COMP3030J Software Engineering Project 2024-2025 Goup6-DeepProgramme-User Documentation

JingwangLi YixinNiu YihanYan YuzeRong ChengkaiJing ChenleQin

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1 Introduction

Welcome to Campus Purge! We're passionate about building a greener campus through smart, sustainable waste management. Developed by students at the Beijing University of Technology, our platform empowers everyone on campus—students, faculty, and staff—to make eco-friendly choices with ease.

Campus Purge helps you sort waste correctly using AI-powered image recognition, locate nearby disposal bins in real-time, and learn more about recycling through interactive and gamified features. Whether you're looking to build better habits or just want to do your part, our platform makes it simple and rewarding.

Available on both web and mobile, Campus Purge is designed to make sustainable living part of your daily routine. Join us in creating a cleaner, smarter, and more sustainable campus—one small action at a time!



Figure 1: Flow Chart

2 Using Guidance

2.1 Overview

As a user, you can conveniently view the nearest trash bins and access detailed information about each one through our platform. The built-in map will guide you to the appropriate location for proper waste disposal.

You can also explore educational content about waste classification, complete related quizzes, play interactive mini-games, and share your feedback with us. To make the experience more rewarding, our system offers coupons as incentives when you take self-assessment quizzes or engage in the games—making learning both fun and beneficial.

2.2 Recommended browser

For the best experience, we recommend using the Google Chrome browser to access our website. If you are an administrator, you can use your administrator account to log into our management system to manage website content and user information.

2.3 Web Page Access

https://csi420-02-vm8.ucd.ie/

Due to the restrictions of Google Maps API, loading our website requires using a VPN.

Here are the two different types of account that are provided for you to use and test

Role	Email	Password	
User	testUser@test.com	123123	
Admin	admin@admin.com	123123	

3 Customer Portal

3.1 Home Page

This page is a brief introduction to this system. It includes the introduction about us, introduction about this platform, the SDGs we achieved, our service, the testimonials, our instructors and how to contact to us. In the top bar of this page, you could click *Login* to enter the login page, click *Register* to enter the register page or click *Map* to access index page as a visitor.





Figure 5: Service, Plan and Testimonials



Figure 6: Team, Instructors and Contact Information

3.2 Index Page



Figure 7: Index page

Note: If you don't log in you will only see the top bar and the map, the navigation bar will not be visible. And your top bar will have three functions: *login* (Figure 9), *register* (Figure 10) and *change theme*

		≡ Login Register &
Figu	re 8: unlogin top bar	
Sustainable Campuspurge		Campuspurge
Welcome Back	First Name	Last Name
	Enter your first name	Enter your last name
Email	Email	
2791694767@QQ.com	Enter your email	
	Password	Confirm Password
Password	Enter your password	Confirm your password
•••••	Phone Number	Gender
	Enter your phone number	Male 🗸
🔊 Login		
		Ar Create Account
Don't have an account? Register here	Alrea	ady have an account? Login here

Figure 9: Login page

Figure 10: Register page

3.2.1 Navigation Bar

Customer Navigation Items:

- Bin Map View the real-time smart bin distribution
- AI Classification Upload waste images to receive instant sorting suggestions
- Garbage Classification Knowledge View the relevant news or knowledge of garbage classification
- Eco Quiz Test your knowledge of garbage classification through questions and win coupons
- Game Use the mini game to learn how to sort different types of garbage and earn coupons
- My Coupons View your coupons and use them to offset corresponding money
- Feedback Provide your valuable suggestions

Administrator Navigation Items:

- Trash Report Display the top ten types of garbage that students have queried
- Garbage Summary Display the amount of garbage in the trash cans this month
- Add Tags Add new tags for new garbage types
- Manage Garbage Classification Knowledge Add new knowledge into the system
- Manage Problem Add new quizzes, questions or categories into the system
- Browse Feedback View all feedback from users
- User Management Manage all system accounts

Common Navigation Items:

- Profile View or change your personal information
- Logout Log out from this platform

3.2.2 Top Bar:

- Campus Purge Logo Click to return to the homepage
- Three hyphens Click to hide the navigation bar
- Title Show the current page without any functions
- Sun/Moon Click to change the them between dark and light

A Home Page
B Detect Garbage
Education
? Problems
🕶 Mini Game
My Coupons
Feedback
Le Profile
(b) Longuit

Figure 11: Customer Navigation bar



Figure 12: Admin navigation bar



Figure 13: Top bar

3.2.3 Desk Pet:

• Users can interact with desk pets and ask questions. You can also change the style of the pet or ask it follow your mouse.



Figure 14: Desk Pet



Figure 15: Change the style

3.3 Features Overview

Our waste classification platform offers four core functionalities to make recycling easy and engaging (we provide both dark theme and light theme, user could click the small icon in the top bar to change it, to save space, the dark theme will not be shown in detail for here):

3.3.1 Maps and Places Autocomplete

• Locate and monitor the garbage content. Map will show you the distribution of garbage can and the content of the garbage in each can. Click on the buttons indicated by the red boxes in figure 11 to locate your position.

Note: Because browsers usually obtain location information relying on network data (such as Wi-Fi or IP addresses), which is not as precise as the built-in GPS of mobile phones, inaccurate positioning may occur sometimes. Additionally, since the API is enabled, the location may occasionally default to the API server's location, causing the coordinates to fall back to the default position.



Figure 16: Map

Figure 17: Positioning Yourself

3.3.2 AI-Powered Identification

• Instant waste categorization using advanced image recognition. You could upload images to ask help from AI which would tell you categorization of this garbage.



Figure 18: Upload and Classify

3.3.3 Educational Resources

• Comprehensive learning materials about proper waste sorting. There are three different functions in this part, quiz, question, and knowledge. Users could test themselves and check the results using the quiz. They could also first practice or see the news through several knowledge.

Household waste is divided into			Your Score: 30% Incorect Quarkine: Outline: While persons and outlinesses and outlinesses and outlinesses and outlinesses and Nav Annue: 3 - Other persons
A. Recyclables, food waste, hazardous B. Recyclables, non-recyclables, perishable waste, other waste			Quantice: Plastic tobleware such as ben't bores are Your Assess: D - Other gallage
C. Recyclables, hazardous waste, dry waste, wel waste.	Question 1: Plastic stationer	Control Annual A. Respectation Develop: Conditioners sate as provide the sate sectory and Sectors: Conditioners cases as provide sectory and Sectors: Conditioners - Conditioners Control Annual - A rest and	
	A. Recyclables	B. Hazardous waste	Oversiden: Laad storage batteries and mercanic oxide batteries ans Neid Answer: D Cotter gastage Connect Answer: B Hazandross waste
✓ Submit Answer ← Last Question → Next Question	C. Food waste	D. Other garbage	Dueblini Vlatka minitraka Barmanetini and aksistress splipgemasaometers am Nor Ammer: D-Other gattage Connet Ammer: A-Terrylation
Incorrecti			Dentified Theodox component such as the process, Sogarea, Chinese medicale procedu, come processi, and canolog Your Answer: 0 - Other galaxies Comed Answer: C - Nool water
The correct answer is: A	✓ Submi	it Answer	Oversitor: Gasa containers such as mobilisticing letters bothis are <u>Vera Averant 0 - Clear generge</u> Consci.Answer: A - Respirations

Figure 19: Question

Figure 20: Test

Figure 21: Test Results

Knowledge base on garbage classification Static browney A Relicies and regulations A Frequent fault Gata statistics - Color-browledge
Basic knowledge
The Science Behind Effective Waste Sorting Waste dassification systems are based on material properties and decomposition processes. Recyclables like paper, gluss, and certain plastics are
Household Waste Sorting: A Room-by-Room Guide Kitchem ned separate bins for food scraps forganici, containers (ercyclable), and wrappers (residual), Bathrooms generate tricky items like
Core Categories Waste is typically divided into four main types: recyclables (paper/plantic), hazardous (batteries)/themically, kitchen waste (lood scraps), and
Hazardous Handling Never mix hazardous waste like medicines or electronics with regular trash - they require special processing to prevent sol/water contamination.

Figure 23: Knowledge Detail

3.3.4 Interactive Games

Figure 22: Knowledge List

• Fun challenges to test and improve your recycling knowledge. This part allows user drag different garbage to the correct garbage cans. Appropriate classify will get 10 more scores but wrong classification will get -5 scores.



Figure 24: Minigame

3.3.5 My Coupouns

• In this module, users can view their own coupons. When user print or buy something, they can use the coupons to offset 5 yuan.

My Coupons Here are the coupons you've earned.				
Active \$5.00	Valid Until: 2005-07-31			
Active \$5.00	Valid Until: 2005-07-31			



Figure 25: Coupons

Figure 26: Coupons QR Code

3.3.6 User Feedback

• In this module, user can write the feedback to us through rating and writing content

	Write Your Feedback
	We value your opinion! Please share your experience with us.
	Your Dation
	Tour raising

our Hee	Iback
Good	
	Submit Feedback

Figure 27: User Feedback

3.3.7 Personal Profile

• The system allow user to see, edit even delete their account information. However, we restrict that only certain information could be changed. The user can also view a record of the garbage he/she has identified.

My Profile View and manage your account information		Edit Profile
chenle qin testUser@test.com		cherie gin Untergrander
Ci Email	testUser@test.com	E Reveal Institute(Steet.com
J Phone Number	18515490308	C Phase Number 185154(0335
9 ²⁷ Gender	Maie	& FirstNaws deale
		å Lastitare ga
D ² Edit Renda		R Save Danges X Cancel
	Delete Account	
Figure 28: View I	Profile My Trash Recognition Records	Figure 29: Edit Profile
Figure 28: View F	Profile My Trash Recognition Records Trash: Pref Casegory: Wet Gartage Time: 2025-05-02 12 44-23	Figure 29: Edit Profile
Figure 28: View F	Trast: Peerl Category: Hezerdous waste Time: 2025-05-02 12:44:37	Figure 29: Edit Profile
Figure 28: View F	Profile My Trash Recognition Records Trash: Preel Category: Wet Category Time: 2025-05-02 12-44-23 Trash: Estimy Category: Hazardoon wate Time: 2025-05-02 12-44-37 Trash: Category: Recyclable gentage Time: 2025-05-02 12-44-47	Figure 29: Edit Profile

Figure 30: Recognized Record

The system combines practical tools with educational content to create a complete waste management solution for households and communities. All features work seamlessly across web and mobile platforms with synchronized user accounts.

4 Administrator Portal

4.1 Features Overview

The functions of administrator includes:

All functions mentioned in the customer's (except Write feedback and My Coupons)

4.1.1 Add Labels

• Add Labels – Click to add new labels of the new garbage can. Administrator could name and upload image to this new site.



Figure 31: Add Labels with image and name

4.1.2 Garbage Summary

• In this module, administrators can look at trash data and related statistics. In practical application, this part of the data will be transmitted in real time by the real-time camera.





Figure 32: Monthly Waste Volume



4.1.3 Trash Report

• In this module, the administrator can view the ranking of the type of trash queried by the user. **note**: All data displays are based on the query data submitted by the user for spam identification via AI classifier (3.3.2)



Figure 34: Trash Report

4.1.4 Editorial Education Board

• There are multiple interfaces in this module. The administrator edits the data in the education interface as well as the categories of questions and specific questions.

Edit Questions for ALL QUESTIONS		
stion:		
usehold waste is divided into		
	/ ID Category Title	
on Al	1 Bacin v What are the fear torse	
yciacies, lood wales, nazardous wales, dhier wales	Dear . What are use for row system.	
on B:		
yclables, non-recyclables, perishable waste, other waste	2 Basic V Common types of Recyc	
n C:		
yclables, hazardous waste, dry waste, wet waste		
va Dr	Policy v Shanghai Municipal Hou	
wishies hazarrirus waste non-servishie waste other waste		
Assumed France and a second second action removal action.		
ect Answer:		
	•	
	Basic ~ Tite	

	Manage Knowledge							
ID	Category	Title	Description	Time	Author	Actions		
1	Basic v	What are the four types -	Recyclable Waste, Kitchen Waste,	2025/05/01	Yihan Yan	Save Delete		
2	Basic ~	Common types of Recyc	Includes paper, plastics, glass, metals,	2025/05/02	Yihan Yan	Save Delete		
3	Policy ~	Shanghai Municipal Hou	Enforces mandatory waste sorting, includes	S0521/021/05	Yuze Rong	Save Delete		
			Add New Knov	vledge				
Bas	sic ~	Tite	Description	# /A/B	Author	Add		

Figure 35: Edit Questions



4.1.5 User Management

• In this module, administrators can manage user accounts

🗣 U	≱ User Management							
ID	Fname	Lname	Email	Phone_number	Gender	Operation		
1	jingwang	lee	jingwang62@163.com	241341313123	Male	update delete		
2	chenle	qin	testUser@test.com	18515490308	Male	update delete		
3	chenle	qin	testUser1@test.com	18515490309	Male	update delete		
4	chenle	qin	testUser2@test.com	18515490301	Male	update delete		
5	yihan	yan	yyh@yyh.com	18610529861	Male	update delete		
6	yixin	niu	nyx@163.com	18629872872	Female	update delete		
7	yuze	rong	ryz@163.com	13683318766	Male	update delete		

Figure 37: User Management

4.1.6 User Feedback Management

• In this module, administrators can manage users' feedback

🗣 Feedback List				
ID	User	Rating	Date	Actions
1	chenie gin testUser@test.com	****	2025-05-15 00:12	⊕ Viaw
2	yuze rong ryz8163.com	****	2025-05-12 00:12	@ View
3	yixin niu nyx0163.com	★★★★★ (5)	2025-05-12 18:12	@ View
4	yihan yan yyh0yyh.com	★★★★★ (5)	2025-05-13 18:20	@ View
5	chenie gin testUser2@test.com	****	2025-05-14 13:20	@ Viaw
6	jingwang lee jingwang62@163.com	****	2025-05-11 13:20	@ Viaw
7	chenie gin testUser2@test.com	****	2025-05-16 13:20	⊕ Viaw

Figure 38: User Feedback Management

5 Statement

• To enhance the clarity and readability of this manual, we utilized AI tools (such as ChatGPT) to refine grammar, improve phrasing, and polish language expression. All content and ideas remain our own; AI was used solely for language enhancement.