed job to reappear in the main general task list so any other user can pick it up again. Overall, this feature is beneficial to the user who wants to pick-up the garbage.

6. Garbage Depositor Management System (Sriram Attanti)

This feature outlines one of the main components in the EnviClean application. It handles all actions that are performed by the garbage depositor user. This feature covers the task of scheduling a garbage deposit, viewing the garbage deposit requests that are created by that user, modifying the deposits created by the user, and deleting the deposits. The detailed implementation, scenarios, task flow diagrams for this feature is explained in detail in the later parts of the document.

User persona

Figure 1 and Figure 2 below is designed using the Adobe XD tool. The below two figures talk in detail about the two different user persona who will use our application. They are categorized as **Garbage Depositor (Figure 1)** and **Garbage Collector (Figure 2)**.

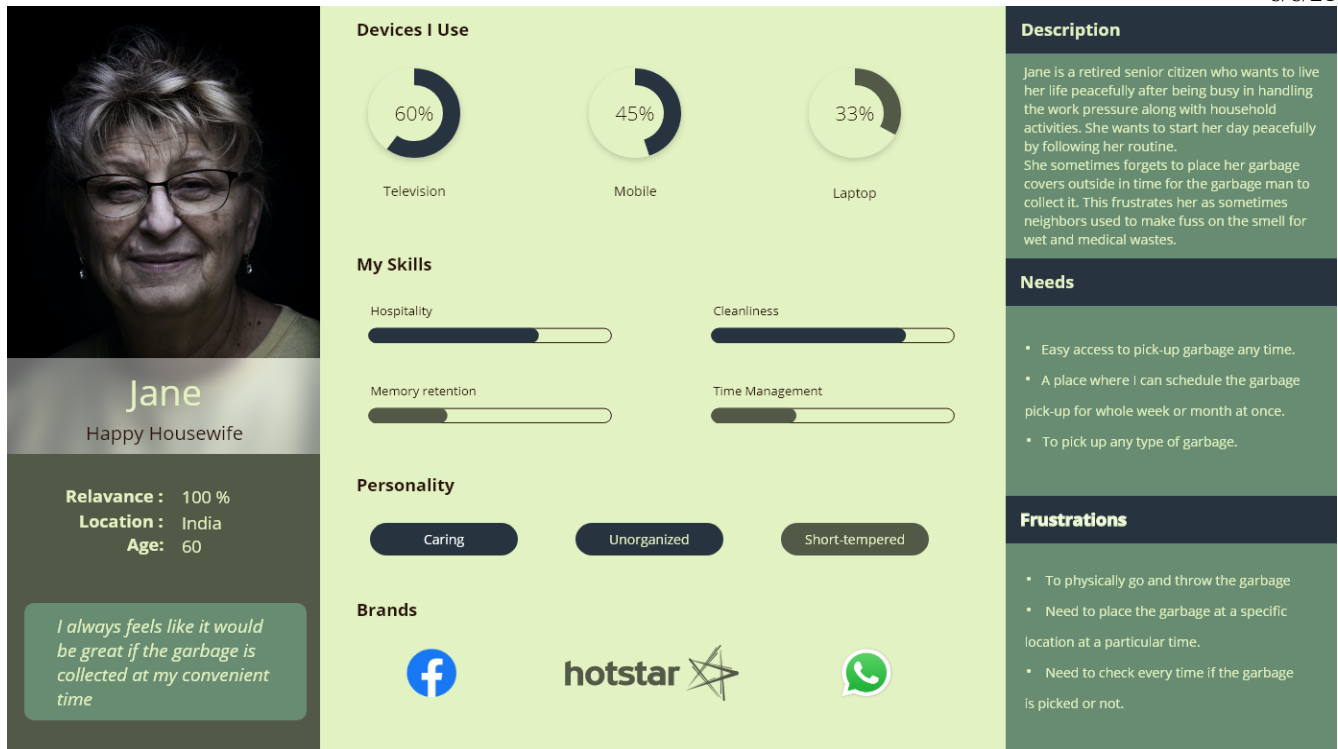


Figure 1 It is a persona about the Garbage depositor whom our application will benefit.

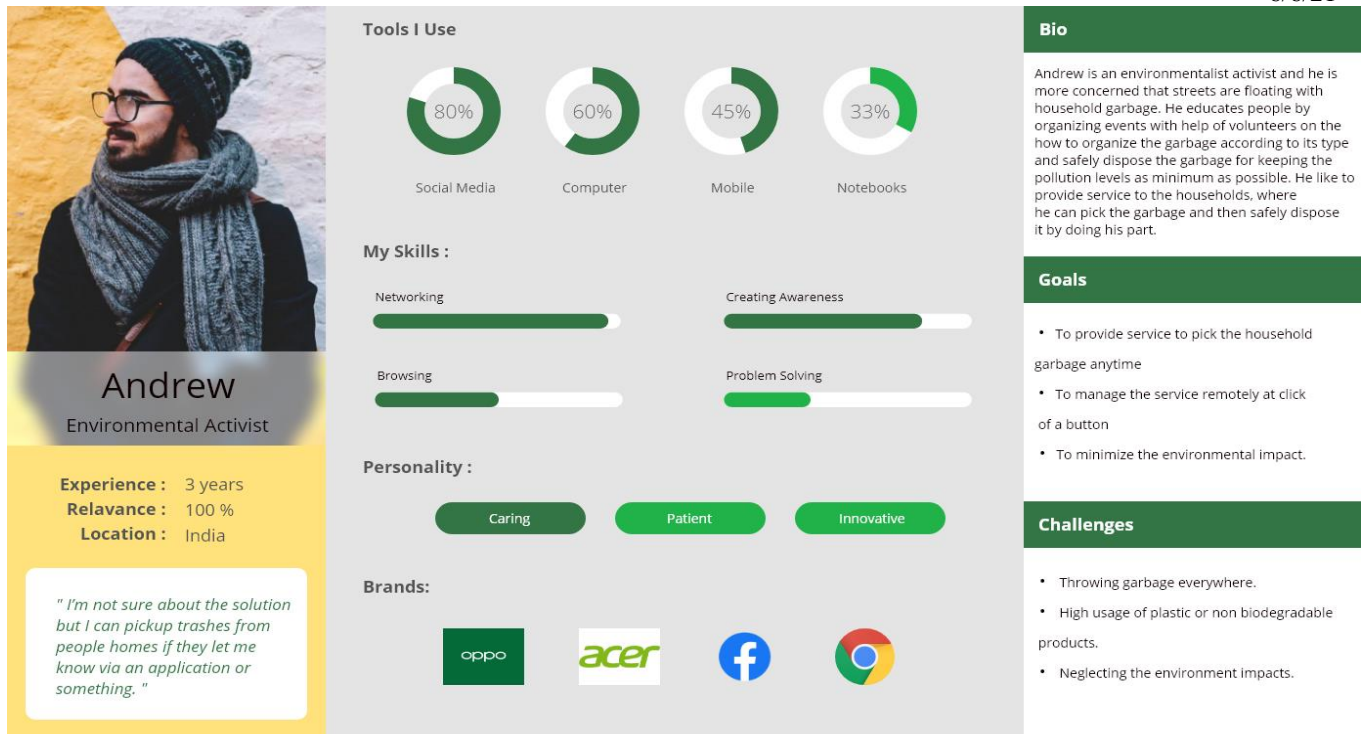


Figure 2 It is a user persona about the Picker who will collect the garbage.

Sitemap

Below Figure 3 gives an idea of the Sitemap that we decided to implement in our EnviClean application.

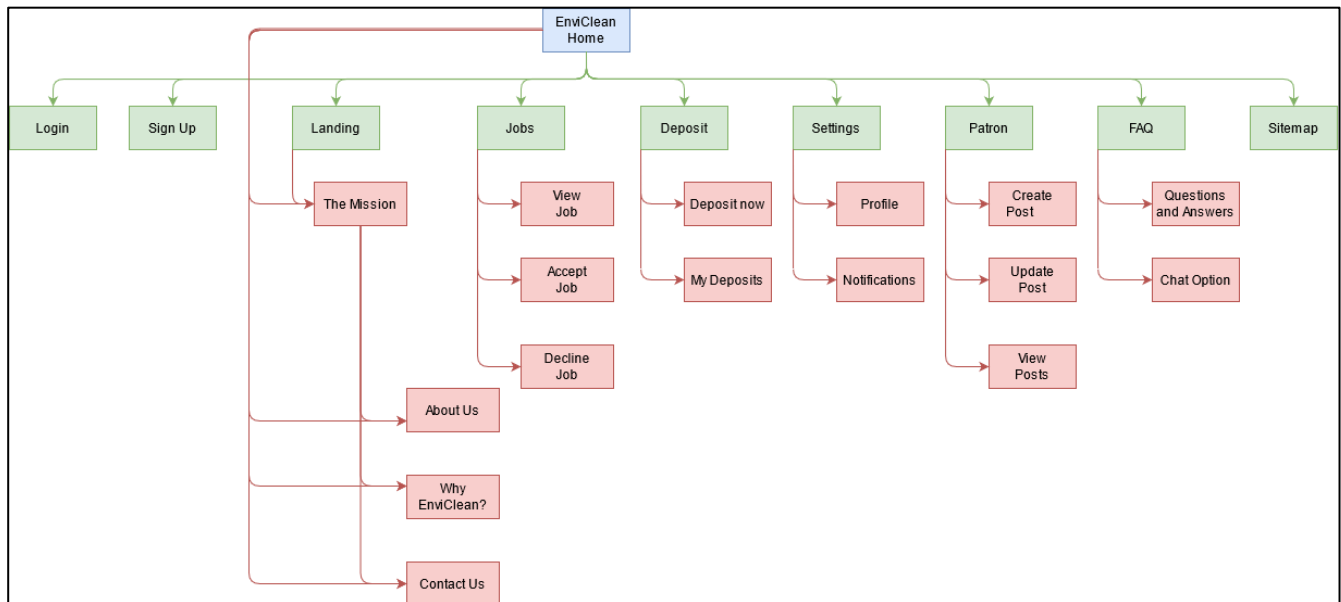


Figure 3 A Sitemap of our website EnviClean

User Profile Management

Feature Owner: B00883321 – Vishal Dipak Parmar (vs301167@dal.ca)

Create a user account.

Scenario

A senior citizen sometimes forgets to keep a dustbin at their doorstep in the morning for the garbage collector to pick up because of which much garbage gets accumulated; they want to create an account with a website that provides a facility to pick up garbage from their doorstep at any time of the day.

Persona: Senior citizen.

Feature: Create a user account.

Need: Get the garbage picked up any time of the day.

Context: Garbage gets accumulated in the dustbin.

Use Case

Create a user account on EnviClean

- 1) User visits the "EnviClean" homepage.
- 2) User clicks on the sign-up button.
- 3) System displays signup-page page, requesting user's email id, first name, last name, address, province, country, pin code, gender, password, and confirm password.
- 4) User enters all the information.
- 5) User clicks on the sign-up button.
 - 5.1. System displays "Email id already signed up" message.
 - 5.1.1. User enters a new email address.
 - 5.1.2. User clicks on the sign-up button.
 - 5.2. System highlights email id input box and displays "Enter valid email id" message.
 - 5.2.1. User enters valid email.
 - 5.2.2. User clicks on the sign-up button.
 - 5.3. System highlights first name input box and displays "First name cannot be empty or more than 25 characters" message.
 - 5.3.1. User enters valid first name.
 - 5.3.2. User clicks on the sign-up button.

5.4. System highlights last name input box and displays "Last name cannot be empty or more than 25 characters" message.

5.4.1. User enters valid last name.

5.4.2. User clicks on the sign-up button.

5.5. System highlights address input box and display "Address cannot be empty or more than 100 characters" message.

5.5.1. User enters the valid address.

5.5.2. User clicks on the sign-up button.

5.6. System highlights pin code input box and displays "Enter valid pin code" message.

5.6.1. User enters a valid pin code.

5.6.2. User clicks on the sign-up button.

5.7. System highlights password input box and displays "Password must have minimum eight characters that include a combination of small letter, capital letter, number, and special character" message.

5.7.1. User enters a valid password.

5.7.2. User clicks on the sign-up button.

5.8. System highlights password and confirm password input boxes and displays "Password and confirm password do not match" message.

5.8.1. User enters the password and confirms the password that matches.

5.8.2. User clicks on the sign-up button.

6) Systems create the user account.

7) System sends a verification email to registered email id and displays "Please verify your email id sent on your registered email" message.

8) System re-directs the user to the profile page.

9) User sees their profile page.

Task Flow Diagram

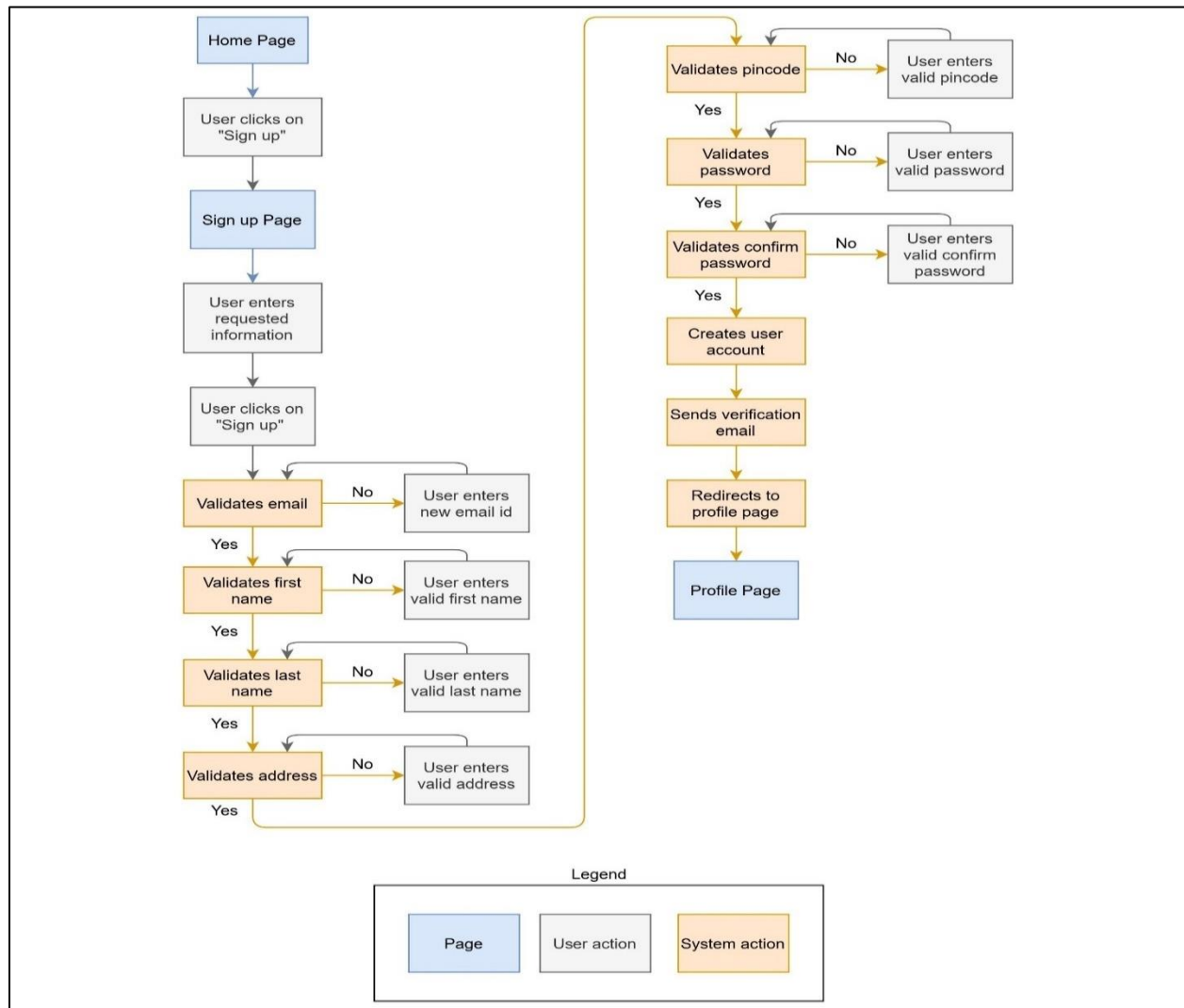


Figure 4 Create user account Task Flow diagram developed by Vishal Dipak Parmar

Login to account.

Scenario

A senior citizen has kept the garbage dustbin at their doorstep; they want to log in to their account to appoint any garbage picker in the nearby area to pick up the garbage and dispose of it.

Persona: Senior citizen

Feature: Login to account

Need: Get the garbage picked up.

Context: Garbage dustbin is kept at the doorstep.

Use Case

Login to EnviClean account

1. User visits the "EnviClean" homepage.
2. User clicks on the login button.
3. System displays login page, requesting user's email id and password.
4. User enters email id and password.
5. User clicks on the login button.
 - 5.1. System displays "Invalid email id/password" message.
 - 5.2. System prompts the user to enter valid credentials.
 - 5.2.1. User enters email id and password.
 - 5.2.2. User clicks login button.
 - 5.3. System displays "Invalid email id/password" message.
 - 5.4. System prompts the user to reset the password.
 - 5.5. User clicks on forgot password link.
 - 5.6. System prompts the user to enter a registered email id for sending authentication code.
 - 5.6.1. User enters registered email id.
 - 5.6.2. User clicks submit button.
 - 5.7. System prompts the user to enter authentication sent on registered mail id.
 - 5.7.1. User enters authentication code.
 - 5.7.2. User clicks submit button.
 - 5.8. System prompts to enter a new password and confirm a new password.
 - 5.8.1. User enters a new password and confirms a new password.
 - 5.8.2. User clicks on the change password button.
 - 5.9. System highlights new password input box and displays "Password must have minimum eight characters that include a combination of small letter, capital letter, number, and special character" message.
 - 5.9.1. User enters a new password.
 - 5.9.2. User clicks on the change password button.
 - 5.10. System highlights new password and confirms new password input boxes and displays "New password and confirm new password do not match" message.
 - 5.10.1. User enters a new password and confirms a new password that matches.
 - 5.10.2. User clicks on the change password button.

6. System updates user password and re-directs user to the login page.
7. User enters email id and new password.
8. User clicks on the login button.
9. System authenticates the user.
10. System displays landing page.
11. User sees the landing page.

Task Flow Diagram

Figure 5 represents the Task Flow diagram based on the login Use Case.

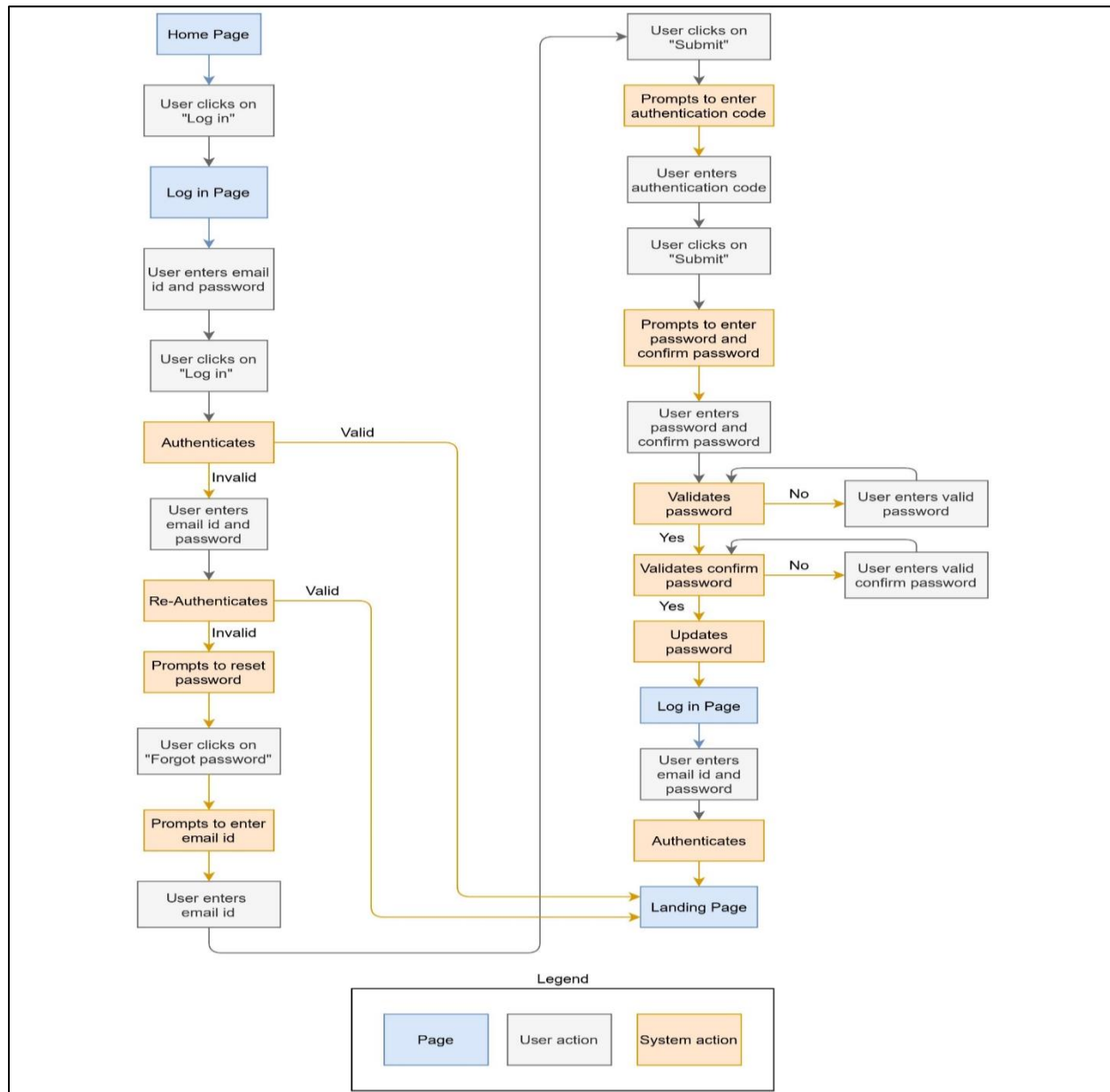


Figure 5 Login Task Flow diagram developed by Vishal Dipak Parmar

Update user account

Scenario

A senior citizen entered the wrong last name while creating an account; they want to update their last name.

Persona: Senior citizen

Feature: Update user account

Need: Some information entered in the profile is incorrect.

Context: Entered a wrong last name while account creation.

Use Case

Update user account.

Assumption: It is assumed that the user is logged into the system.

1. User clicks on the user profile icon in the navigation bar.
2. System displays dropdown menu.
3. User clicks on settings in the dropdown menu.
4. System displays profile page.
5. User enters a value in the updatable fields such as first name, last name, address, province, country, pin code, gender, password, and confirm password.
6. User clicks on the update button.
 - 6.1. System highlights first name input box and displays "First name cannot be empty or more than 25 characters" message.
 - 6.1.1. User enters valid first name.
 - 6.1.2. User clicks on the update button.
 - 6.2. System highlights last name input box and displays "Last name cannot be empty or more than 25 characters" message.
 - 6.2.1. User enters valid last name.
 - 6.2.2. User clicks on the update button.
 - 6.3. System highlights address input box and display "Address cannot be empty or more than 100 characters" message.
 - 6.3.1. User enters the valid address.
 - 6.3.2. User clicks on the update button.
 - 6.4. System highlights pin code input box and displays "Enter valid pin code" message.
 - 6.4.1. User enters a valid pin code.
 - 6.4.2. User clicks on the update button.
 - 6.5. System highlights password input box and displays "Password must have minimum eight characters that include a combination of small letter, capital letter, number, and special character" message.
 - 6.5.1. User enters a valid password.
 - 6.5.2. User clicks on the update button.
 - 6.6. System highlights password, confirms password input boxes, and displays "Password and confirm password do not match" message.

6.6.1. User enters a password and confirms the password that matches.

6.6.2. User clicks on the update button.

7. Systems update the user account.

8. Systems displays "User profile updated successfully" message.

Task Flow Diagram

Figure 6 represents the Task Flow diagram based on the updated user account Use Case.

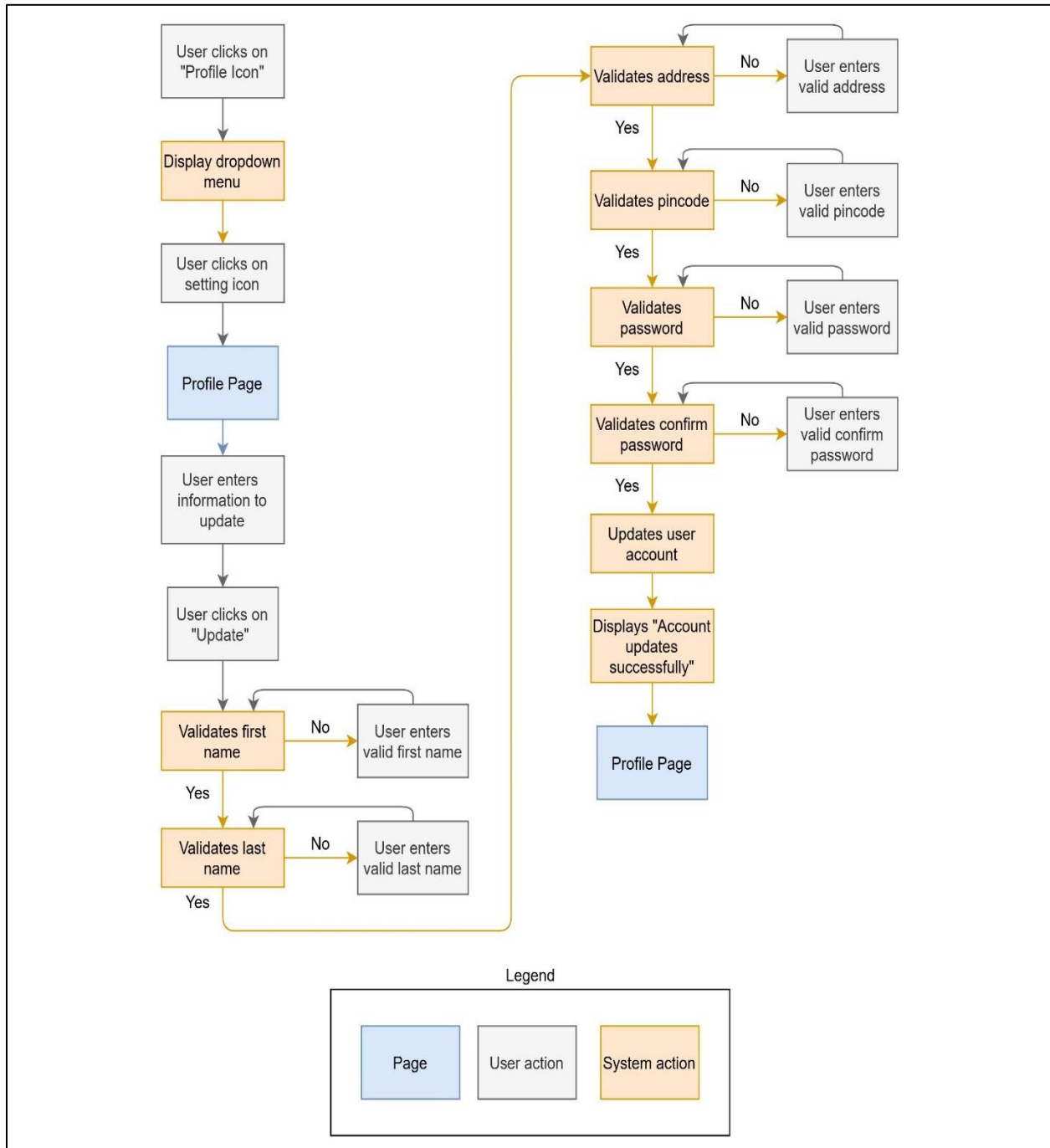


Figure 6 Update user account Task Flow diagram developed by Vishal Dipak Parmar

Delete user account

Scenario

A senior citizen accidentally created two accounts using two different email id, and they want to delete one of the accounts.

Persona: Senior citizen

Feature: Delete user account

Need: Delete one of the two same user accounts.

Context: User accidentally created two accounts.

Use Case

Delete user account.

Assumption: It is assumed that the user is logged into the system.

1. User clicks on the user profile icon in the navigation bar.
2. System displays dropdown menu.
3. User clicks on settings in the dropdown menu.
4. System displays profile page.
5. User scrolls down to the bottom of the page.
6. User clicks on the delete account button.
7. Systems display a confirmation box to confirm account deletion.
 - 7.1. User clicks on the cancel button.
 - 7.1.1. System removes confirmation box from the screen.
 - 7.1.2. System displays profile page.
 - 7.2. User clicks on confirm button.
8. System deletes a user account.
9. System displays delete profile page with "Account deleted successfully" message.

Task Flow Diagram

Figure 7 represents the Task Flow diagram based on the delete user account Use Case.

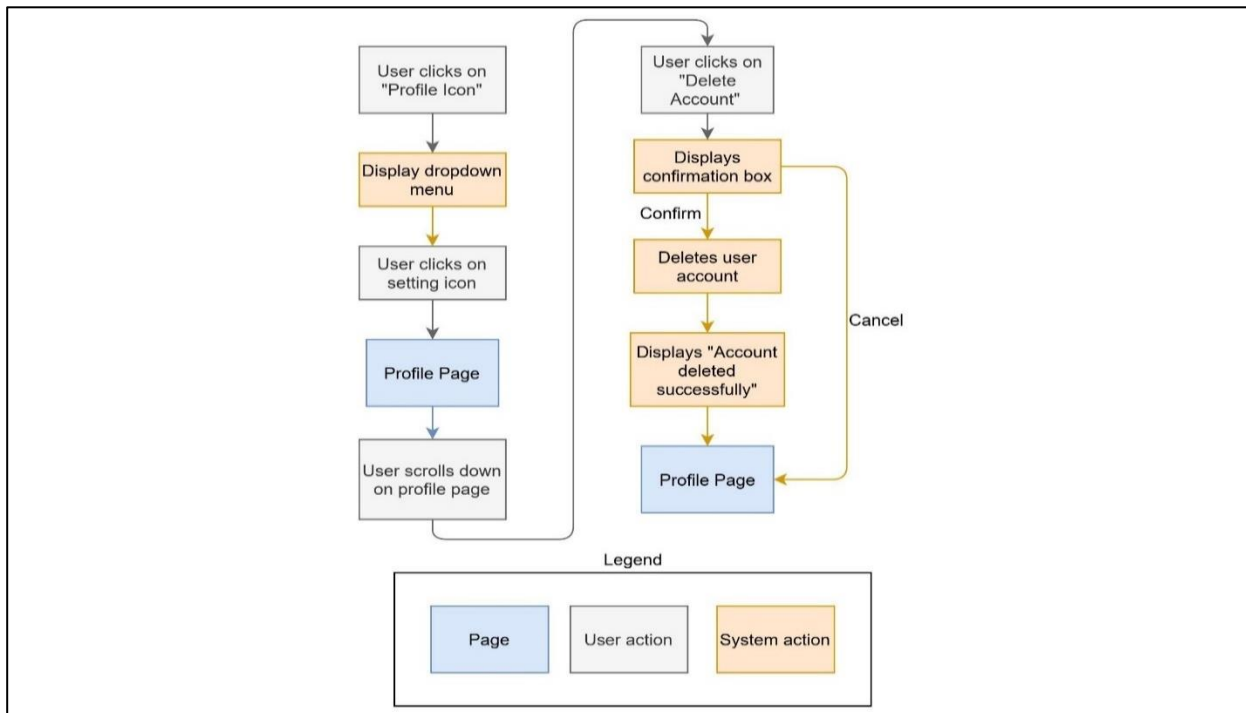


Figure 7 Delete user account Task Flow diagram developed by Vishal Dipak Parmar

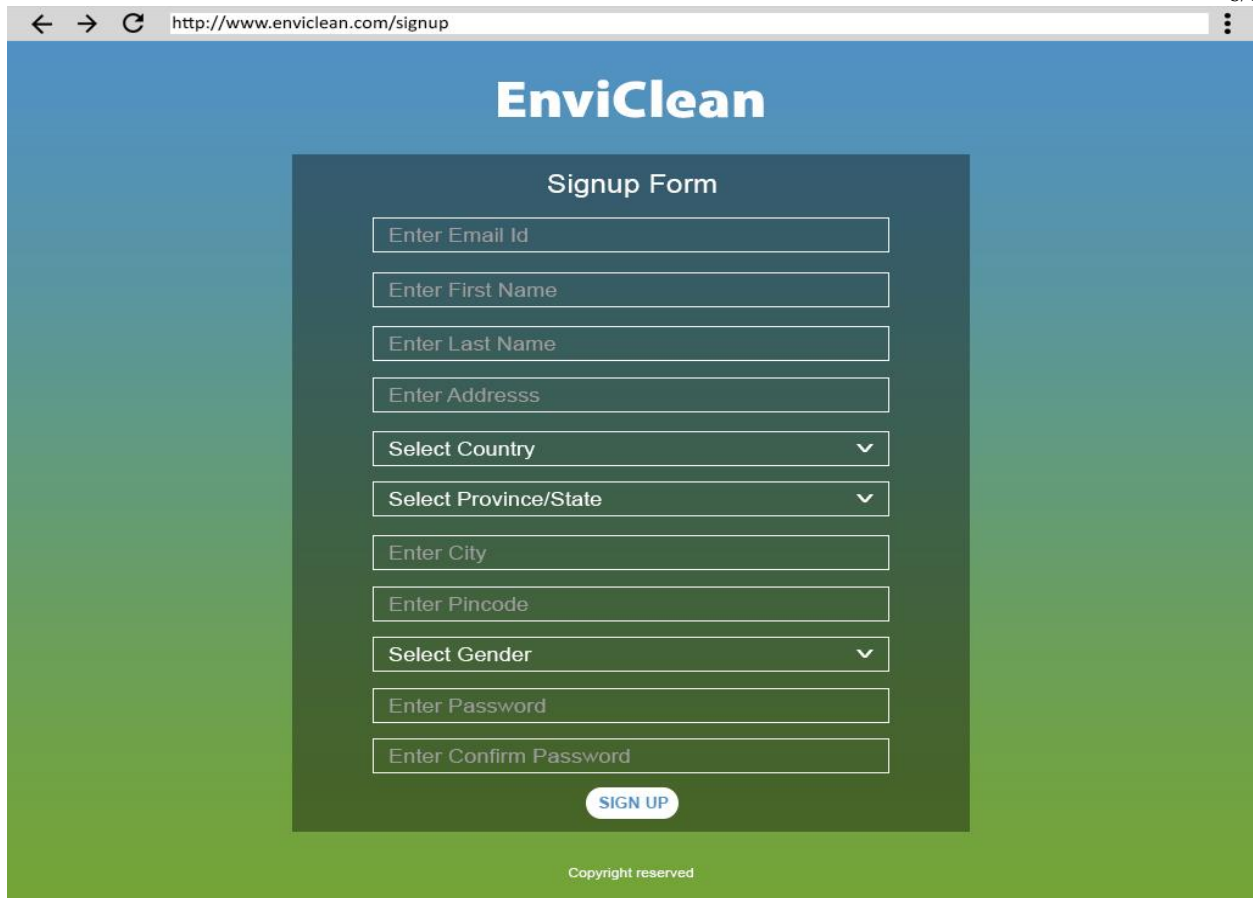
Prototype

Figure 8 shows the wireframe of the home page for "EnviClean" website. The gradient background is kept with the idea of sky and grass in mind, which represents nature. This provokes the thought of keeping Earth clean in people's minds. The quote overlayd on an image of the Earth held in hands gives the gist of the website being something related to cleanliness. The login button navigates the user to login page, and the sign-up button navigates the user to a sign-up page.



Figure 8 Home page wireframe developed by Vishal Dipak Parmar

Figure 9 shows the wireframe of the sign-up screen. The gradient background is kept to maintain the consistency of the sign-up page with the home page.



The image shows a web browser window with the URL <http://www.enviclean.com/signup>. The page features a blue header with the "EnviClean" logo. Below the header is a dark blue "Signup Form" box. The form contains the following fields: "Enter Email Id", "Enter First Name", "Enter Last Name", "Enter Addresss", "Select Country" (dropdown), "Select Province/State" (dropdown), "Enter City", "Enter Pincode", "Select Gender" (dropdown), "Enter Password", and "Enter Confirm Password". A "SIGN UP" button is located at the bottom of the form. The background of the page is a green-to-blue gradient. At the bottom of the page, the text "Copyright reserved" is visible.

Figure 9 Sign-up page wireframe developed by Vishal Dipak Parmar

Figure 10 shows the wireframe of error messages that are displayed to the user while they enter the invalid information. The messages are displayed just below the erroneous input value maintaining the design principle of the vicinity. The color of error messages is a version of red due to the traditional usage of red color versions in websites to display error messages.

The image shows a web browser window with the URL <http://www.enviclean.com/signup>. The page features the 'Enviclean' logo at the top. Below the logo is a 'Signup Form' with the following fields and error messages:

- Enter Email Id: *Email id cannot be empty
- Enter First Name: *First name cannot be empty
- Enter Last Name: *Last name cannot be empty
- Enter Addresss: *Address cannot be empty
- Select Country: *Please select country
- Select Province/State: *Please select province/state
- Enter City: *City cannot be empty
- Enter Pincode: *Pincode cannot be empty
- Select Gender: *Please select gender
- Enter Password: *Password cannot be empty
- Enter Confirm Password

A 'SIGN UP' button is located at the bottom of the form. The footer of the page reads 'Copyright reserved'.

Figure 10 Sign-up page with error messages wireframe developed by Vishal Dipak Parmar

Figure 11 shows the wireframe of the error modal that appears when the user clicks on the sign-up button to submit an invalid sign-up form. The modal is overlayed on an opaque black background and does not disappear until the user clicks on the cancel button.

The image shows a web browser window with the URL <http://www.enviclean.com/signup>. The page features the 'Enviclean' logo at the top. Below it is a 'Signup Form' with the following fields: 'Enter Email Id', 'Enter First Name', 'Enter Last Name', 'Enter City', 'Enter Pincode', 'Select Gender' (a dropdown menu), 'Enter Password', and 'Enter Confirm Password'. Each field has a red error message below it: '*Email id cannot be empty', '*First name cannot be empty', '*City cannot be empty', '*Pincode cannot be empty', and '*Please select gender'. A 'SIGN UP' button is at the bottom of the form. A white modal box is centered over the form, containing the text 'Please enter all the required information and then click on sign up button.' and a blue 'CANCEL' button. At the bottom of the page, it says 'Copyright reserved'.

Figure 11 Sign-up screen error modal wireframe developed by Vishal Dipak Parmar

Figure 12 shows the wireframe of a hollow user profile screen with a modal that displays verify email id message. The user is directed to this screen after successful sign-up.

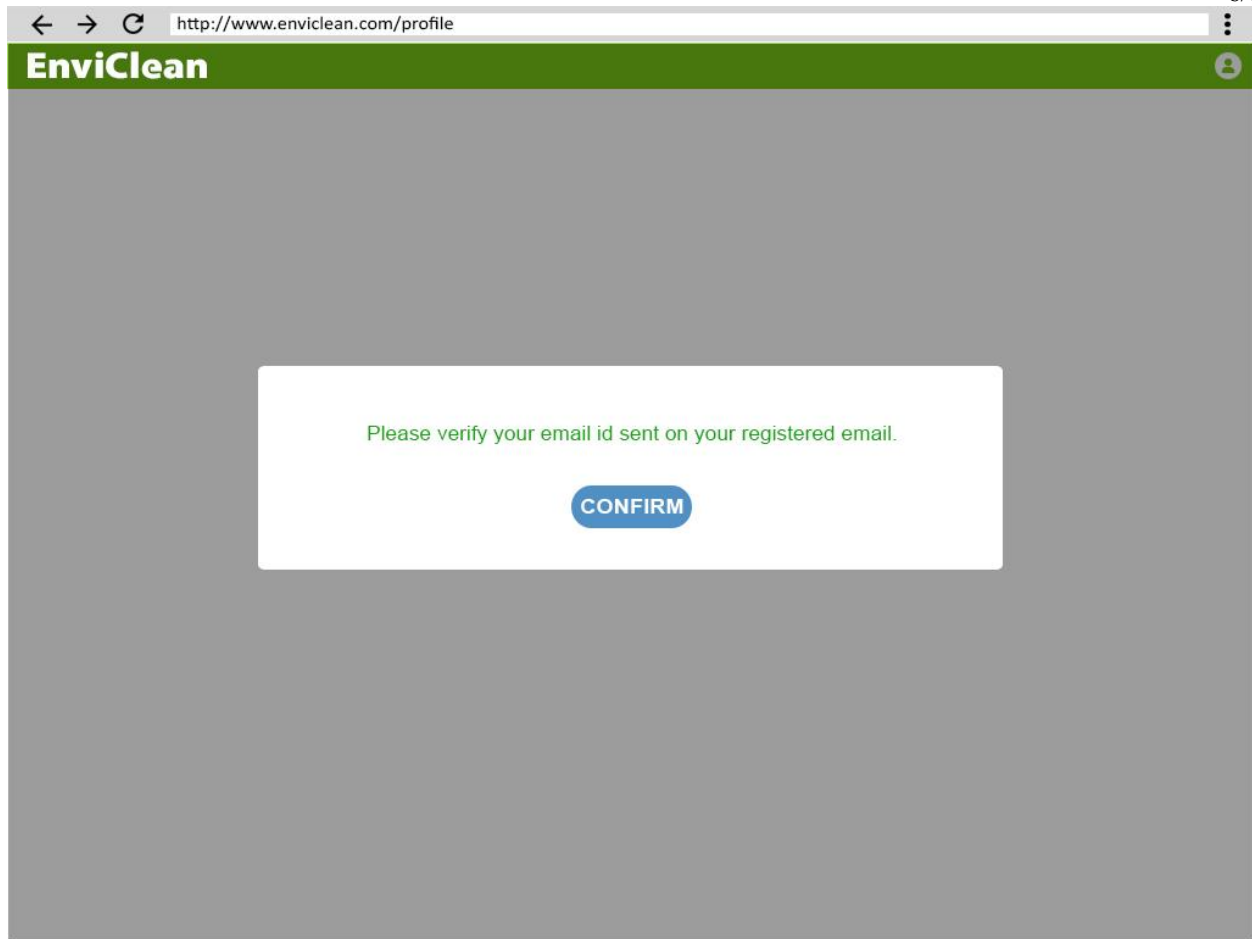


Figure 12 Profile page modal wireframe developed by Vishal Dipak Parmar

Notification Management System.

Feature Owner: B00881083 - Srikrishnan Sengottai Kasi (srikrishnan.sk@dal.ca)

Enable email notifications related to the upcoming pickup for the user. [Garbage Depositor]

Scenario

Jane wants an email notification 1 hour or 2 hours before the garbage is being collected from her doorstep so that she can keep it segregated and available for the hassle-free collection process.

Use Case

Assuming, the user has signed into the application and on the landing page.

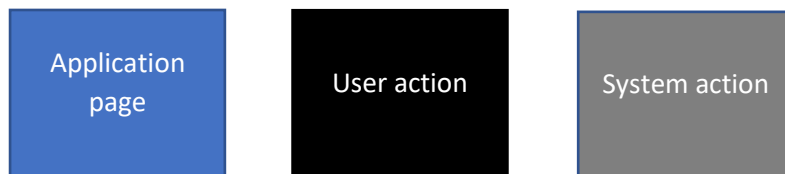
- 1) User clicks on the Settings icon at the top right corner of the landing page.
- 2) Clicks on the Notification preferences in the submenu item displayed.

- 3) If the pop window has a title other than "Notification preferences", the user clicked on wrong submenu option.
 - 3.1 User needs to click on the close icon in the pop-up window.
 - 3.2 Go back to step 1.
- 4) On the notification preferences screen that is popped out in the window, the user needs to check the box mentioning, "Notify me before the pickup time via email".
- 5) In the dropdown displayed adjacent to the checkbox text, the user can change the hour into the desired time from the dropdown. By default, it is left as 1 hour.
- 6) User needs to click on the Save button to store the notification preference.
 - 5.1 If the save button is inactive, the user goes to step 4 and modifies the interval to be saved.
 - 5.2 If the user accidentally clicks close button, he needs to start from Step 1.
- 7) After the "Settings successfully saved" message is displayed on the screen, the user needs to close the pop-up window if he has no further changes.
 - 7.1 If the user needs to change the reminder time window, go to step 4.

Task Flow Diagram

Below Figure 13 describes the task flow diagram of the above-described use case flow.

Legend for Task Flow Diagram



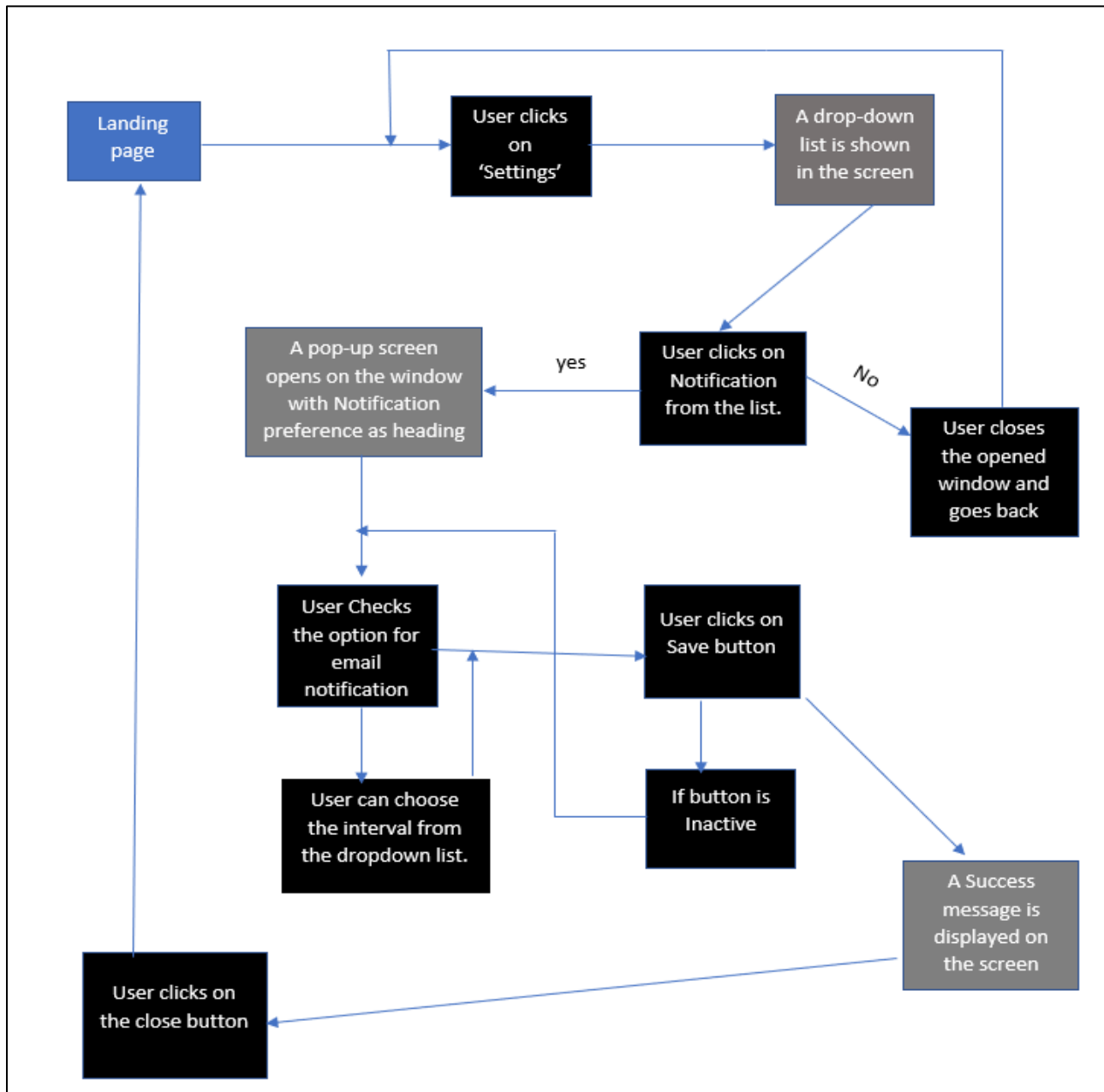


Figure 13 Task Flow diagram of "Enable notifications related to upcoming pickup to the Garbage depositor" by Srikrishnan Sengottai Kasi

Disable email notifications related to the upcoming pickup for the user [Garbage depositor].

Scenario

Jane finds the email reminders triggered for the regular pickups as spam, and she wants to disable the reminders for the pickups sent from the garbage management application."

Use Case

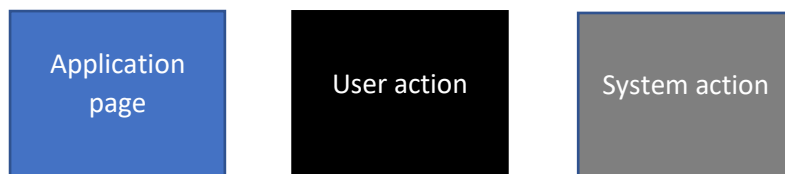
Assuming the user had signed in and has the notification preference to remind before pickup enabled in the settings.

- 1) User clicks on the Settings icon at the top right corner of the landing page.
- 2) Clicks on the Notification preferences in the submenu item displayed.
- 3) If the pop window has a title other than "Notification Preferences", the user clicked on the wrong submenu option.
 - 3.1 User needs to click on the close icon in the pop-up window.
 - 3.2 Go back to step 1.
- 4) On the notification preferences screen that is popped out in the window, the user needs to un-check the box mentioning, "Notify me before the pickup time via email".
- 5) User needs to click on the Save button to store the notification preference.
 - 5.1 If the save button is inactive, the user goes to step 4 and modifies the interval to be saved.
- 6) After the "Settings successfully saved" message is displayed on the screen, the user needs to close the pop-up window if he has no further changes.
 - 6.1 If "Something went wrong! Try Again Later" message is displayed on the top of the window, the user can refresh the page and start from step 1.

Task Flow Diagram

Below, Figure 14 describes the task flow diagram of the above-described use case flow.

Legend for Task Flow Diagram



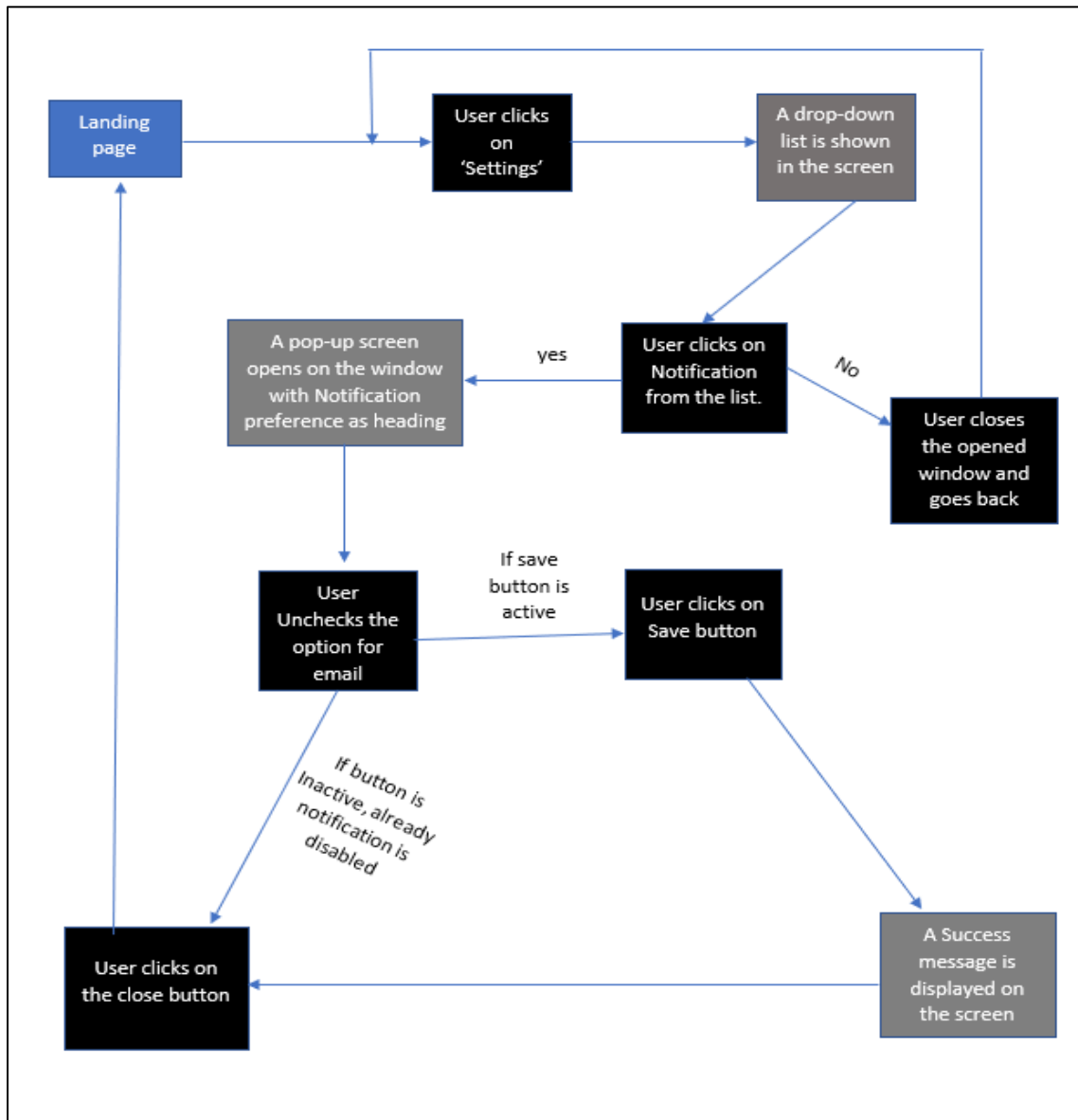


Figure 14 Task Flow diagram of "Disable notifications related to upcoming pickup to the Garbage depositor" by Srikrishnan Sengottai Kasi

Enable notification for the collector via email about his upcoming pickup task [Garbage Collector]

Scenario

Andrew accepts the job posted by Jane to collect the trash. However, he forgets to collect the trash from Bob on the scheduled day. Andrew feels it would be great to have an email reminder 1 hour before the pickup time.

Use Case

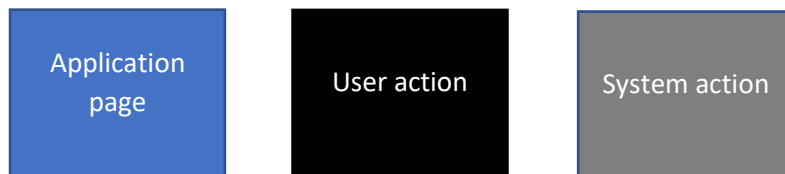
Assuming Andrew is the user and a registered Garbage collector in the application, and he is logged into the application.

- 1) User clicks on the settings icon located in the top right of the screen.
- 2) User chooses the Notification option from the submenu displayed on the screen.
- 3) A pop-up window with Notification preferences is opened.
 - 3.1 If the window title is not Notification Preferences, the user goes to step 1.
- 4) User checks the "Notify me before one hour of the upcoming Pickup via email" with one hour shown as a default selected option in the dropdown field.
 - 4.1 The time interval is displayed as a dropdown list adjacent to the option.
 - 4.2 User selects the convenient option from the list.
- 5) User clicks on the Save option in the lower right bottom of the window.
 - 5.1 If the user has already enabled and did not make any changes in the interval, the Save option will be disabled.
 - 5.2 User will go to step 4.
- 6) Once the "Preferences are successfully saved" message is displayed on the screen, the user can close the pop-up window.

Task Flow Diagram

Below, Figure 15 describes the task flow diagram of the above-described use case flow.

Legend for Task Flow Diagram



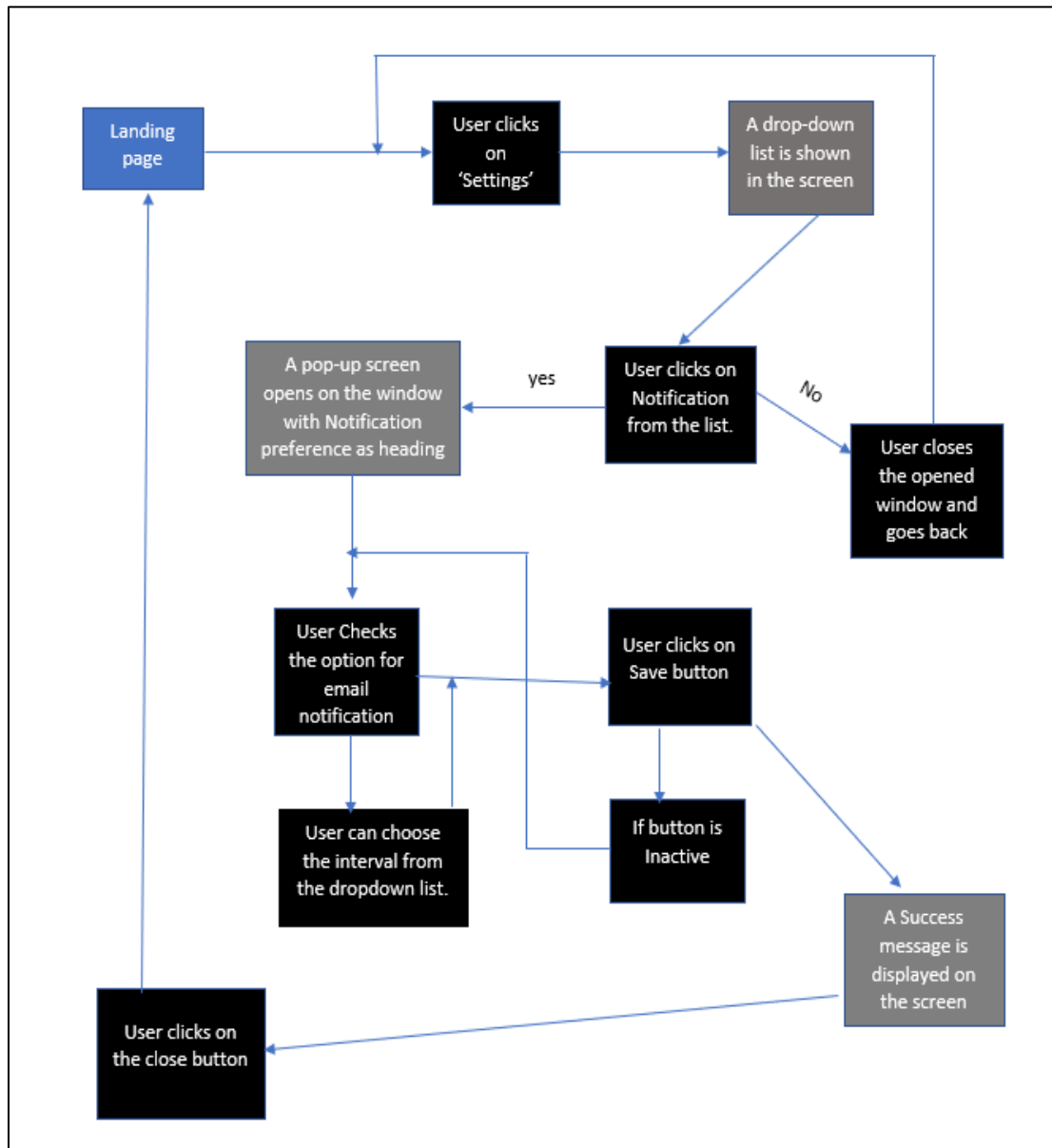


Figure 15 Task Flow diagram of "Enable notifications related to upcoming pickup to the Garbage Collector" by Srikrishnan Sengottai Kasi

Disable notification for the collector via email about his upcoming pickup task [Garbage Collector]

Scenario

Andrew accepts the job posted by Jane to collect the trash. He collects it every day on time and got used to the routine. One day he opens his email, and it was flooded with reminders. Those emails were spam, and he wants to stop the notifications from the website.

Use Case

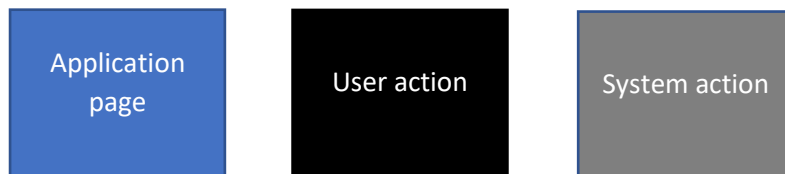
Assuming Andrew is the user and a registered Garbage collector in the application, he is logged into the application.

- 1) User clicks on the settings icon located in the top right of the screen.
- 2) User chooses the Notification option from the submenu displayed on the screen.
- 3) A pop-up window with Notification preferences is opened.
 - 3.2 If the window title is not Notification Preferences, the user goes to step 1.
- 4) User unchecks the "Notify me before one hour of the upcoming Pickup via email" with one hour shown as a default selected option in the dropdown field.
 - 4.3 The time interval is displayed as a dropdown list adjacent to the option.
 - 4.4 User selects the convenient option from the list.
- 5) User clicks on the Save option in the lower right bottom of the window.
 - 5.3 If user have already disabled and did not make any changes in the interval, then the Save option will be disabled.
 - 5.4 User will go to step 4.
- 6) Once the "Preferences are successfully saved" message is displayed on the screen, the user can close the pop-up window.

Task Flow Diagram

Below, Figure 16 describes the task flow diagram of the above-described use case flow.

Legend for Task Flow Diagram



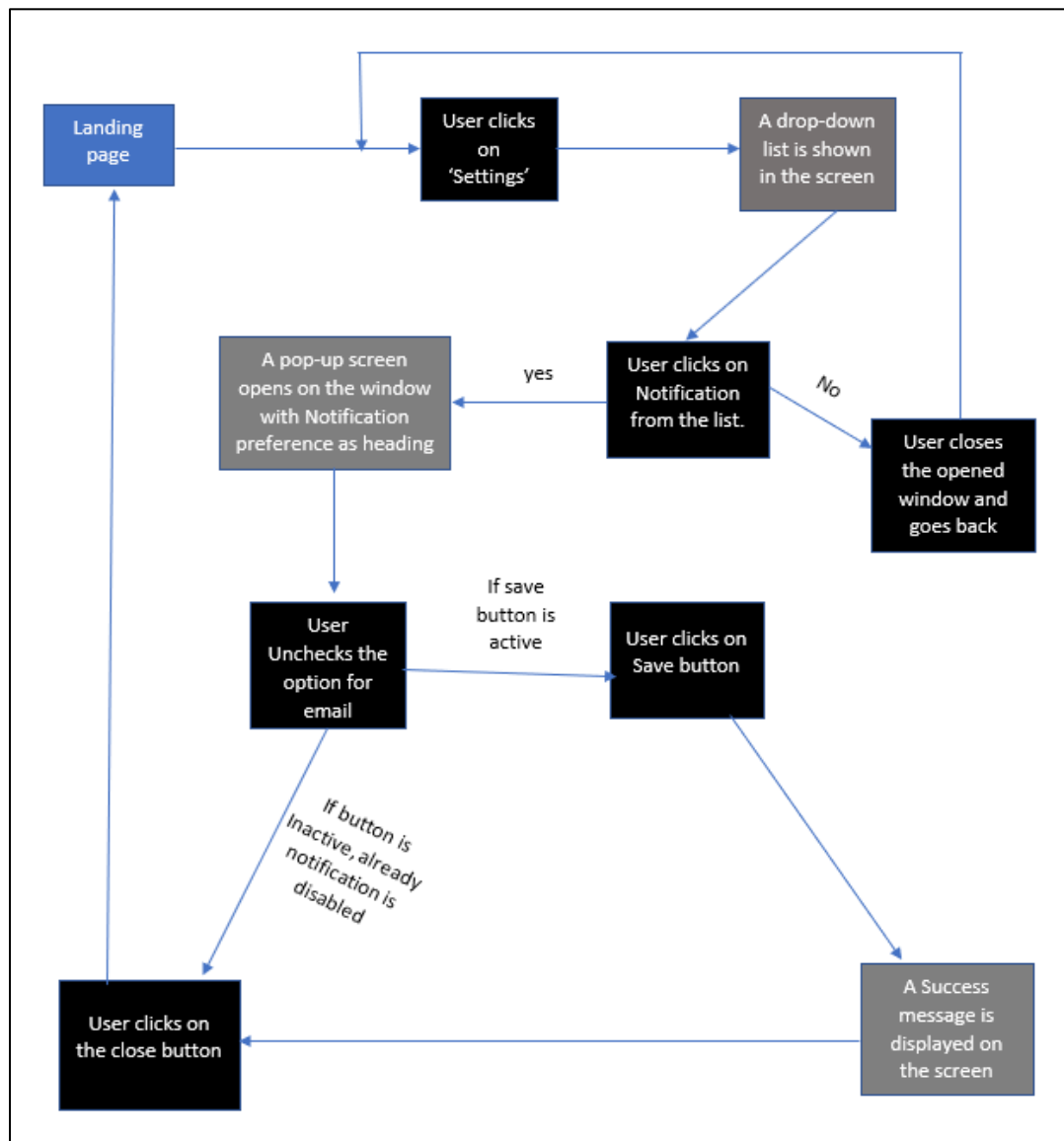


Figure 16 Task Flow diagram of "Disable notifications related to upcoming pickup to the Garbage Collector" by Srikrishnan Sengottai Kasi

Prototype

The prototype is created using the help of Adobe XD, Adobe Illustrator. The background design is inspired from FreePik website^[3]. Color combination is derived with the help of the Adobe Color tool. Green is chosen as primary because it relates to the emotion of keeping the environment clean. To make the elements look better, aiding white shade is chosen. It also supports our motive of keeping the surroundings clean. The vectors of man carrying the garbage to the recycle bin define the goal of our application which is to pick garbage from users and deposit it in the recycle bins appropriately. Below, Figure 17 and Figure 18 represent the prototype of the planned design. It just demonstrates only the flow associated with the Garbage depositor. When the depositor is logged into the application, he sees the landing page with the actions mentioned on the navigation bar. Figure 21 demonstrates the flow of settings being saved by the user by enabling the notifications.

Prototype link: <https://xd.adobe.com/view/0aad54d0-a03c-4e28-8b5b-35372682b98f-5ffe/>

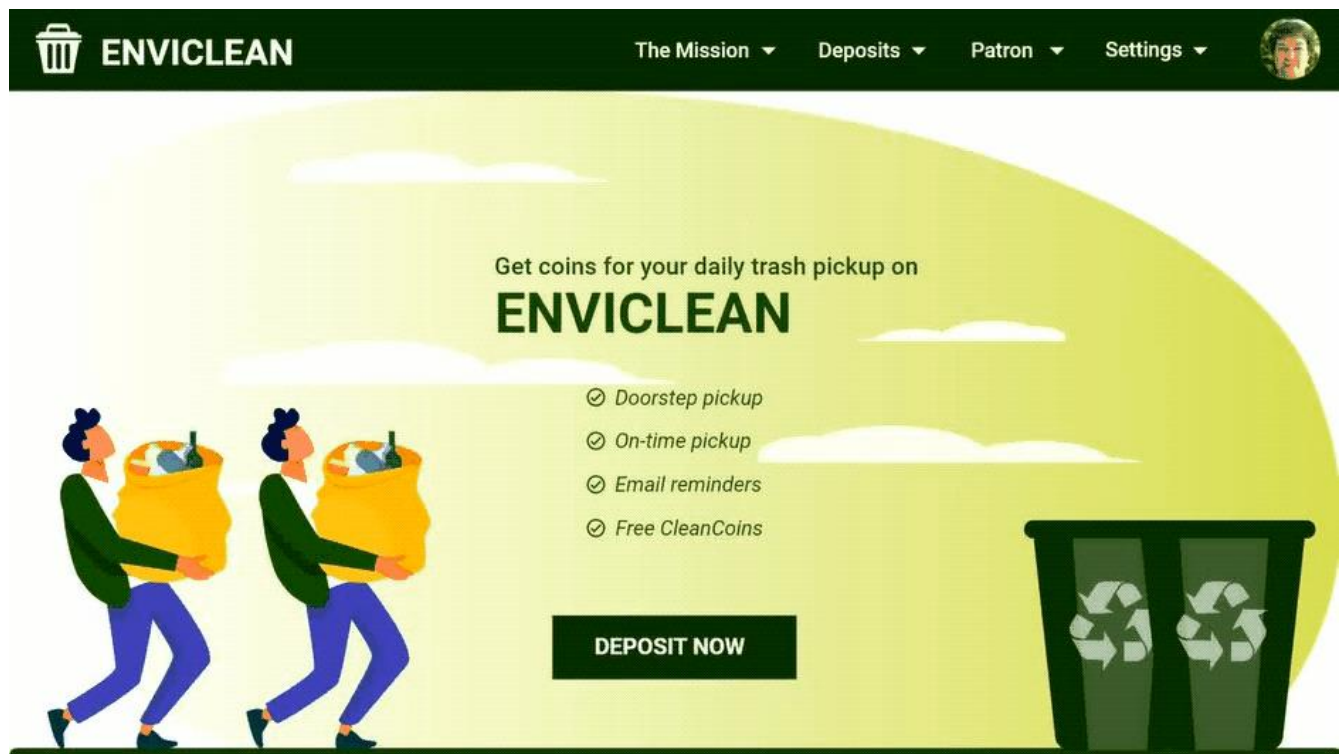


Figure 17 The landing page when depositor signs inside the application by Srikrishnan Sengottai Kasi

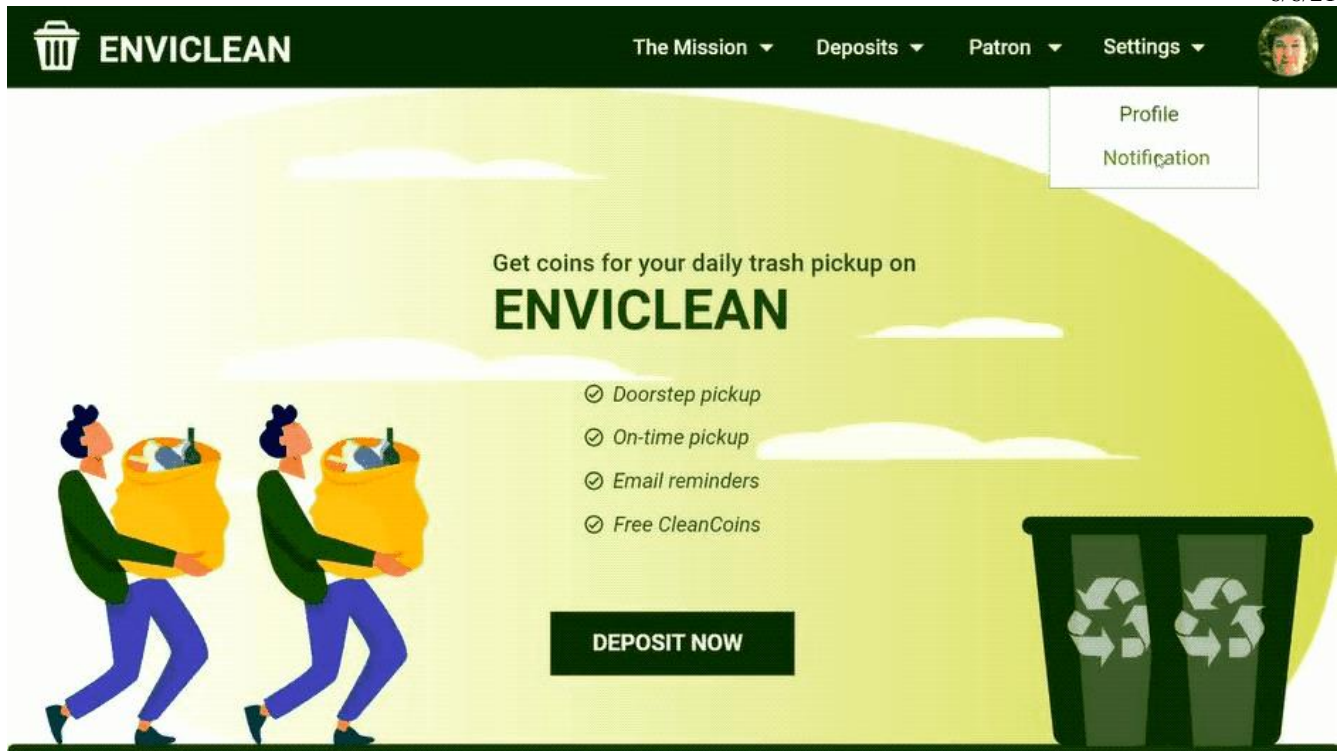


Figure 18 "The flow when depositor clicks on notification settings and save it successfully", designed by Srikrishnan Sengottai Kasi

Social Clean Reporter Management – EnviClean Patron

Feature owner: B00857606 – Dhruvil Amish Shah (dh416386@dal.ca)

Register as a social reporter and become an EnviClean Patron.

Scenario

Andrew wants to become a patron as being an environmentalist, and he wants to ensure that he can seamlessly and conveniently identify and treat all the trash and garbage he comes across without contacting any external organization.

Feature – Register as a social reporter and become a patron.

Need – To register patrons who will ensure environmental sustainability.

Context – For locating and treating the garbage.

Use Case

Assuming Andrew is already a registered user of EnviClean.

1. System displays EnviClean home page.
2. User clicks on the "EnviClean Patron" tab located on the navigation menu.
3. System displays the EnviClean patron page to the user.
4. User clicks on the "Enroll as Patron" button on the EnviClean patron page
5. System shows "Patron Terms and Conditions" dialogue to the user with two buttons, "Accept" and "Reject".
 - 5.1. User clicks on the "Reject" button.
 - 5.2. System displays "Terms and Conditions rejected" message and re-directs the user to the EnviClean patron page.
6. User clicks on the "Accept" button.
7. System re-directs the user to the EnviClean patron page.
8. System displays "Registered successfully. Create your first post" button.

Task Flow

Below figure 19 describes the task flow diagram of the above-described use case flow.

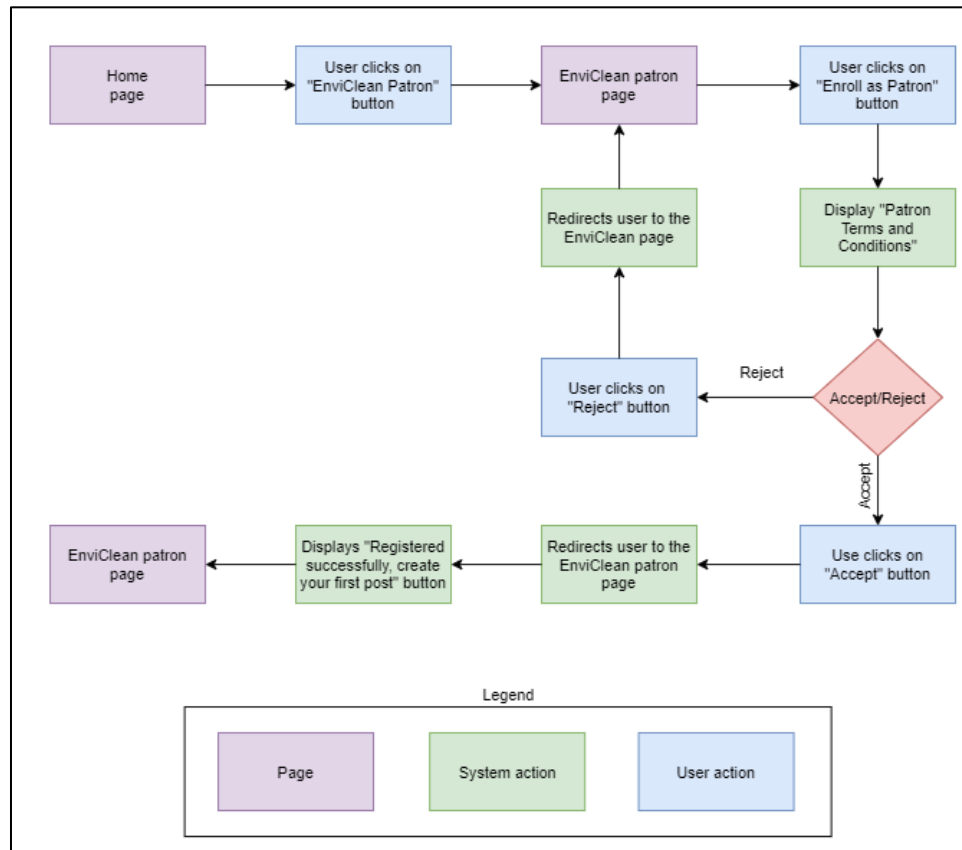


Figure 19 Task Flow diagram of "Register as a social clean reporter and become an EnviClean Patron" by Dhrumil Amish Shah.

Create a post regarding the garbage found.

Scenario

Jane wants to create a post regarding the garbage bags he came across while he was on his way to work so that garbage collectors working in that area can be intimated.

Feature – Report the garbage identified by creating a post.

Need – To notify about an untreated pile of trash.

Context – For creating a post of located garbage.

Use Case

Assuming Jane is already a registered user of EnviClean and EnviClean patron member.

1. System displays EnviClean home page.
2. User clicks on the "EnviClean Patron" tab located on the navigation menu.
3. System displays the EnviClean patron page to the user with all the posts created by other users.
4. System displays "Create New Post" card on the right side of the EnviClean patron page.

5. User enters the necessary information required to create a post.
 - 5.1. User enters the street address.
 - 5.1.1. System displays "Street address entered is incorrect."
 - 5.1.2. User enters the correct street address.
 - 5.2. User enters the city.
 - 5.2.1. System displays "City entered is incorrect."
 - 5.2.2. User enters correct city.
 - 5.3. User enters province.
 - 5.3.1. System displays "Province entered is incorrect."
 - 5.3.2. User enters correct province.
 - 5.4. User enters zip code.
 - 5.4.1. System displays "Zip code entered is incorrect."
 - 5.4.2. User enters correct zip code.
 - 5.5. User uploads image.
6. User clicks the "Create" button.
7. System displays "Post created successfully".
8. System displays all the posts with a newly created post on top.

Task Flow

Below figure 20 describes the task flow diagram of the above-described use case flow.

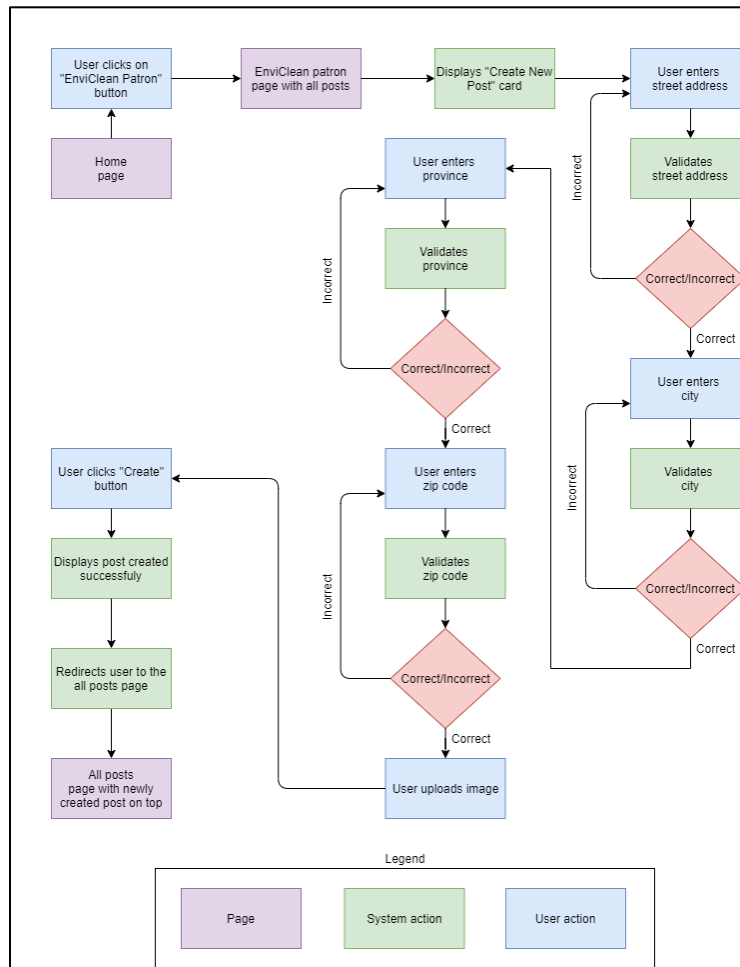


Figure 20 Task Flow diagram of "Create a post regarding the garbage found" by Dhrumil Amish Shah.

View posts created by other users in the vicinity.

Scenario

Andrew wants to view the posts created by others to gather details of the work they have done and the status of their posts to learn if the waste was taken care of properly and know the places that accumulate most garbage in his vicinity.

Feature – View posts created by other users.

Need – To gather information about the posts created by others and learn about the locations in the user's vicinity which accumulate more trash.

Context – To view the status of the posts created by other users and learn more details about the posts.

Use Case

Assuming Andrew is already a registered user of EnviClean and EnviClean patron member.

1. System displays EnviClean home page.

2. User clicks on the "EnviClean Patron" tab located on the navigation menu.
3. System displays the EnviClean patron page to the user with all the posts created by other users.
4. System displays a search bar where the user can enter a pin code.
5. User enters the zip code in the search bar.
 - 5.1. System displays "Zipcode entered is incorrect."
 - 5.2. User enters correct zip code.
6. User clicks search icon.
7. System displays all the posts in the location entered by the user.

Task Flow

Below figure 21 describes the task flow diagram of the above-described use case flow.

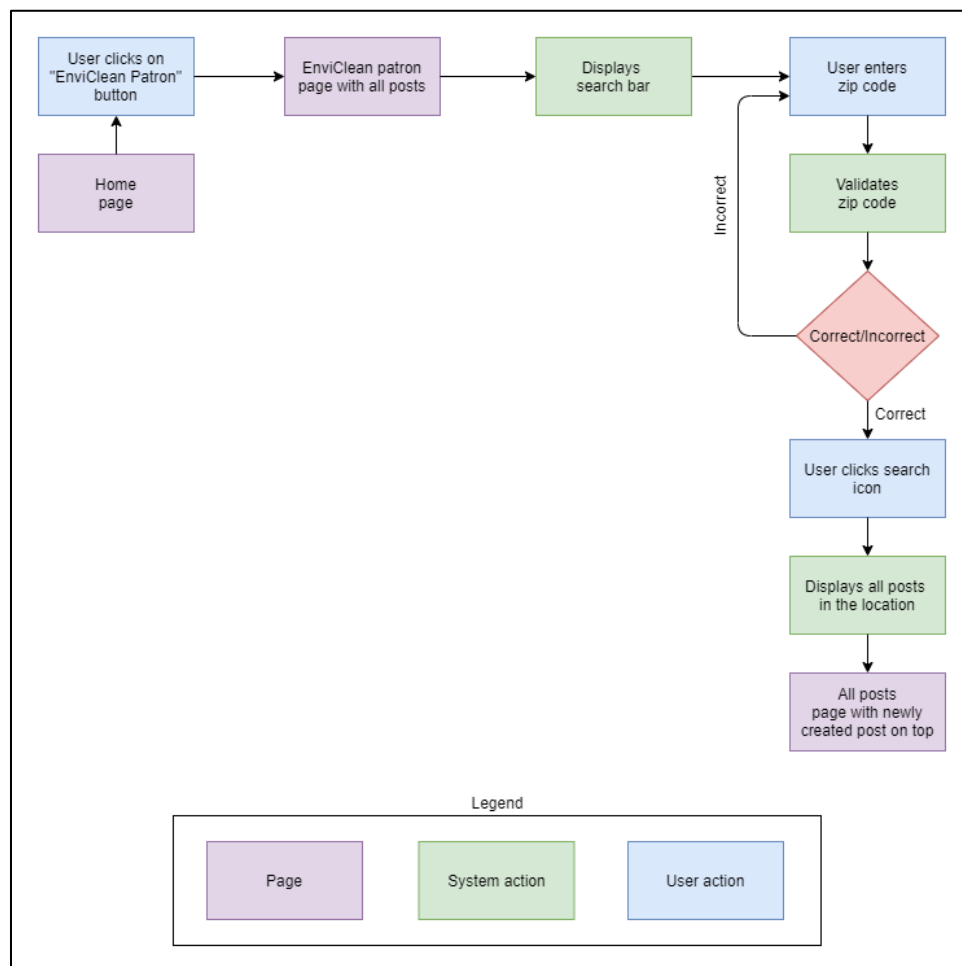


Figure 21 Task Flow diagram of "View posts created by other users in the vicinity" by Dhrumil Amish Shah.

View posts created by users themselves.

Scenario

Jane wants to view the status of all the posts created by himself earlier to ensure that the reported garbage was treated appropriately.

Feature – View the status of posts created earlier by the user himself.

Need – To gather information about his created posts and learn if the trash was appropriately treated.

Context – To view the status of his created posts.

Use Case

Assuming Jane is already a registered user of EnviClean and EnviClean patron member.

1. System displays EnviClean home page.
2. User clicks on the "EnviClean Patron" tab located on the navigation menu.
3. System displays the EnviClean patron page to the user.
4. System displays the "My Posts" button.
5. User clicks on the "My Posts" button.
6. System displays all the posts created earlier by the user and their status.

Task Flow

Below figure 22 describes the task flow diagram of the above-described use case flow.

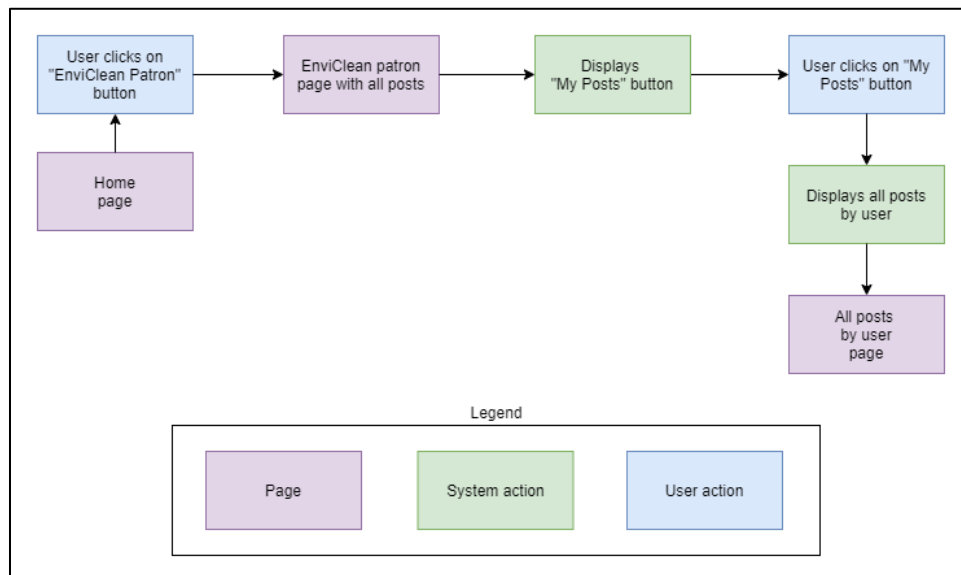


Figure 22 Task Flow diagram of "View posts created by users themselves" by Dhrumil Amish Shah.

Prototype

The prototype is developed with the help of Figma. The design is simple, transparent, and follows a minimalistic design approach to ensure that the user is not diverted from the intended flow. A green color shade for the navigation bar and button is primarily chosen as it is associated with a clean environment. Also, to make the center card stand out, elevation and shadow effect is used.

Prototype Figma Link

- <https://www.figma.com/file/EgFQpTL3LK6oXDuZcObkhA/DhruMil-Amish-Shah-A1-EnviClean>

Prototype Video Link

- <https://www.figma.com/proto/EgFQpTL3LK6oXDuZcObkhA/DhruMil-Amish-Shah-A1-EnviClean?node-id=1%3A2&scaling=scale-down&page-id=0%3A1>

Webpage Link

- <https://dhrumil-amish-shah-a1enviclean.herokuapp.com/>

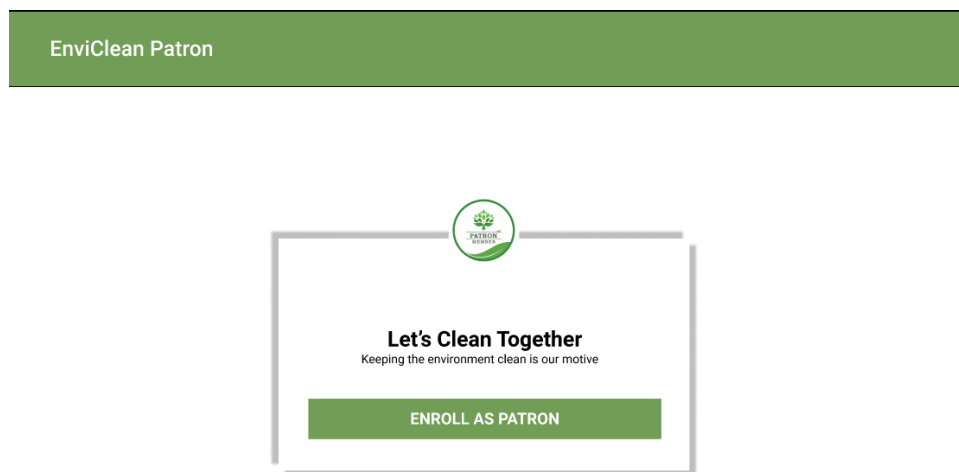


Figure 23 Wireframe of "Register as an EnviClean Patron" by DhruMil Amish Shah.

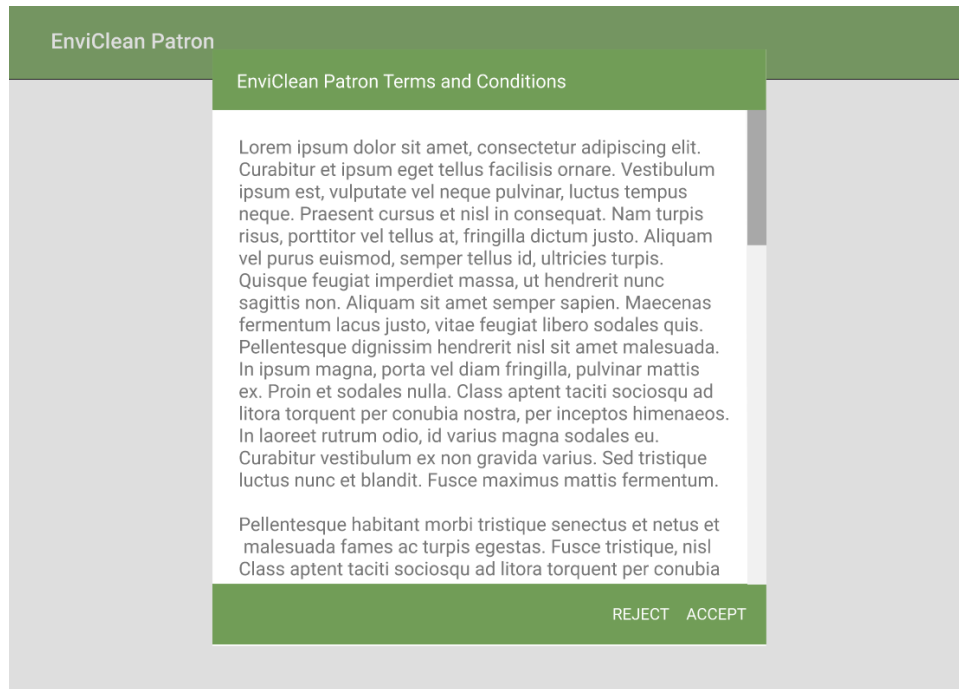


Figure 24 Wireframe of "Terms and Conditions when user clicks on Enroll as Patron" by Dhrumil Amish Shah.

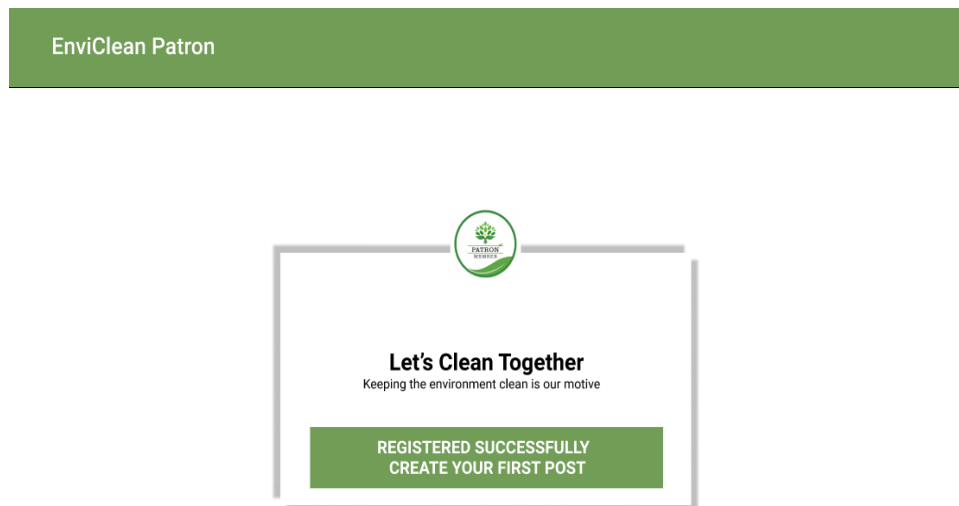


Figure 25 Wireframe of "Registered successfully. Create your first post when user clicks Accept" by Dhrumil Amish Shah.

Garbage Depositor Management.

Feature Owner: B00881894 -Sriram Attanti (sr601872@dal.ca)

To Schedule a Deposit

Scenario

There are about 20 kgs of dry waste lying around for two days. Jane wants to schedule a garbage deposit tomorrow at 10:00 AM and dispense it.

Persona: Senior Citizen.

Task: Schedule a garbage deposit at 10:00 AM tomorrow.

Feature: Garbage Depositor Management.

Need: To deposit the garbage.

Context: 20 kg of dry waste lying for two days.

Use case

Assumptions

It is assumed that the garbage depositor user is logged into the system and on the landing page.

1. User clicks on the Deposit Now button on the screen.
2. The system displays the Schedule a deposit form.
3. The user enters the task name.
4. The user selects one or more checkboxes from available types of garbage like dry waste, wet waste, medical waste, and others.
5. The user enters the approximate weight of the garbage in Kilograms.
6. The user selects a schedule deposit for once or daily, or weekly.
7. The user enters the deposit time.
8. The user enters the deposit Address.
9. The user enters the depositor's contact number.
10. The user enters comments if there are any.
11. The user submits the task.
 - 11.1. The system displays to enter task name.
 - 11.2. The system displays to select at least one type of garbage.

- 11.3. The system displays to enter the approximate weight of the garbage in kilograms.
 - 11.4. Enter a valid number in garbage weight.
 - 11.5. The system displays to select a deposit time.
 - 11.6. Enter a valid deposit time.
 - 11.7. The system displays to enter the address.
 - 11.8. The system displays to enter a contact number.
 - 11.9. Enter a valid contact number.
12. The system displays the list of deposit requests created by the user and the latest submitted deposit request.

Task Flow

Figure 26 provides the usability mapping for scheduling a deposit request based on the schedule of a deposit use case.

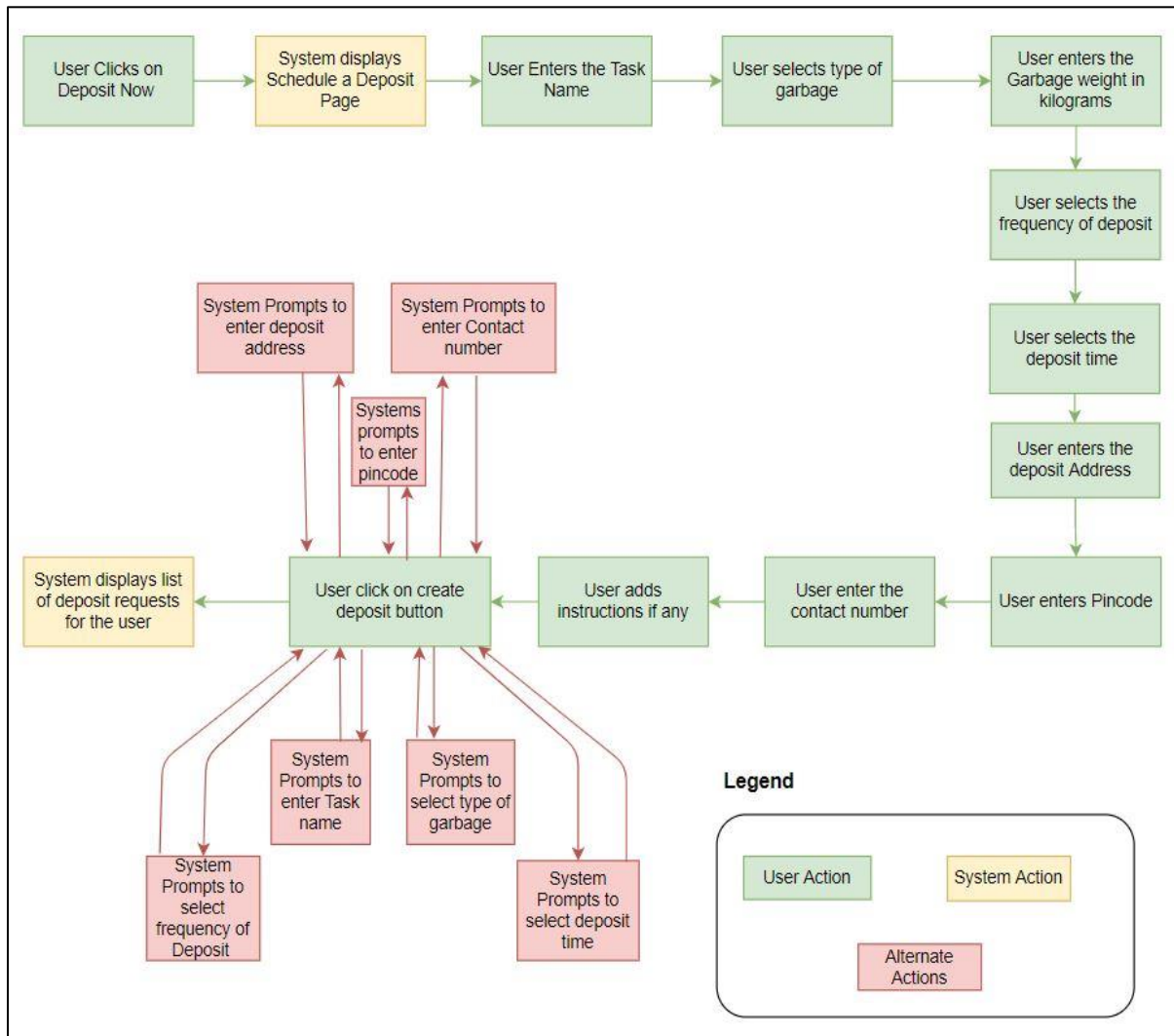


Figure 26 Schedule a deposit task flow diagram developed by Sriram Attanti.

To view the created Deposit request for the user

Scenario

Jane wants to check if pick-up is confirmed for the scheduled garbage deposit at 10:00 AM tomorrow so that she can schedule her doctor appointment at 10: 30 AM.

Persona: Senior Citizen.

Task: View scheduled deposit.

Feature: Garbage Depositor Management.

Need: To check if pickup is confirmed.

Context: To schedule a doctor's appointment.

Use case

Assumptions

It is assumed that the garbage depositor user is logged into the system and on the landing page

1. The user clicks to My Deposits.
2. The system displays the list of deposit requests created by the user.
 - 2.1. The system displays no deposit requests created by the user.

Task Flow

Figure 27 provides the usability mapping for viewing deposits created by the user based on the view deposits use case.

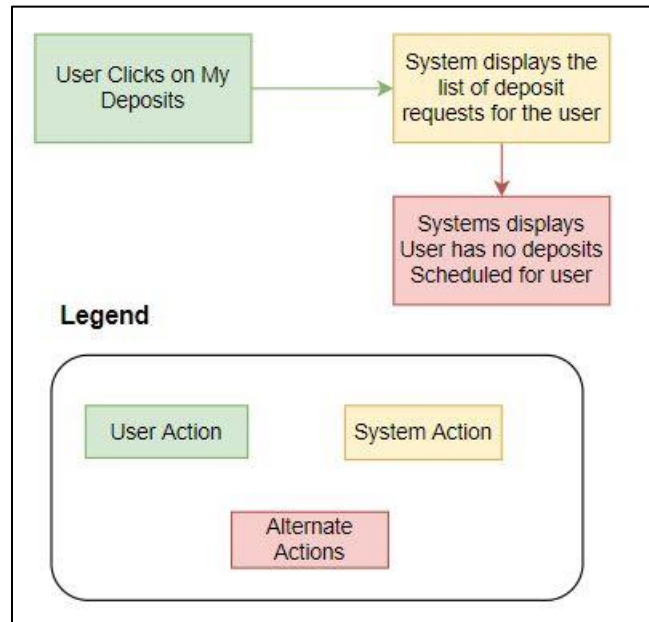


Figure 27 Viewing deposits created by user task flow diagram developed by Sriram Attanti.

To Modify the Scheduled Deposit Request

Scenario

Jane wants to change the time of scheduled garbage deposit from tomorrow at 10:00 AM to tomorrow at 12:00 PM so that she can go out and get medicines at 10:00 AM.

Task: Modify scheduled deposit requests.

Feature: Garbage Depositor Management.

Need: To change deposit time from 10:00 AM to 12:00 PM tomorrow.

Context: To get medicines at 10:00 AM.

Use case

Assumptions

It is assumed that the garbage depositor user is logged into the system and on the landing page

1. The user clicks to My Deposits.
2. The system displays the list of deposit requests created by the user.
 - 2.1. The system displays no deposit requests created by the user.
3. The user clicks on the modify button for a particular deposit request user wants to modify.
4. The system displays the Deposit details.
5. The user to modify the parameter/s.
6. The user saves the deposit request.
 - 6.1. The system displays to enter task name.
 - 6.2. The system displays to select at least one type of garbage.
 - 6.3. The system displays to enter the approximate weight of the garbage in kilograms.
 - 6.4. Enter a valid number in garbage weight.
 - 6.5. The system displays to select a deposit time.
 - 6.6. Enter a valid deposit time.
 - 6.7. The system displays to enter the address.
 - 6.8. The system displays to enter a contact number.
 - 6.9. Enter a valid contact number.
7. The system displays the list of deposit requests created by the user.

Task Flow

Figure 28 provides the usability mapping for modifying a scheduled deposit based on the modified deposit use case.

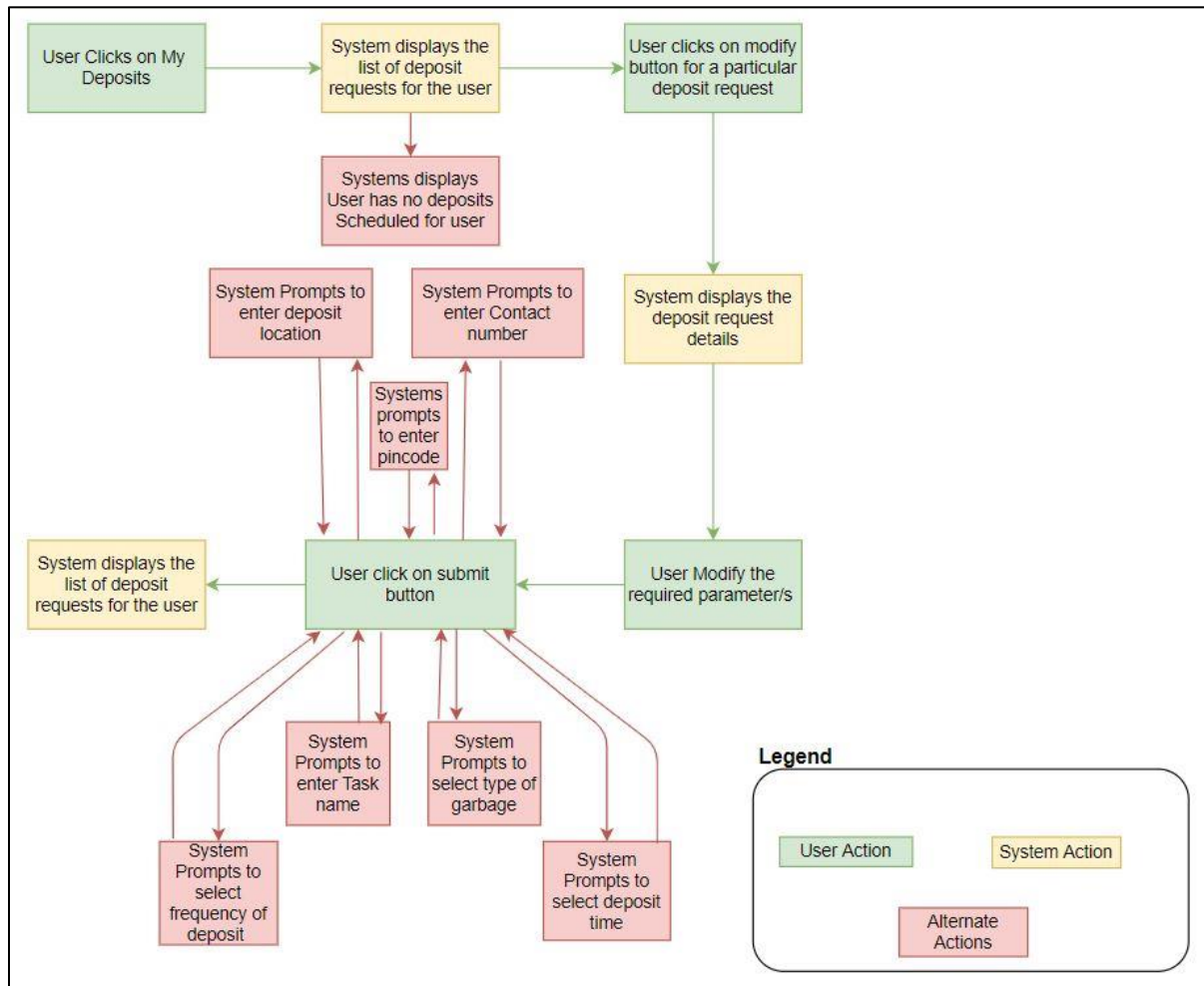


Figure 28 Modifying a scheduled deposit task flow diagram developed by Sriram Attanti.

To Delete the Scheduled Deposit Request

Scenario

Duke has disposed of the dry waste, so Jane wants to delete the scheduled garbage deposit scheduled for tomorrow at 12:00 PM.

Persona: Senior Citizen.

Task: Delete scheduled deposit.

Feature: Garbage Depositor Management.

Need: Dry waste is disposed of, wants to delete the deposit request.

Context: Dry waste was disposed of, so wants to delete tomorrow 12:00 PM scheduled garbage deposit.

Use case

Assumptions

It is assumed that the garbage depositor user is logged into the system and on the landing page

1. The user clicks to My Deposits.
2. The system displays the list of deposit requests created by the user.
 - 2.1. The system displays no deposit requests created by the user.
3. The user clicks on the delete button for a particular deposit request user wants to delete.
4. System displays a confirmation message to delete the deposit request.
5. The user clicks on confirm to delete the request.
6. The system displays the list of deposit requests created by the user.

Task Flow

Figure 29 provides the usability mapping for deleting a scheduled deposit based on the delete deposit use case.

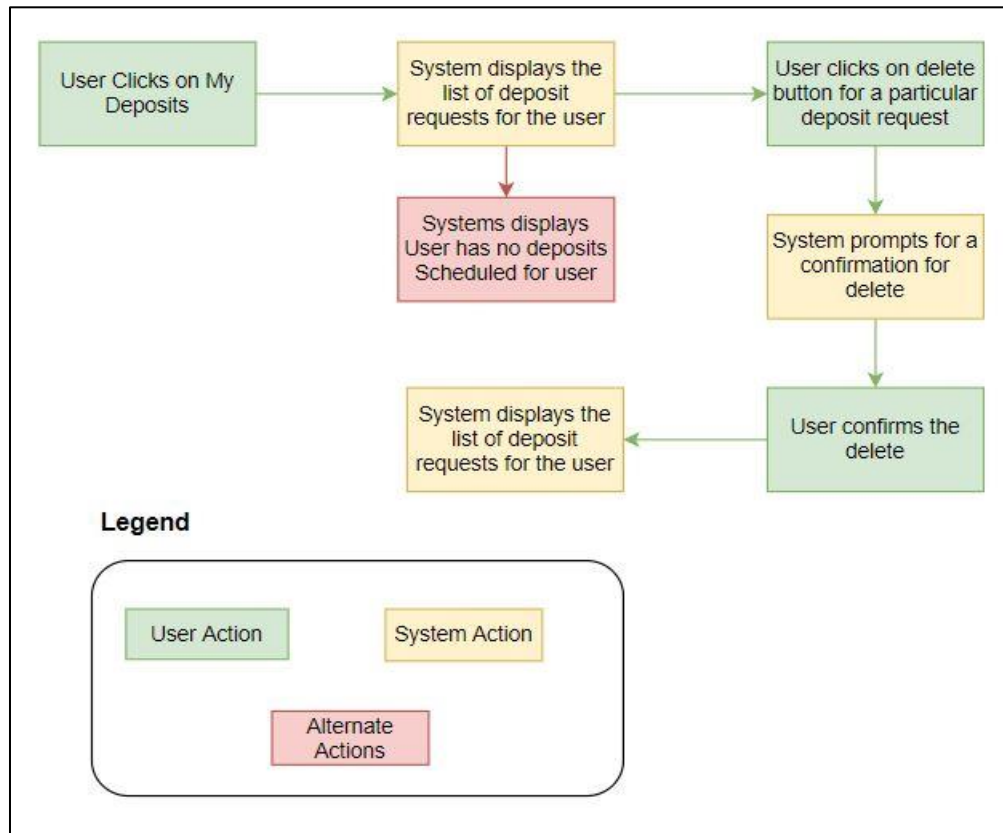
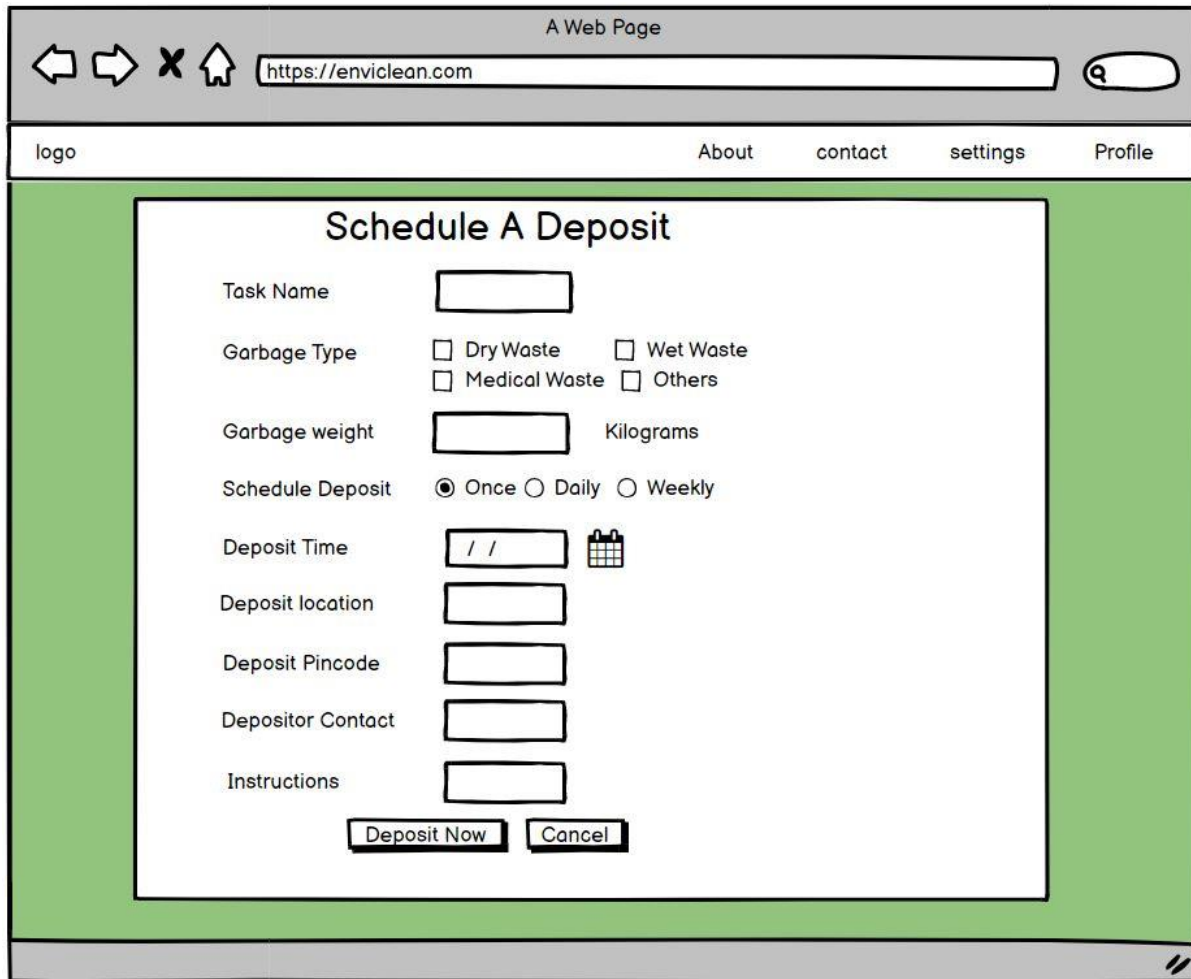


Figure 29 Deleting a scheduled pickup task flow diagram developed by Sriram Attanti.

Prototype

Figure 30 shows the low fidelity prototype using a wireframe. The background color is based on the mixture of green and yellow, which depicts spoiled land with dry grass. The Navigation bar color is planned to be green as it shows more on the application goal to protect the environment. The form to schedule a Deposit consists of various details required from the depositor to pick the garbage. The collector will be assigned based on the pin code. All fields are mandatory except instructions, and errors will be thrown if the respective criteria are not met. The depositor can schedule a task from one to weekly according to their specification. Upon meeting all the criteria, the form is submitted successfully.



The wireframe shows a web browser window titled "A Web Page" with the URL "https://enviclean.com". The browser has navigation buttons (back, forward, stop, home) and a search bar. Below the browser is a navigation bar with "logo", "About", "contact", "settings", and "Profile". The main content area is titled "Schedule A Deposit" and contains the following form elements:


- Task Name:
- Garbage Type: ☐ Dry Waste ☐ Wet Waste ☐ Medical Waste ☐ Others
- Garbage weight: Kilograms
- Schedule Deposit: ☒ Once ☐ Daily ☐ Weekly
- Deposit Time: / / 
- Deposit location:
- Deposit Pincode:
- Depositor Contact:
- Instructions:
- Buttons:

Figure 30 Wireframe for scheduling a deposit developed by Sriram Attanti.

Garbage Collection Management System.

Feature owner: B00872268 - Parth Dinesh Thummar (parth.thummar@dal.ca)

View the garbage collection requests.

Scenario

Andrew wants to see if any user's garbage collection request has been placed in his location (Pin code) so that he can pick the task and pick-up the garbage on the user requested time.

Task: View pick-up requests scheduled by the user in his location (Pin code).

Persona: Environmental Activist.

Feature: Garbage Collection management System.

Context: To see if Andrew can find the pick-up request which is convenient for him to pick-up.

Use Case

Assumption

It is assumed that the user is logged into the system.

1. User clicks on the view task button from the dashboard.
2. System displays the page to the user for garbage collection.
3. User enters the pin code.
 - 3.1 System displays incorrect pin code.
 - 3.2 User enters the correct pin code again.
4. System displays All the pick-up requests in the location to the user.
 - 4.1 System displays No pick-up requests to the user.

Task Flow

Figure 31 demonstrates the usability mapping for viewing the pick-up requests placed by garbage depositor.

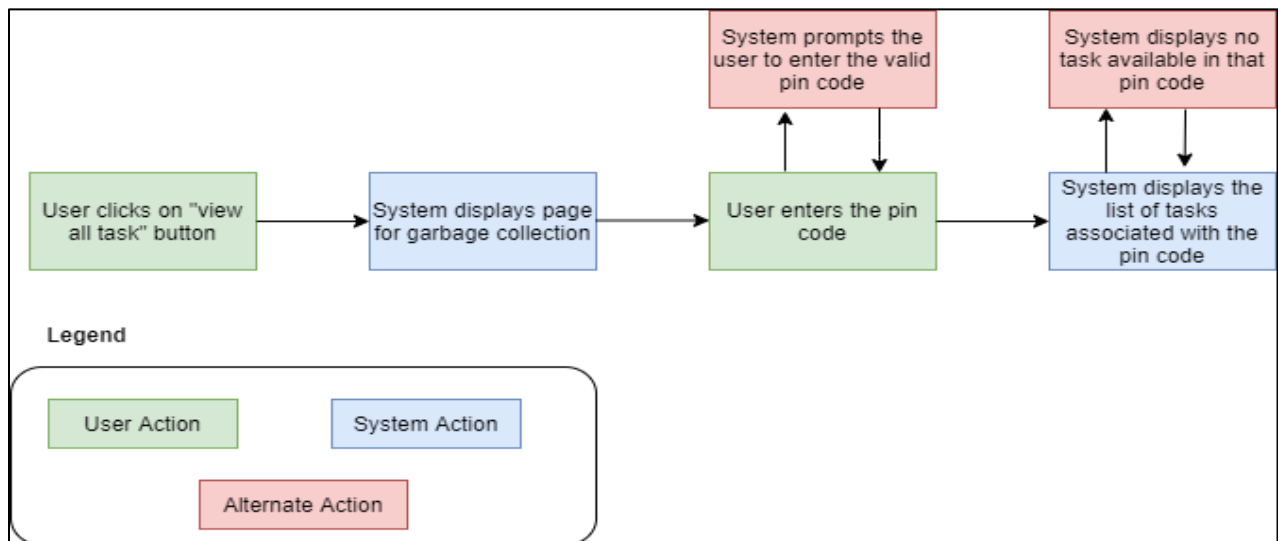


Figure 31 Wireframe for viewing the pick-up requests developed by Parth Thummar.

Pick-up the garbage collection request.

Scenario

Andrew has already decided which task he wants to complete or which garbage collection request he wants to take and pick.

Task: Select one pick-up request and pick it.

Persona: Environmental Activist.

Feature: Garbage Collection management System.

Context: He wants to take the garbage collection request posted by the user and collect the garbage from the specified location.

Use case

Assumption

It is assumed that the user is logged into the system.

1. User clicks on the "view all task" button from the dashboard.
2. System displays the page to the user for garbage collection.
3. User enters the pin code.
 - 3.1 System displays incorrect pin code.
 - 3.2 User enters the correct pin code again.
4. System displays all the pick-up requests in the location to the user.
 - 4.1 System displays no pick-up requests to the user.
5. User decides to select any one pick-up request.
6. User presses the pick button corresponding to that single decided task.
 - 6.1 At the same time, someone selects and picks the same task. Hence conflict occurs.
 - 6.2 System displays the proper error message.
 - 6.3 System re-directs the user to the initial list of tasks.
7. System assigns the task to the user.
8. System moves that task to the user's personal task list.

Task Flow

Figure 32 provides the usability mapping for picking up the garbage collection request placed by the depositor.

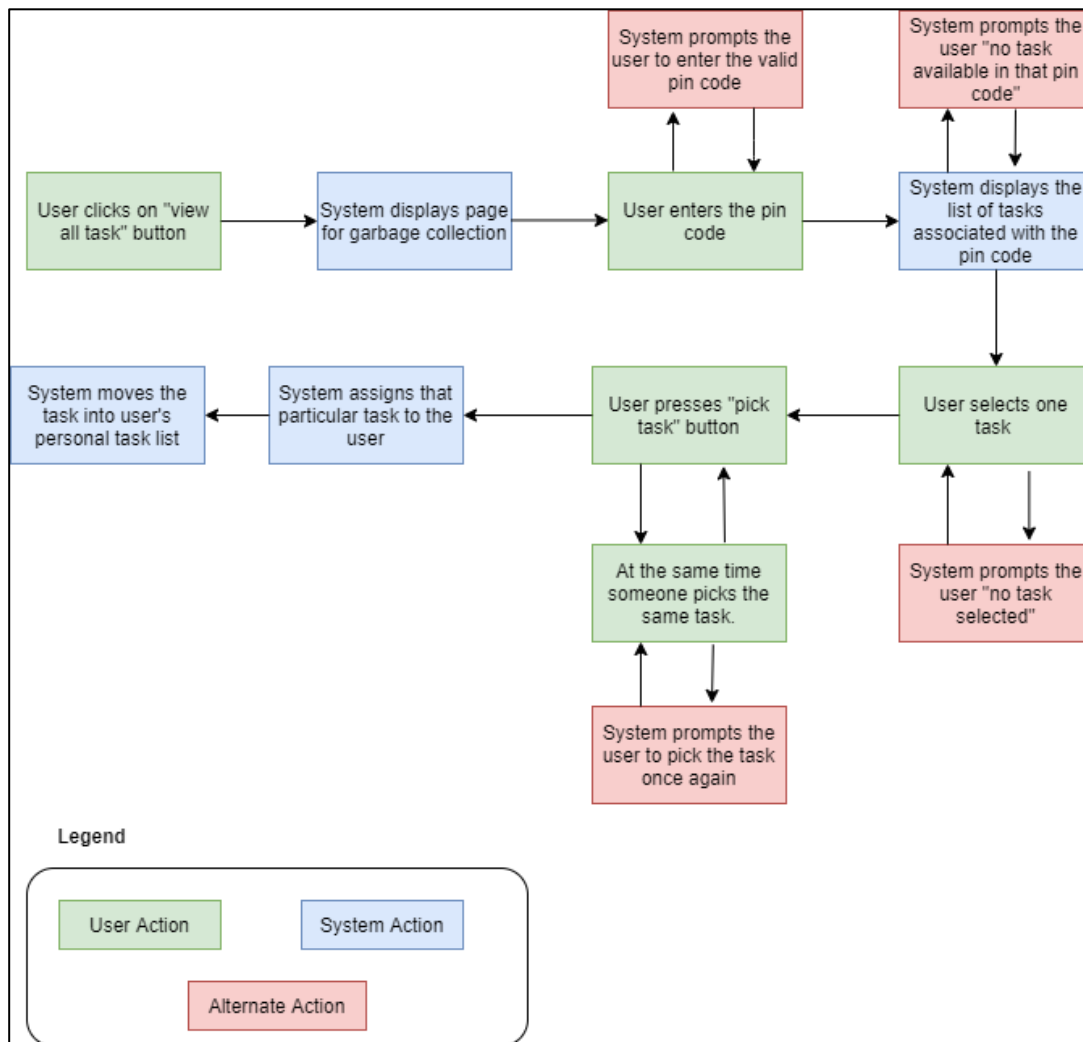


Figure 32 wireframe for picking up the garbage collection request developed by Parth Thummar.

Discard the already taken task.

Scenarios

Andrew has already picked the task, but he cannot pick-up the garbage due to some reason. Hence, he wants to unpick the task.

Task: Select an already picked task and unpick it or remove it from his list of tasks.

Persona: Environmental Activist.

Feature: Garbage Collection management System.

Context: As he cannot fulfill the garbage collection request, he wants to remove that particular task from his list of tasks.

Use case

Assumption: It is assumed that the user is logged into the system.

1. User clicks on the "view my task" button from the dashboard.
2. System displays user's task which was assigned by user.
 - 2.1. System displays "no task available".
3. User selects a particular task that he/she wants to unpick.
 - 3.1. User selects no task.
4. After selecting the task, the user presses the " unpick " button.
5. System removes the selected task from the user's list of tasks.
6. System displays the selected task in the list of all tasks.

Task Flow

Figure 33 provides the usability mapping for discarding the already taken task so that others can pick that task again.

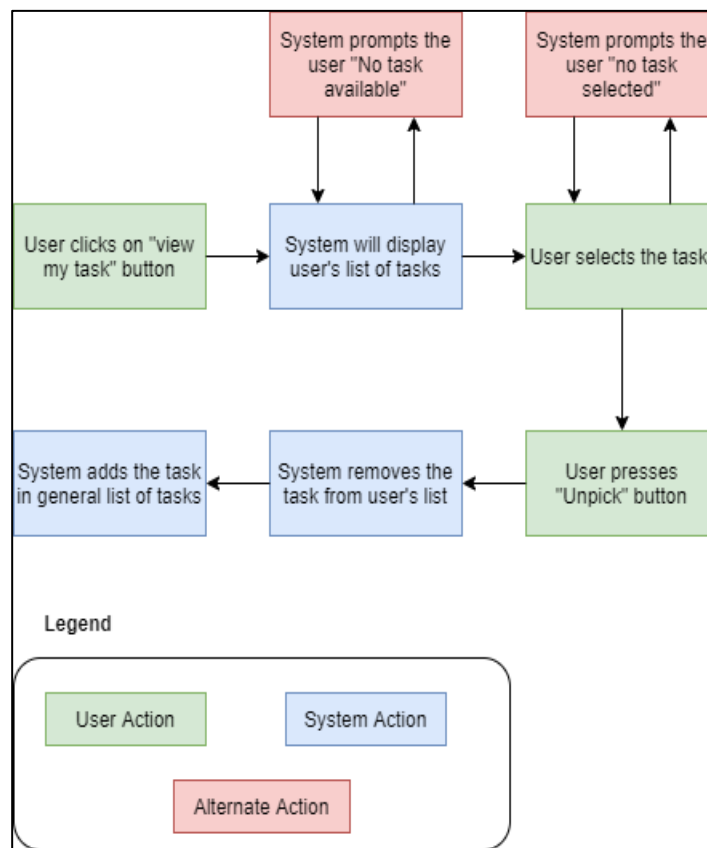


Figure 33 wireframe for discarding the already taken garbage collection request developed by Parth Thummar.

Prototype

Figure 34 depicts the low fidelity prototype using a wireframe. It is developed using the Balsamiq tool. The main screen's background color is dark green, which signifies cleanliness, while the background color of the list of tasks is light green, which is a perfect match for the main screen color and gives the web page an overall clean appearance. The upper right corner of the page has a search bar that accepts the pin code as an input. Additionally, at the top of the page, there are two tabs labeled "view all task" and "view my task." The "view all task" tab, as the name implies, shows all of the garbage collection requests made by the depositor, whereas the "view my task" tab shows the collector's personal job list.

Prototype link: <https://balsamiq.cloud/snm10qn/pwwi5ay>

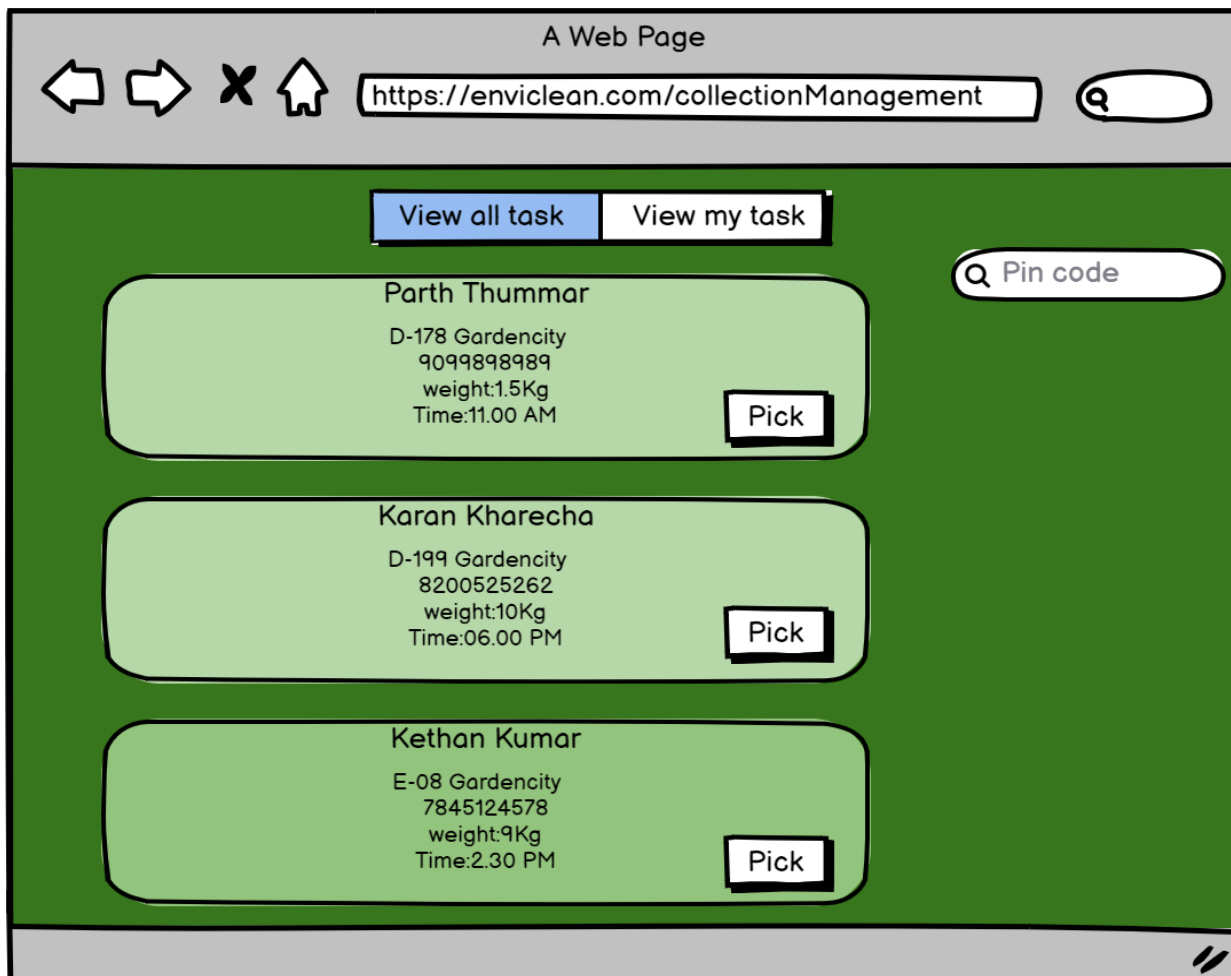


Figure 34 Low Fidelity prototype for viewing the garbage collection requests developed by Parth Thummar.

References

- [1] diagrams.net - free flowchart maker and diagrams online, "Flowchart Maker & Online Diagram Software," Diagrams.net, 2021. [Online]. Available: <https://app.diagrams.net/>. [Accessed: 27-May-2021].
- [2] "Photoshop free trial and free download | Adobe Photoshop," Adobe.com, 2021. [Online]. Available: <https://www.adobe.com/in/products/photoshop/free-trial-download.html>. [Accessed: 30-May-2021].
- [3] "Freepik," *Freepik*, 2020. <https://www.freepik.com/vectors/people> [Accessed Jun. 06, 2021].
- [4]"Balsamiq Cloud", *Balsamiq.cloud*, 2021. [Online]. Available: <https://balsamiq.cloud/sektshi/ppyp610/r2278>. [Accessed: 04- Jun- 2021].
- [5] Figma. 2021. *Figma: the collaborative interface design tool*. [online] Available at: <https://www.figma.com> [Accessed 6 June 2021].