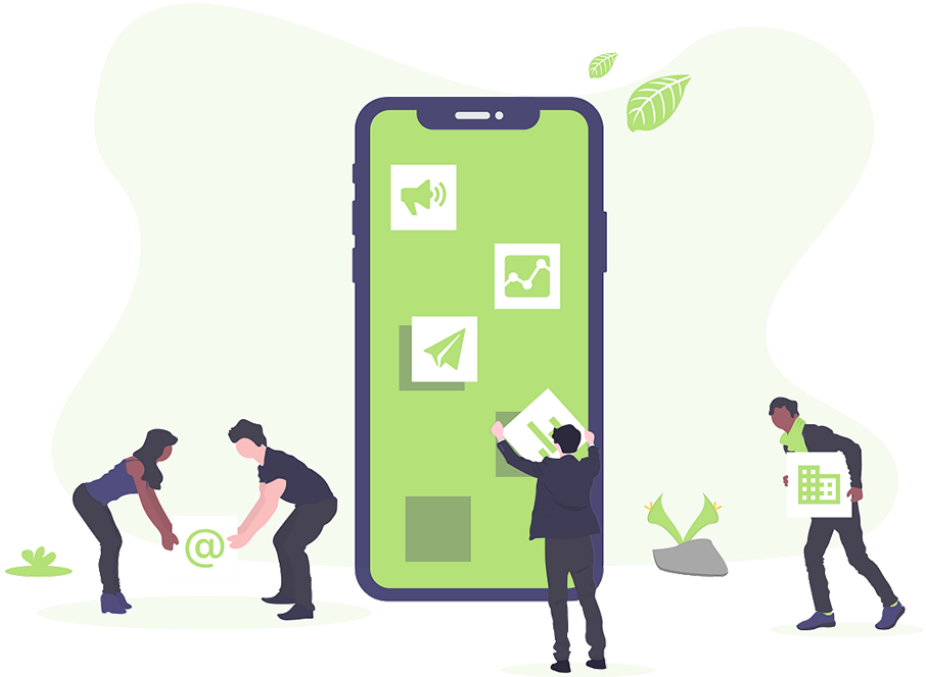
Green Routine

Huang Zhengjie Terry
Ivo Janssen
Low Yu Benedict
Ng Jin Han Benedict
Yuen Kim Hwee



Discussions and Content

1. Introduction
2. Application Overview and Demo
3. Design Considerations and Scalability
4. Use Case Analysis
5. Testing (Black Box and White Box)

Hello!

We are Green Routine!

To work towards a greener society by making **recycling** more **accessible** and **convenient**.

“Cash-for-Trash is an incentive programme by Public Waste Collectors, where **residents** may bring their recyclables to the Cash-for-Trash stations and **cash is given in exchange** …”

Source: nea.gov.sg/our-services/waste-management/3r-programmes-and-resources/recycling-collection-options

2. Application Overview

Application Features

One-Stop Application

Discover Cash-for-trash locations. **Ask** a question, get answers. **Calculate** your monetary returns. **Read** the latest worldwide news on recycling.

We have them all here!

iOS and Android

With the focus on **accessibility**, this application is coded in **React Native,** allowing for both iOS and Android production.

User Friendly and Intuitive Design

A **carefully crafted UI/UX** design, simplifying navigation to only the most meaningful tasks.

Functional Requirements

1. The system must allow the User to **register a new account**.

1. The system must allow the user to **login** using with a **valid account**.

1. The system must be able to **retrieve the user's device location** using the Geolocation API.

1. The system must allow the user to **search** for **information of Cash-for-trash sites**.

1. The system must allow the user to **filter sites** displayed on the map.

6. Users must be able to **access a Frequently Asked Question** page.

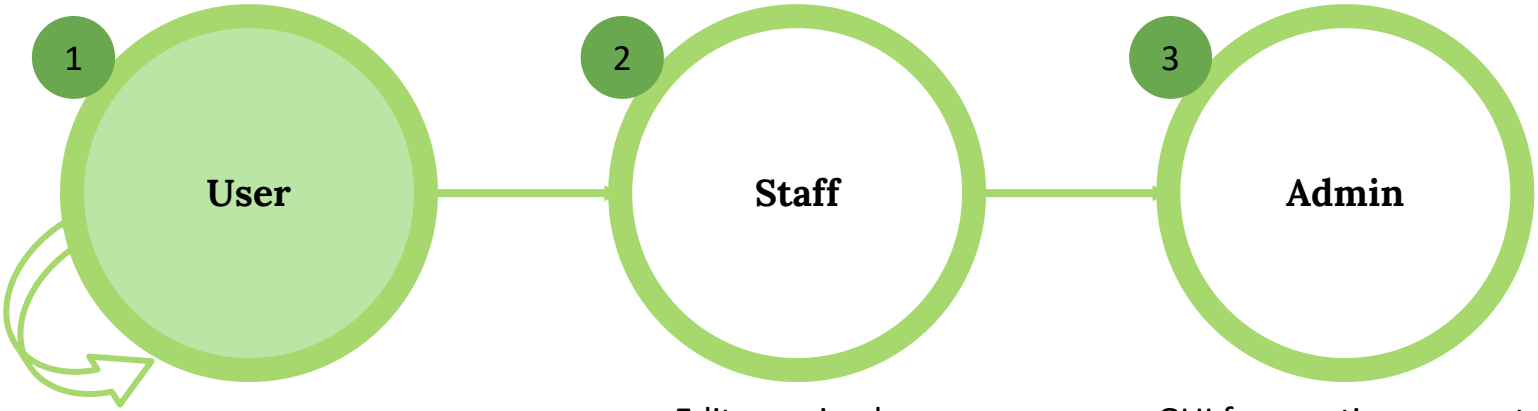
6. The system must allow the user to **view** their inbox for **messages sent**, and **check for replies**.

6. System must be able to **retrieve the site's information** from the API provided by data.gov.sg.

6. The system shall **display environmental news** on the home page.

3. Design Considerations and Scalability

Envisioned Development Phases



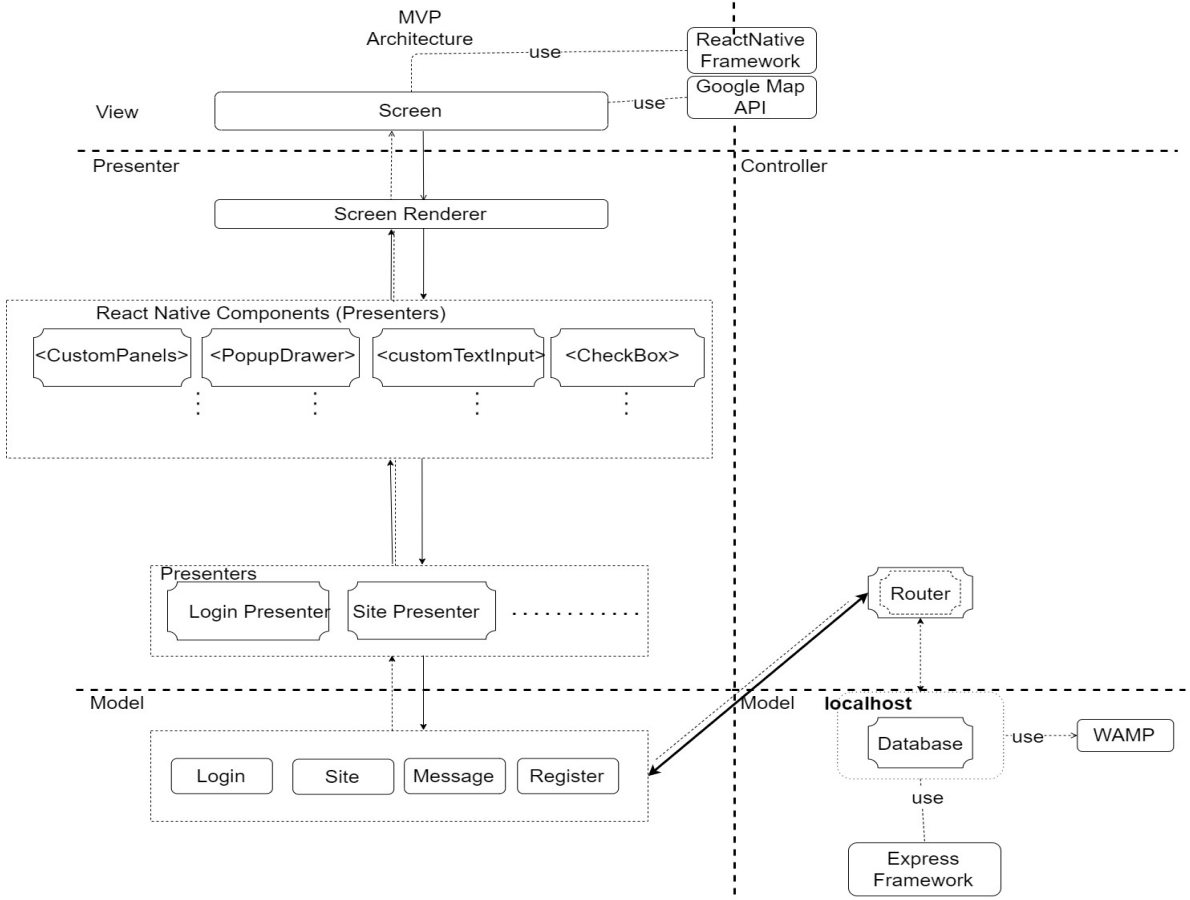
- Forum Page
- Other green initiatives

- Edit opening hours
- Edit recyclables
- Edit rates

- GUI for creating accounts
- GUI for creating new sites
- GUI to create a new type of recyclable

System Design

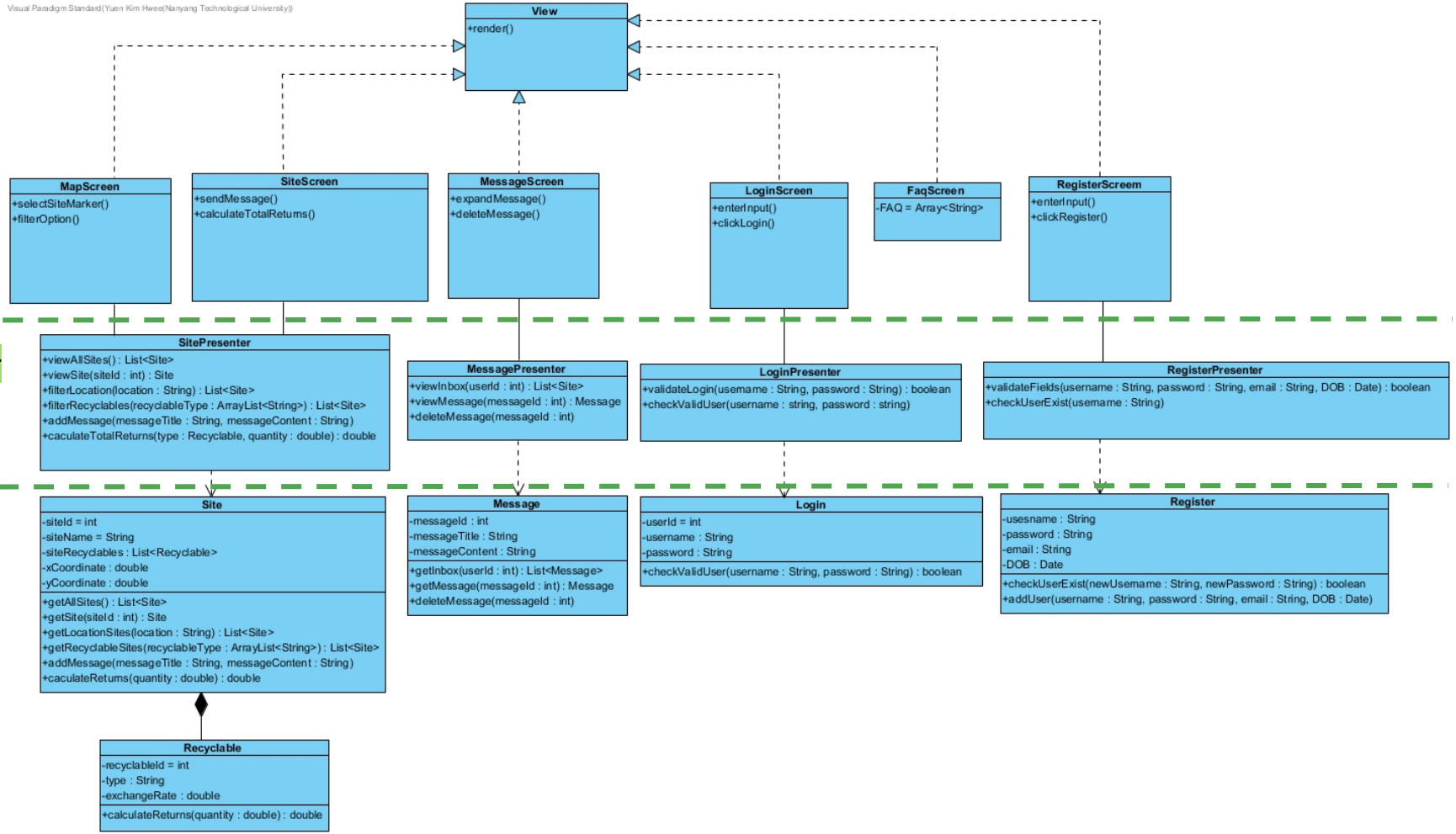
Model-View-Presenter



View

Presenter

Model



Software Engineering Practices Applied

Consistent Testing

- Regular Tests
- Postman Testing
- iOS and Android Tests

Layered Architecture

- Model-View-Presenters
- Low Coupling
- High Cohesion

Component Based

- Reusable
- Maintainability
- Scalability

S.O.L.I.D

Single Responsibility, **O**pen-Closed,
Liskov Substitution,
Interface Segregation,
Dependency Inversion

Clear Documentation

- Regular Updates
- Clear Documentation

Repositories

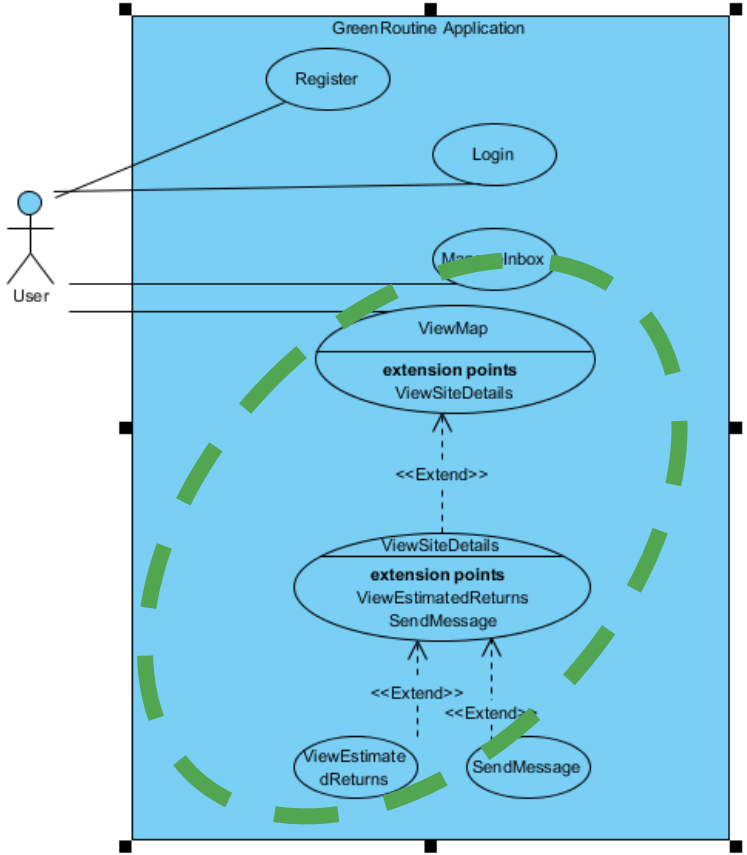
- SVN, Github, Google Docs, Google Drive
- Latest Codes and Documents
- Changelog & Branching

Application Demo

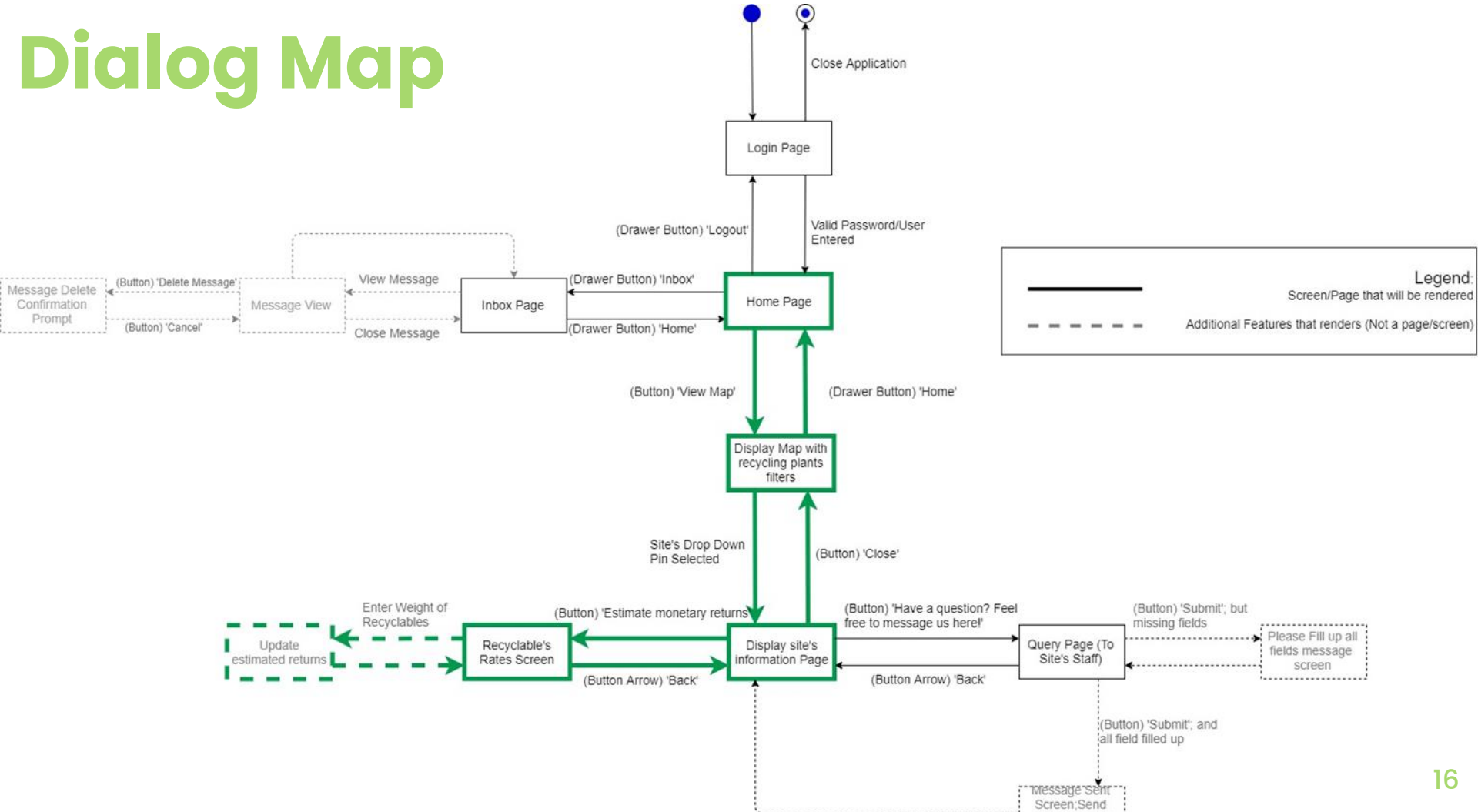
4.
Use Case Analysis and Tests

Use Case

Viewing of sites, retrieving information and monetary estimates

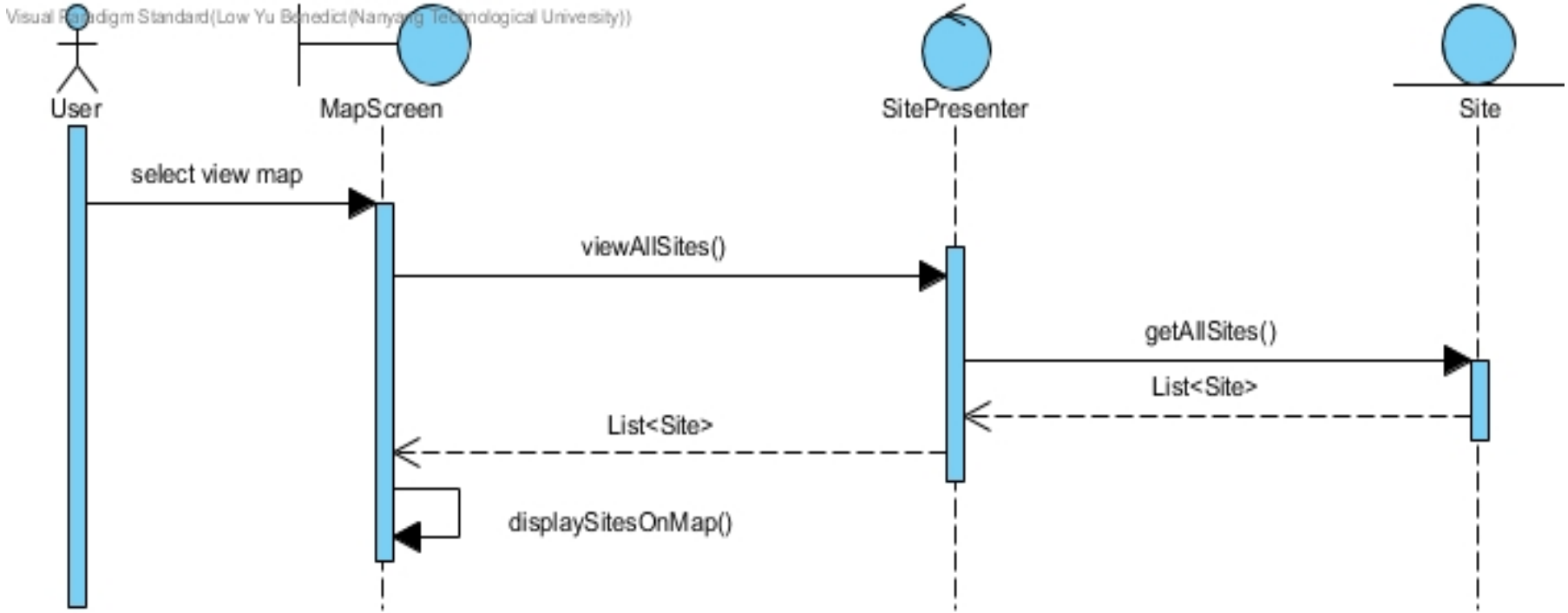


Dialog Map


Close Application
Login Page
(Drawer Button) 'Logout'
Valid Password/User Entered
Message Delete Confirmation Prompt
(Button) 'Delete Message'
(Button) 'Cancel'
Message View
View Message
Close Message
Inbox Page
(Drawer Button) 'Inbox'
(Drawer Button) 'Home'
Home Page
Legend:
Screen/Page that will be rendered
Additional Features that renders (Not a page/screen)
(Button) 'View Map'
(Drawer Button) 'Home'
Display Map with recycling plants filters
Site's Drop Down Pin Selected
(Button) 'Close'
Enter Weight of Recyclables
Update estimated returns
Recyclable's Rates Screen
(Button) 'Estimate monetary returns'
(Button Arrow) 'Back'
Display site's information Page
(Button) 'Have a question? Feel free to message us here!'
(Button Arrow) 'Back'
Query Page (To Site's Staff)
(Button) 'Submit'; but missing fields
Please Fill up all fields message screen
(Button) 'Submit'; and all field filled up
Message Sent Screen;Send

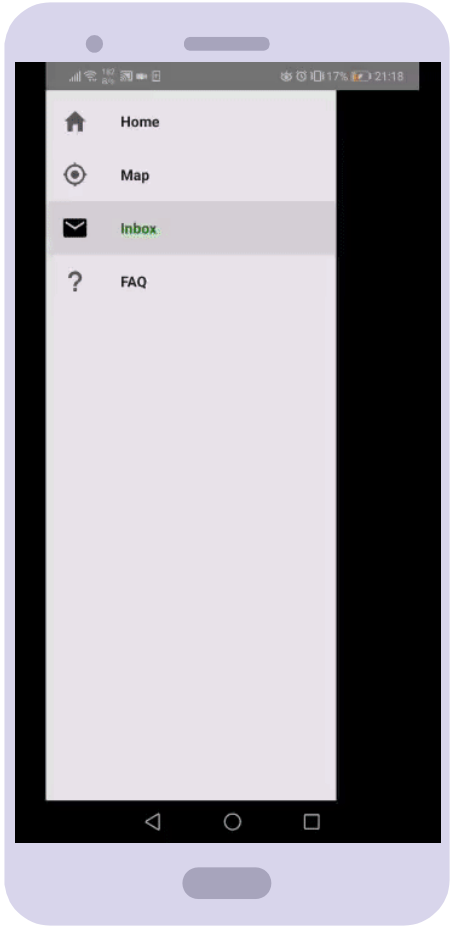
View Map

Sequence Diagram



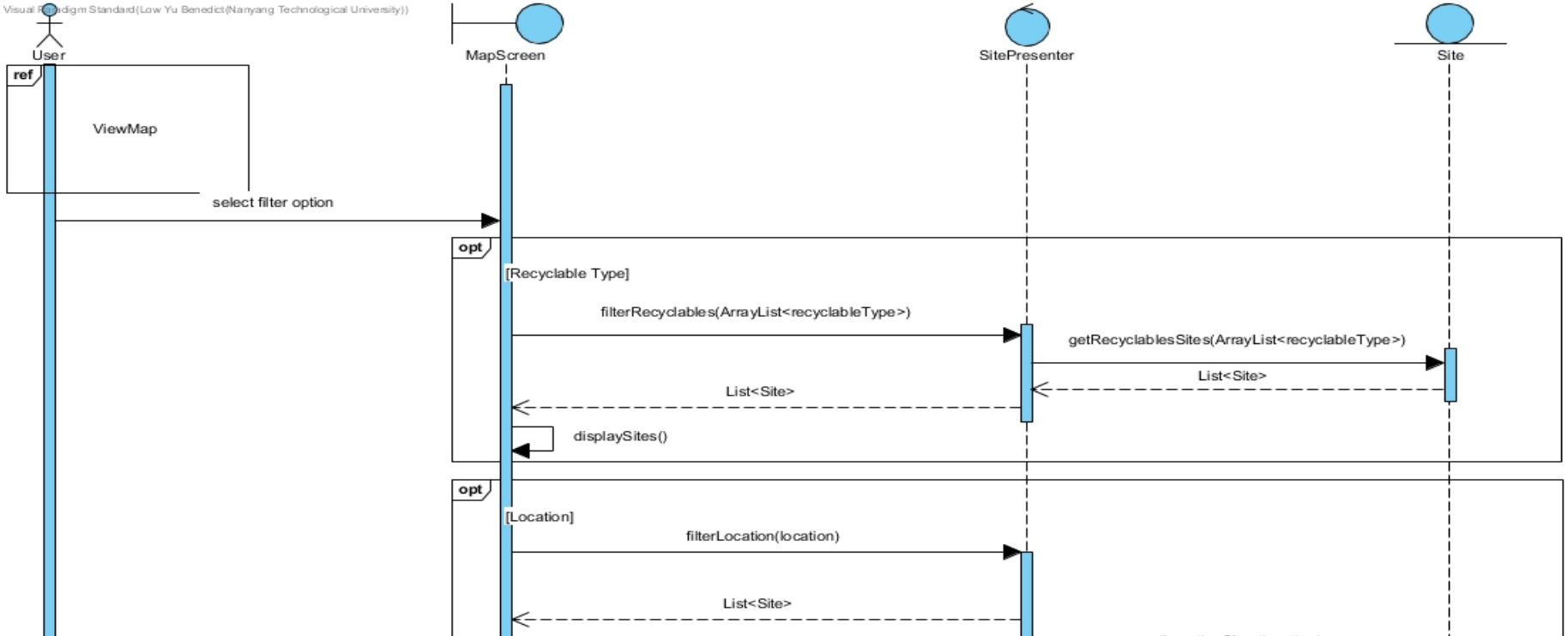
View Map

Retrieves all **Cash-for-Trash locations** from database before displaying using Google Maps API.



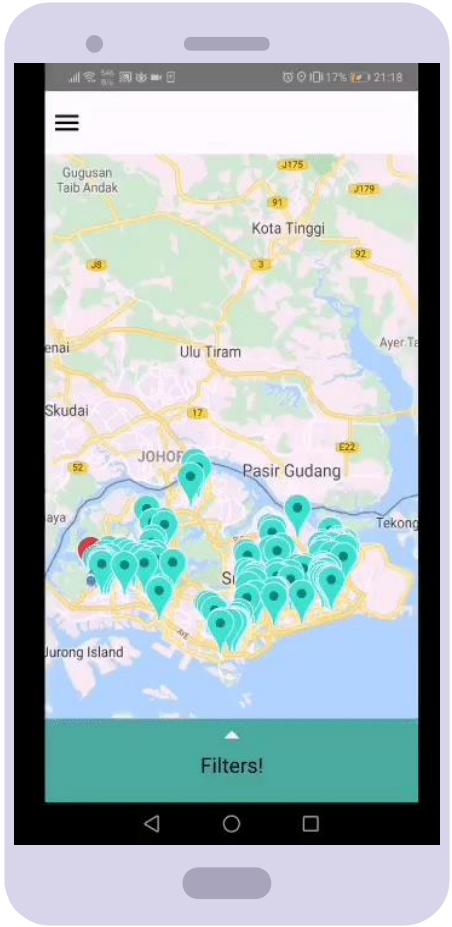
Filter Map

Sequence Diagram



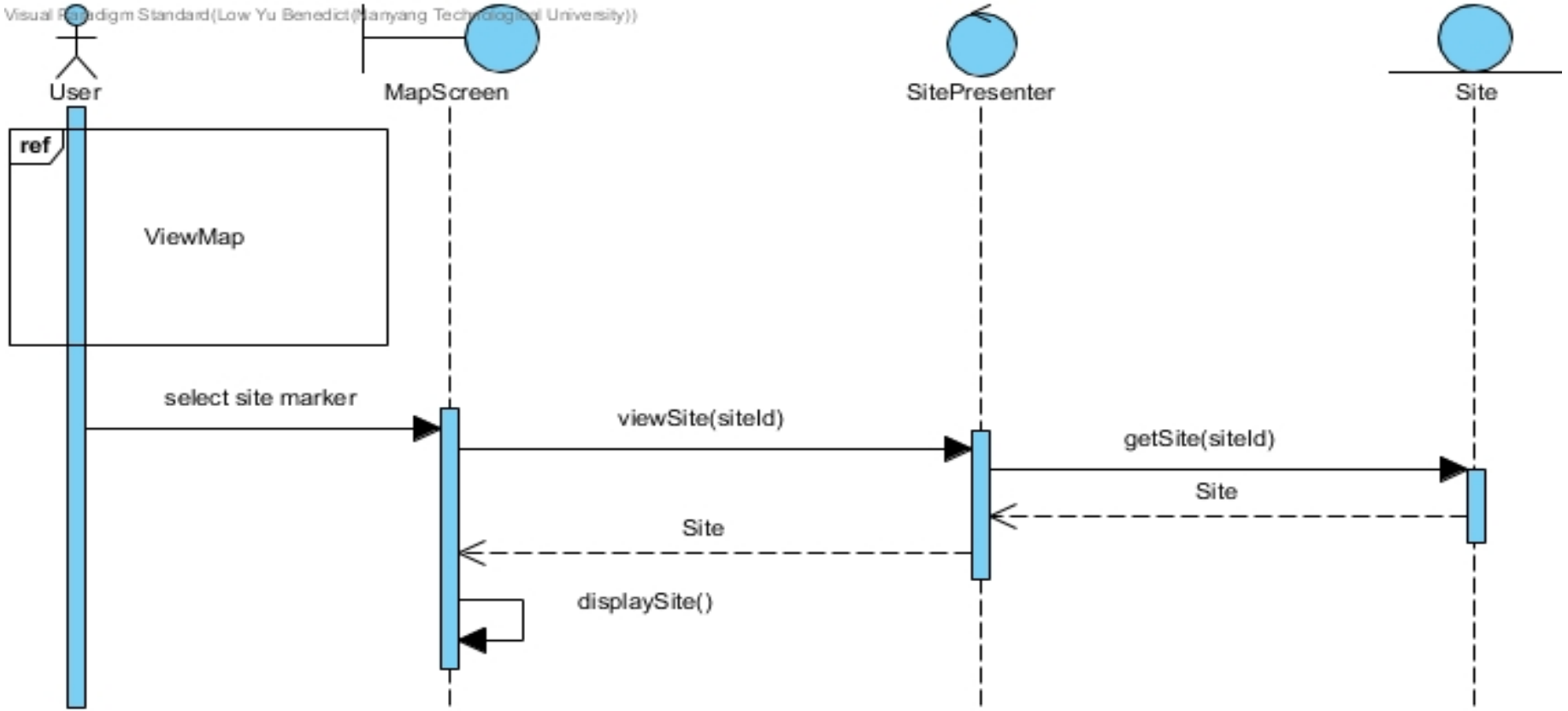
Filter Map

Filters displayed pins based on the user's choices for **recyclables** or **location**.



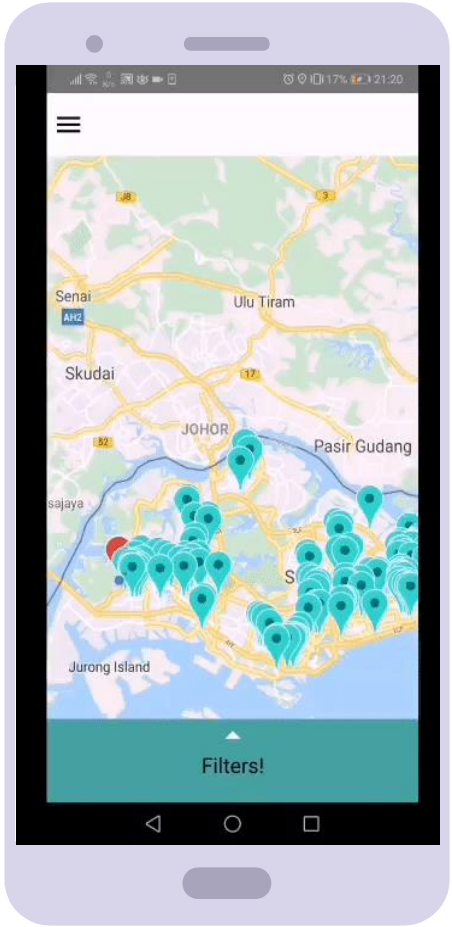
View Site Details

Sequence Diagram



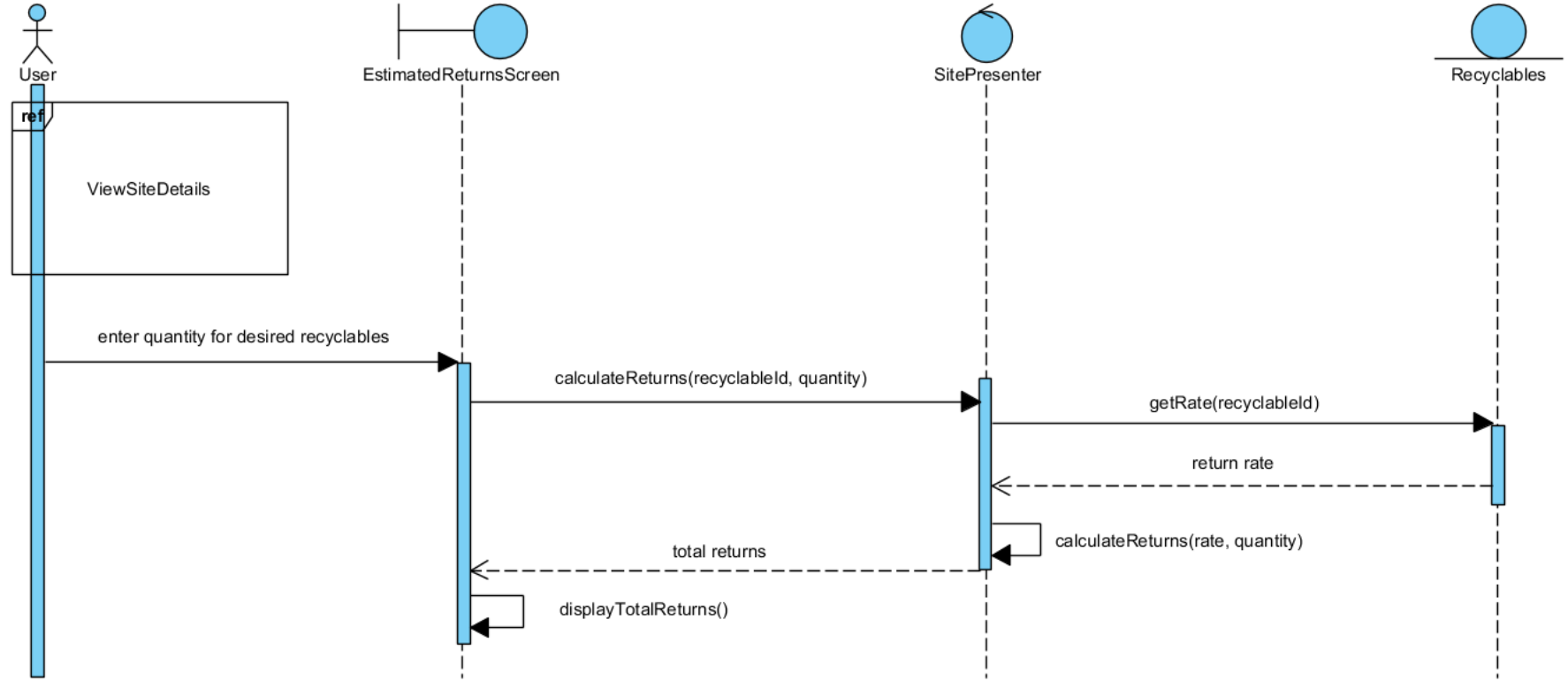
View Site Details

Displays more information of the site, including **opening hours and dates**, **accepted recyclables**, and the option to **calculate estimated returns**.



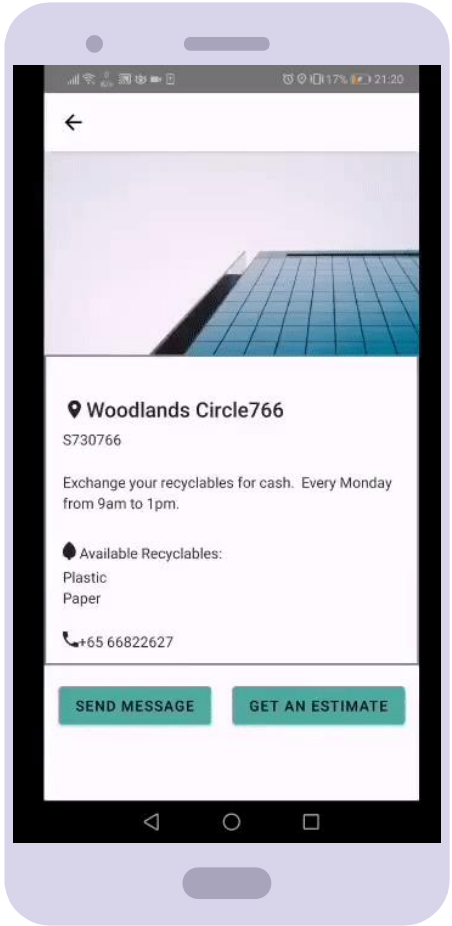
View Estimated Returns

Sequence Diagram



View Estimated Returns

Calculates and displays the **estimated monetary returns** for the amount of **recyclables entered** by the user.



5. Testing (Black Box and White Box)

MessagePresenter BVT Test Cases

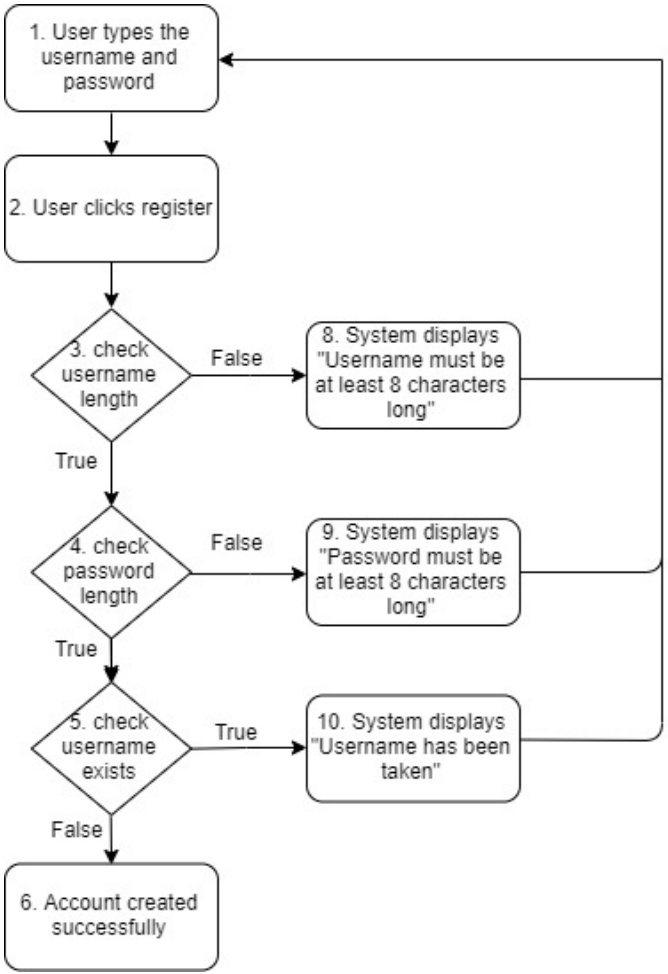
	Valid boundary values	Invalid boundary values
Title (length)	{10, 23}	{9, 24}
Content (length)	{10, 255}	{9, 256}

Title (length)	Content (length)	Expected Output	Actual Output
10	10	**Accept**	**Accept**
10	255	**Accept**	**Accept**
23	10	**Accept**	**Accept**
23	255	**Accept**	**Accept**
10	**9**	**Reject**	**Reject**
10	**256**	**Reject**	**Reject**
23	**9**	**Reject**	**Reject**
23	**256**	**Reject**	**Reject**
9	10	**Reject**	**Reject**
24	10	**Reject**	**Reject**
9	255	**Reject**	**Reject**
24	255	**Reject**	**Reject**

User Registration (Basis Path Testing)

This requires the user to enter a **username** and **password** with **at least 8 characters**.

Also, **checking** for an **existing username** is performed.



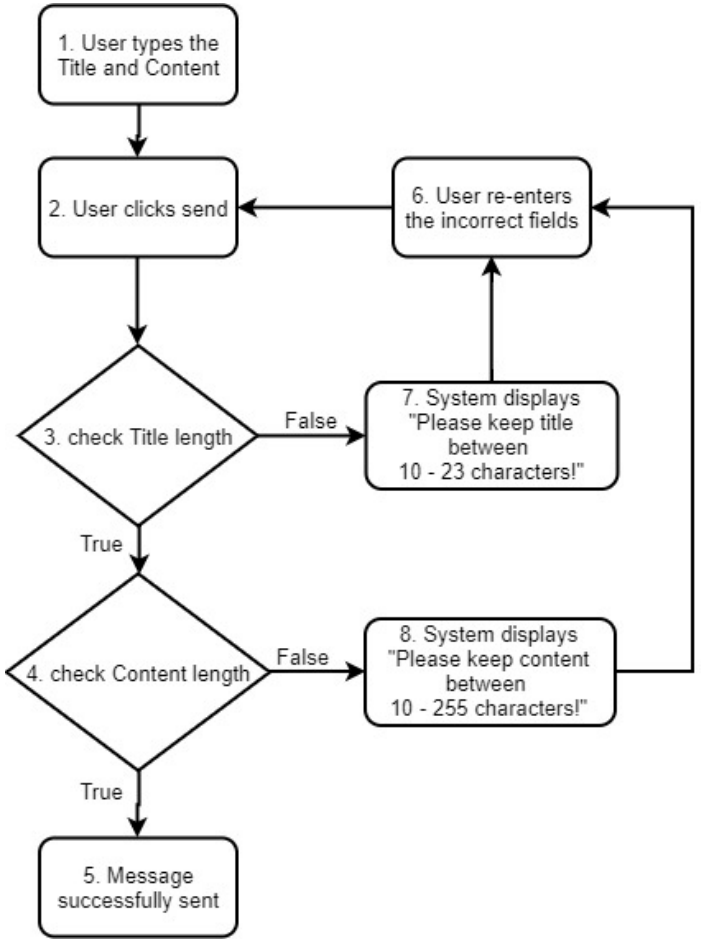
User Registration Test Cases

Basis Path	1,2,3,4,5,6	1,2,3,8,1,2,3,4,5,6	1,2,3,4,9,1,2,3,4,5,6	1,2,3,4,5,10,1,2,3,4,5,6
Test Input	Valid username and password	Invalid username length	Invalid password length	Username already exists
Expected Output	Account created	Error message, and then account created	Error message, and then account created	Error message, and then account created
Actual Output	Account created	Error message, and then account created	Error message, and then account created	Error message, and then account created

Send Message (Basis Path Testing)

The **title** must be **between 10 to 23 characters.**

This **content** must be **between 10 to 255 characters.**

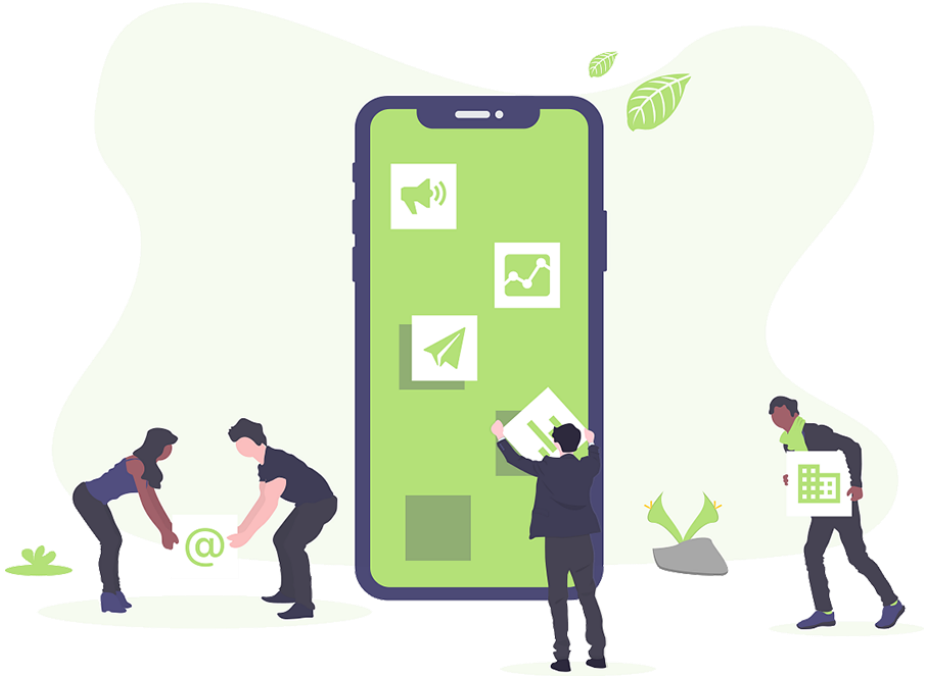


Send Message Test Cases

Basis Path	1,2,3,4,5	1,2,3,5,6,2,3,4,5	1,2,3,4,8,6,2,3,4,5
Test Input	Title.length = 11 Content.length = 20	Title.length = 26 Content.length = 56	Title.length = 15 Content.length = 259
Expected Output	Message sent	Error message, and then message sent	Error message, and then message sent
Actual Output	Message sent	Error message, and then message sent	Error message, and then message sent

Conclusions

1. Impactful Application
2. Scalable
3. Maintainable
4. Easy Project Handover



Thank You!

Any questions?

You can also find find us at: greenroutine@gmail.com

Credits

Special thanks to all the people who made and released these awesome resources for free:

- Presentation template by SlidesCarnival
- Photographs by Unsplash
- Illustrations by Undraw.co