

FPT UNIVERSITY

Capstone Project Document



SOCIAL TOILET MAP

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We are grateful to ourselves again for cooperating to complete this project. Thank ourselves for always being there as we jointly create the Social Toilet Map, something we have always desired.

*Best of luck,
[Social Toilet Map Team](#)*

Definition and Acronyms

Acronym	Definition
API	Application Program Interface
BR	Business Rule
C2B2C	Consumer to Business to Consumer
ERD	Entity Relationship Diagram
EX	Exclusion
FE	Feature
FK	Foreign Key
LI	Limitation
MS	Message
PK	Primary Key
SDD	Software Design Description
SRS	Software Requirement Specification
UC	Use Case
UI	User Interface
WBS	Work Breakdown Structure

Table 01 - Acronym and Definition

I. Project Introduction

1. Overview

1.1 Project Information

- Project name: Social Toilet Map
- Project code: SU23SE05
- Group name: GSU23SE29
- Software type: Web App, Mobile App

1.2 Project Team

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Table 02 - Project Team

2. Introduction

Toilet Map is a C2B2C project that we implement together with Reva Enterprise Solutions Development Joint Stock Company, the partner businesses are companies and public toilet units, first of all, Dịch vụ Công ích Quận 1. The basic idea of the project is to create a web and mobile application system that helps residents, tourists,... in Ho Chi Minh City to search for toilets near them quickly and in accordance with their standards, while also assisting them in their payment operations. At the same time, the application will also help companies and services that provide public toilet systems to manage their toilets.

The current solution and orientation of the system based on the policy of the government is Orientation for socialization in combination with the government building a network of public toilets that connect to each other. In cooperation with coffee and shops, mobilizing more places such as schools, offices, and agencies of the political system to strengthen the network of toilets to meet actual needs. That led to the need to build an application that provides public toilets with features such as displaying toilets around the current area, making directions, and making payments, ... and will be deployed in Ho Chi Minh City.

3. Product Background

Public toilet services at the present time in Vietnam in general or Ho Chi Minh City in particular still have a lot of problems that need to be solved.

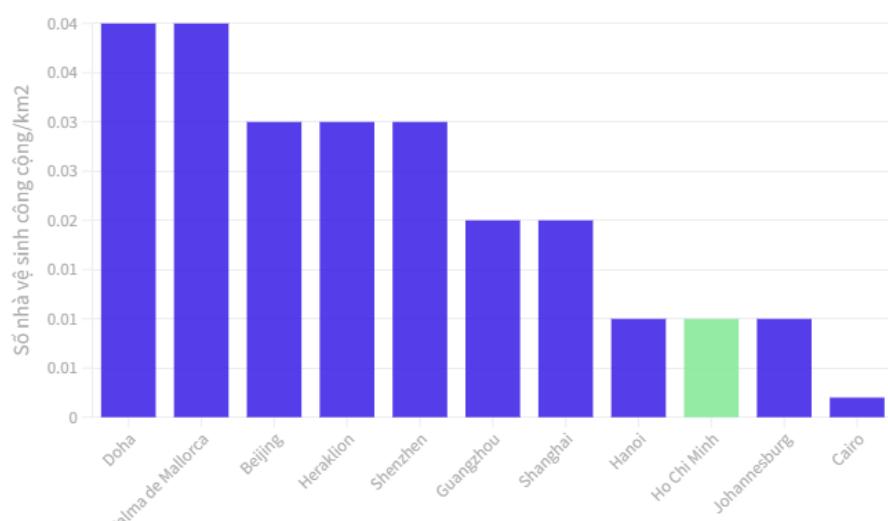
To give an example, if a person is on the street and they have a need to go to the bathroom, they will often choose the option of waiting until they get home or their company to go to the bathroom instead of choosing a public toilet near their place. The problems of public toilets can be posed as:

- Public toilets are too few compared to their needs, and sometimes not close to them.
- They don't know where there are public toilets.
- The payment process is long and time consuming.
- The quality of public toilets is not good.
- Security issues: social evils, being secretly filmed,...
- They don't like going to the toilet in a strange place.
- ...

Articles of the mainstream newspapers have also reported on these issues:

- According to VNEWS, not only poor service quality, public toilets in Ho Chi Minh City are also too inappropriate to meet the needs of more than 10 million residents and millions of tourists.
(Reference:
<https://vnews.gov.vn/video/nha-ve-sinh-cong-cong-o-tphcm-thieu-va-do-71834.htm>)
- According to the index from the ranking of QS Supplies, Nikkei Asia newspaper in early February reported by vnexpress, the quality of public toilets in Ho Chi Minh City ranked 67 out of 69 tourist cities in the world.

10 thành phố có tỷ lệ nhà vệ sinh công cộng trên mỗi km2 thấp nhất năm 2022



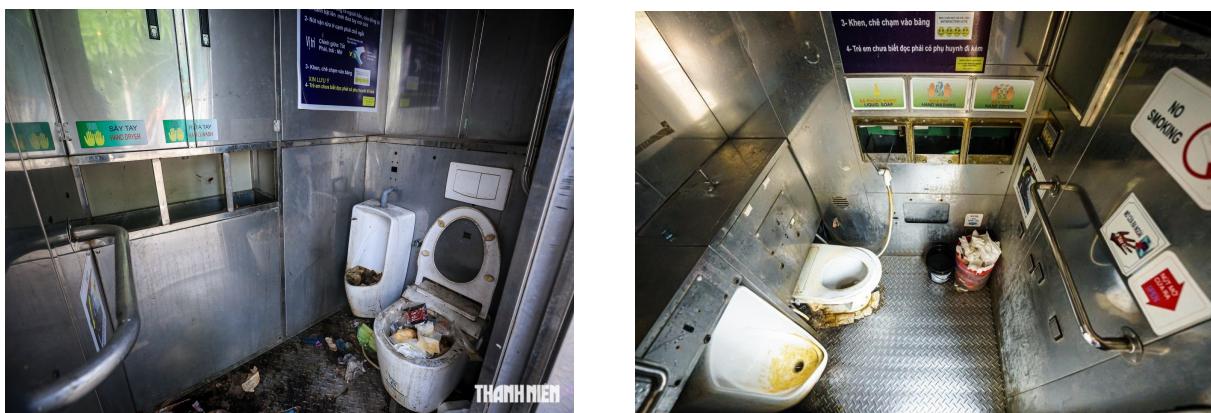
Nguồn: QS Supplies

(Reference:

https://vnexpress.net/100-cua-hang-o-trung-tam-sai-gon-cho-dung-nha-ve-sinh-mien-phi-4583042.html?gidzl=zIxCAXInn0tsuCug7kR72FVlnlq6wCPVxR6VBrFha5ovufbuKUh42-lXctnMxf5LkxF88ZdVFpiH6_ZE2G

<https://nhipsonghomnay.vn/doi-song-xa-hoi/dan-sinh/can-gap-rut-xay-dung-nhieu-nha-ve-sinh-cong-cong.html?fbclid=IwAR2kFdysf4RhQ7e1AmX7ql2h02yGuYvbj6iJTw34B6zuWfkxsS3oni0ofg>

- According to Zingnews, many current public toilets have deteriorated quality, along with many problems with management.



(Reference:
<https://zingnews.vn/hien-trang-nha-ve-sinh-cong-cong-o-trung-tam-tphcm-post1410813.html>)

From the above evidence, it is possible to summarize the current problem of toilets in Ho Chi Minh City as follows: Demand for toilets by locals and tourists is high, while there are many degraded or even abandoned toilets that are not used, making it difficult to find and use public toilets.

4. Existing Systems

The system of public toilets is not an unfamiliar concept. Currently, in the world, there are many applications that help people find toilets easily. It can be said that these applications are quite interesting and useful, not only for foreign tourists but also for locals travelling to a new province and even useful for many native people.

4.1 Analysis

4.1.1 The current system of Dịch vụ Công ích Quận 1

- At the present, there is no application system to support customers to search for toilets and make payments when going to the toilet.
- The payment is made by cash or money-loaded magnetic card (if the card runs out of money, the customers must give their cards to the company to recharge the card within 1-2 days).
- When using a defecation or showering service, customers have to swipe their card 2-3 times, so it is impossible to calculate how many times this service is used.
- Old system with high operating and maintenance costs, difficult to upgrade.
- High cost of buying magnetic card, so it's very difficult to reach new users.
- Customers do not manage their own accounts (actively top up at all times, view usage history, etc.).

4.1.2 Toilet Finder

- Brief descriptions: Toilet Finder is a mobile app which allows people to find public toilets like toilets in Gas station, Restaurant, Store, Bar, Public easily. This application allows use in many countries around the world and it allows users to contribute more toilets without acceptance from administrators.
- Link: <https://play.google.com/store/apps/details?id=com.bto.toilet&hl=vi&pli=1>

- Feature:
 - Location and Finding: Locating users and finding public toilets for users.
 - Direct with Map: Guide the user the way to the toilet.
 - Show Toilets list: Allow users to see public toilets nearby.
 - Add new toilet: Allow users to add more toilets (with different locations like Gas station, Restaurant, Store, Bar, Public) to toilet maps.
 - Rating.
- With a list of all features, this system has some pros:
 - Help users find a toilet to limit defecation in the street.
 - Improve the nation's service when Restaurants, Stores,...connected with Toilet Finder.
 - Multi languages like English, German, French and Arabic,....
 - This App is built as a community to help users contribute toilets, helping the toilet ecosystem to be wider.
 - This app has a custom mode of toilet for handicap access.
- Behind pros, this system also have some cons like:
 - Locate user very low.
 - Allowing people to add toilets is very dangerous to other users, e.g they can add the wrong toilet location.
 - This app does not support Vietnamese language.
 - Rating when adding a toilet is a very subjective tendency and wrong information if user has not used the toilet yet.
 - Misdirects the user, e.g. let the user cross a river to go to the bathroom.
 - This app does not have filters, which is very important for people who have some special needs.

4.1.3 Comfort as home

- Comfort as home helps users to search for public toilets or locations participating in the program "Comfort As Home" in Da Nang, Vietnam. This is a model of mobilizing business establishments to open toilets to serve residents and visitors free of charge with open and friendly spirit.
- Link: <https://play.google.com/store/apps/details?id=com.enouvo.comfortashome&hl=vi>
- Feature:
 - Location and Finding: Locating users and finding toilets, locations participating in the program "Comfort As Home".
 - Show Toilets list: Allow users to see public toilets or locations.
- With a list of all features, this system has some pros:
 - Help native people or tourists in Da Nang find a toilet to limit defecation in the street.
 - It helps to reduce defecation, while helping the service of restaurants, coffee shops, ... to be advertised indirectly.
 - Have multiple languages like English, Japanese, Chinese, Korean, and Vietnamese.
- Behind pros, this system also have some cons like:
 - If users want to go to the toilet they have chosen, they must use Google Maps or other maps to direct.

- This app does not have filters or search, which is very important for people who have some special needs.

4.2 Conclusion

From the applications that are analyzed above, combine with the current system of Dịch vụ Công ích Quận 1, we can see that there are problems that do not match the requirements of the public toilet problem in Ho Chi Minh City that our application system can solve is as follows:

- Helping users to go to the toilet the fastest by integrating the navigation map into the app and calculating the shortest, most suitable distance for the user.
- Add a reasonable filter for users who have some special needs like type of toilet (disabilities) distance or utilities that toilets have.
- Integrated toilet rating feature so that users can rate after going to the toilet and the following users can have a more general view of that toilet.
- There is an additional emergency function to help users find the nearest toilet in case of an emergency.

5. Business Opportunity

According to Vnexpress newspaper, in March 2023, Chairman of the People's Committee of District 1 Le Thanh Duc mobilized 100 shops and cafes to serve public toilets. This posed a need for a system to manage the toilets. (Reference:

<https://vnexpress.net/100-cua-hang-o-trung-tam-sai-gon-cho-dung-nha-ve-sinh-mien-phi-4583042.html?gidzl=zlxCAXInn0tsuCug7kR72FVlnlq6wCPVxR6VBrFha5ovufbuKUct>

According to Vnews and Vtv, the current number of public toilets in Ho Chi Minh City is too small, just over 200 public toilets serving more than 10 million residents and tourists. This has caused a lot of difficulties for people to find public toilets. (Reference:

<https://vnews.gov.vn/video/nha-ve-sinh-cong-cong-o-tphcm-thieu-va-do-71834.htm>,
<https://vtv.vn/xa-hoi/van-dong-nha-hang-khach-san-cho-khach-su-dung-nha-ve-sinh-2023-30317064936445.htm>

At the present, there is still no application that meets the needs of people in finding and supporting payment when using public toilets effectively. At the same time, applications have not really supported public service companies in managing toilets effectively, the most visible is Dịch vụ Công ích Quận 1.

6. Software Product Vision

As expected, the application will be deployed by Reva Enterprise Solutions Development Joint Stock Company with the first partner enterprise, Dịch vụ Công ích Quận 1. "Toilet Map" will help people to use public toilet services more conveniently in the process of searching, paying,...

In the future, this system can be developed with the following orientations:

- Expand the project scale to the whole Ho Chi Minh city, Integrate into a part of a large application system of Dịch vụ Công ích Quận 1 (combining Toilet Map with other public services, for example: public buses, public bicycles,...).
- Based on the location of the toilets to advertise for shops, supermarkets,... nearby.

7. Project Scope & Limitations

7.1 Major Features

Role	Feature code	Description
User	FE-01	View the public toilets in the system, view the toilets near the current location, and search for a toilet.
	FE-02	View the information of a toilet: service, address, facilities, images,...
	FE-03	Get the direction from the current location to a toilet.
	FE-04	Support conveniently users to pay for a toilet service.
	FE-05	Top up the account balance or buy a turn combo.
	FE-06	Review/Complaint to the manager of the toilet.
Manager	FE-07	Support the user to pay for using toilet services.
	FE-08	Top up user account to use toilet services.
	FE-09	Manage company information.
	FE-10	Manage toilet information.
	FE-11	View the review/complaint from the user using toilet services.
	FE-12	View the statistic of user using toilet services.
Staff	FE-13	Top up for user
	FE-14	Check-in for user/walk-in-guests
Admin	FE-15	Configure toilet services and toilet services price/turns.
	FE-16	Configure combo price.
	FE-17	Configure toilet facilities.
	FE-18	Configure sensitive words.
	FE-19	Configure discount.
System handler	FE-20	Provide nearby toilets from user.
	FE-21	Direct to a toilet.

Table 03 - Major Features

7.2 Limitations & Exclusions

Limitations:

Limitations Code	Description
LI-01	The user application is currently only supported on the Android platform.
LI-02	The system uses Location Services and supports routes from 3rd parties.
LI-03	Auto-locating convenience stores, cafes, malls, etc., near a toilet, is not yet supported.
LI-04	The system only supports pay with VNPay, does not support pay with Momo Wallet, ZaloPay, Master Card or other payment services.

Table 04 - Limitations

Exclusions:

Exclusions Code	Description
EX-01	The system does not support Human Resource Management.
EX-02	The system does not support accounting-related functions.
EX-03	The procedure of verifying a company is not included in the system.
EX-04	The system does not support directions to a toilet by multiple vehicles such as by bike, or by bus,...

Table 05 - Exclusions

II. Project Management Plan

1. Overview

1.1 Scope & Estimation

#	WBS Items	Complexity	Est. Effort (man-days)
1	Research and collect requirement		
1.1	Collect information about public toilets	Simple	2
1.2	Collect information about the current system from the customer	Medium	3
1.3	Collect dataset for bad word filter	Medium	3
1.7	Learn about third-party software component	Complex	14

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#	WBS Items	Complexity	Est. Effort (man-days)
2	Initialize database		
2.1	Design database	Complex	14
3	Deploy system		
3.1	Deploy database	Medium	3
3.2	Deploy BE project	Medium	3
3.3	Setup CI/CD	Complex	5
4	Authenticate user (not include user authentication)		
4.1	Login/logout with username/password	Simple	4
5	Manage map & location		
5.1	Get map from third-party component	Complex	10
5.2	Get list of active locations	Complex	3
5.3	Inactive location	Simple	1
5.4	Create location	Complex	5
6	Manage user		
6.1	Signup by mobile number & OTP	Complex	7
6.2	Login by mobile number & OTP	Complex	7
6.3	Track transaction history	Simple	2
6.4	Add wallet's balance	Complex	3
6.5	Deduct wallet's balance	Medium	3
6.6	Track scanning history	Simple	2
6.7	Change information	Simple	2
7	Manage toilet		
7.1	Create toilet	Complex	7
7.2	Delete toilet (inactive toilet)	Simple	2

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#	WBS Items	Complexity	Est. Effort (man-days)
7.3	Update toilet	Complex	5
7.4	Filter toilet	Medium	3
7.5	Get list of toilets in a company	Simple	1
8	Manage company		
8.1	Create company	Complex	7
8.2	Delete company (inactive company)	Simple	2
8.3	Update company	Complex	5
8.4	Get list of companies	Simple	1
9	Implement QR code		
9.1	Setup hardware	Medium	3
9.2	Scan & send QR code detail to BE	Medium	4
9.3	Get information from the QR code	Medium	2
10	Manage service & price		
10.1	Update service price	Simple	1
10.2	Get all services with price by location	Simple	1
10.3	Delete service (Inactive service)	Simple	1
10.4	Get income statistics	Medium	5
10.5	Add new service & price for location	Medium	3
11	Authorize user		
11.1	Authorize for each role	Medium	3
12	Review system		
12.1	Review database	Medium	5
12.2	Review User Interface	Medium	4
12.3	Review Manager Interface	Medium	3

#	WBS Items	Complexity	Est. Effort (man-days)
12.4	Review Admin Interface	Medium	3
12.5	Review User's Mobile Interface	Medium	5
12.6	Review Staff's Mobile Interface	Medium	3
13	Compose report		
13.1	Compose Project Introduction	Simple	4
13.2	Compose Project Management Plan	Medium	7
13.3	Compose Software Requirement Specification (SRS)	Complex	12
13.4	Compose System Design Description (SDD)	Complex	12
13.5	Compose System Implementation and Test (SIT)	Complex	12
13.6	Compose System User's Manual	Medium	7
13.7	Compose Final Project Report	Medium	7
Total Estimated Effort (man-days)			236

- Allocated Effect: 4 (members) * 14 (weeks) * 5 (days) = 280 man-days

Table 06 - Scope and Estimation

1.2 Project Objectives

#	Testing Stage	No. of Defects	% of Defect	Notes
1	Integration test	<20	1%	
2	System test	<10	1%	

Table 07 - Project Objectives

1.3 Project Risks

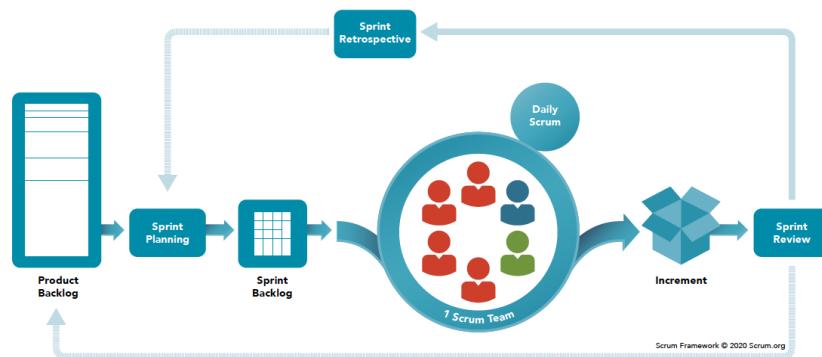
#	Risk Description	Impact	Possibility	Response Plans
1	Customers change requirements in terms of the business, and interface during code implementation.	Critical	Medium	Hold meetings to review the modification, advise customers on the impact of changes on the finished product or project process so that they can make a decision to change or not to change, and avoid unnecessary, redundant changes.

#	Risk Description	Impact	Possibility	Response Plans
2	The requirement is not fully understood between the customer and the team or between the team members.	Critical	Low	Organize urgent meetings between the team and customers or team members together to discuss and help each other understand the requirements of the customer.
3	Lack of experience or skills in coding and testing the project. Couldn't find the suitable technique to implement a certain feature.	High	High	Identify the difficult techniques, and the main techniques from the early stages to make a reasonable study plan.
4	Conflict between members when discussing and dividing work, members doing the same work.	Medium	Medium	Ask supervisor for help, organize emergency meetings with supervisor to give advice, and resolve conflicts between members.
5	A certain member of the team is forced to leave the team or leave the team due to personal reasons.	Critical	Low	The remaining team members will be forced to work overtime to complete the work on time.

Table 08 - Project Risks

2. Management Approach

2.1 Project Process



Source: <https://www.scrum.org/>

Figure 01 - Scrum framework

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Social Toilet Map Project is developed using the Scrum framework of Agile methodology for collecting requirements, designing, developing, testing, deploying, and maintaining products. We decided to use this model because of the following reasons:

- To implement this project, we need to collect the requirements from Dịch vụ công ích quận 1 and we have to discuss with the customer a lots. The possibility of changing and updating user requirements is high.
- Our team consists of four people, and because this project is being developed from scratch, it is difficult for everyone to understand the needs. As a result, we must meet with the mentors every week to explain the requirements and demonstrate whether they are being followed correctly. Therefore, for this project, each sprint takes 5 days, and the length of our product backlog is 4 months.

2.2 Quality Management

- To ensure our product quality, we apply some general rules:
 - Using coding convention:
 - Class name, variable name, constant name, function name, and file name must be written in English correctly and meaningfully.
 - Class name, function name, variable name, and constant name of each language must be written in the right way based on the document (camelCase, snack_case,...).
 - Similar handlers should be written similarly.
 - Format code: There must be a space between the variable and the operation.
 - Comment Code: Delete unused code, do not comment out that code, comment warning consequences, comment clarify the meaning of the code (if the logic is complicated).
 - Integration testing:
 - All test cases must be written in Excel with appropriate priority, important modules must be checked first.
 - Each function after implementation always requires a checklist containing all test cases which are summarized by every member.
 - System testing:
 - Testing the system as a whole to confirm that every feature of the application functions correctly.
 - Everything tested must be within software requirements specification (SRS) and after integration testing.

2.3 Training Plan

Training Area	Participants	When, Duration	Waiver Criteria
Java Spring Boot	Huỳnh Lê Thùy Tiên, Trần Kim Hiếu	Week 1, 7 days	Mandatory

Training Area	Participants	When, Duration	Waiver Criteria
Flutter	Nguyễn Đào Đức Quân	Week 1, 7 days	Mandatory
ReactJS	Nguyễn Lâm Thúy Phượng	Week 1, 7 days	Mandatory
Project workflow, Git, Github, Sourcetree, Azure	Everyone	Week 1, 7 days	Mandatory
3rd parties services: VNPay, Firebase, Web Socket	Everyone	Week 1, 7 days	Mandatory

Table 09 - Training Plan

3. Project Deliverables

#	Sprint	Duration	Notes
1	Sprint 1	08/05/2023 - 12/05/2023	<ul style="list-style-type: none"> - Collect user requirements - Training - Report 1
2	Sprint 2	15/05/2023 - 19/05/2023	<ul style="list-style-type: none"> - Design database - Design UI - Set up the base project, set up CI/CD - Report 2
3	Sprint 3	22/05/2023 - 26/05/2023	<ul style="list-style-type: none"> - Implement authenticate user module - Implement manage map & location module
4	Sprint 4	29/05/2023 - 02/06/2023	<ul style="list-style-type: none"> - Implement manage user module
5	Sprint 5	05/06/2023 - 09/06/2023	<ul style="list-style-type: none"> - Implement manage toilet module - Report 3
6	Sprint 6	12/06/2023 - 16/06/2023	<ul style="list-style-type: none"> - Implement manage company module - Meet the customer to set up the project for future release

#	Sprint	Duration	Notes
7	Sprint 7	19/06/2023 - 23/06/2023	<ul style="list-style-type: none"> - Implement QR Code - Implement manage service & price module - Report 4
8	Sprint 8	26/06/2023 - 30/06/2023	<ul style="list-style-type: none"> - Implement authorize user - Implement validation & constraint value for all features - Meet the customer to demo first core flow
9	Sprint 9	10/07/2023 - 14/07/2023	<ul style="list-style-type: none"> - Continue to implement validation & constraint value for all features - Review system
10	Sprint 10	17/07/2023 - 21/07/2023	<ul style="list-style-type: none"> - Implement integration test - Meet the customer to demo full project's core flow
11	Sprint 11	24/07/2023 - 28/07/2023	<ul style="list-style-type: none"> - Implement system test - Report 5
12	Sprint 12	31/07/2023 - 04/08/2023	<ul style="list-style-type: none"> - Release - Report 6
13	Sprint 13	07/08/2023 - 11/08/2023	<ul style="list-style-type: none"> - Review all features related to projects - Report 7
14	Sprint 14	14/07/2023 - 18/08/2023	<ul style="list-style-type: none"> - Prepare for final presentation

Table 10 - Project Deliverables

4. Responsibility Assignments

4.1 Team & Structures

Role	Fullscreen
Product Owner	Kiều Trọng Khánh CTCP Phát triển giải pháp doanh nghiệp REVA – Phạm Thị Thủy
Scrum Master	Huỳnh Lê Thủy Tiên
Developer Team	Nguyễn Lâm Thúy Phượng Nguyễn Đào Đức Quân Trần Kim Hiếu

Table 11 - Team and Structures

4.2 Responsibilities

D~Do; R~Review; S~Support; I~Informed; <blank>- Omitted

Sprint	Activity	T i e n H L T S E 1 5 1 1 0 4	h u o n g N L T S E 1 5 0 9 9 9	Ph u o n g N L T S E 1 5 1 0 0 8	Qu a n N D D S E 1 5 1 0 0 8	H i e u T K S E 1 4 0 9 0 7
Sprint 1	Collect user requirements			D	D	D
	Training			D	D	D
	Report 1 - Project Introduction			R	S	D
Sprint 2	Design database			D	I	I
	Design UI			R	D	S
	Set up the base project, set up CI/CD			D	S	S
	Report 2 - Project Management Plan			D	S	S
Sprint 3	Implement UI for authenticate user module			R	D	D
	Implement API for authenticate user module			D	I	I
	Implement UI for managing map & location module			I	D	D
	Implement API for managing map & location module			D	I	S
Sprint 4	Implement UI for managing user module			I	I	D
	Implement API for managing user module			D	I	I
Sprint 5	Implement UI for managing toilet module			I	D	I
	Implement API for managing toilet module			D	I	S

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Sprint	Activity	T i e n H L T S E 1 5 1 1 0 4	P h u o n g N L T S E 1 5 0 9 9 9	Q u a n N D D S E 1 5 1 0 0 8	H i e u T K S E 1 4 0 9 0 7
	Report 3 - Software Requirement Specification	R	S	D	S
Sprint 6	Implement UI for managing company module	I	D	I	I
	Implement API for managing company module	S	I	I	D
	Meet the customer to set up the project for future release	D	D	D	D
Sprint 7	Set up for scanning QR Code	I	I	D	I
	Implement API for scanning QR Code module	D	I	I	S
	Report 4 - Software Design Document	D	S	S	D
Sprint 8	Implement API for authorize user	S	I	I	D
	Implement validation & constraint value for all features	D	D	D	D
	Meet the customer to demo first core flow	D	D	D	D
Sprint 9	Implement validation & constraint value for all features (continue)	D	D	D	D
	Review system	D	D	D	D
Sprint 10	Implement integration test	D	D	D	D
	Meet the customer to demo full project's core flow	D	D	D	D
Sprint 11	Implement system test	D	D	D	D
	Report 5 - Test Documentation	S	D	S	D

Sprint	Activity	T i e n H L T S E 1 5 1 1 0 4	p h u o n g N L T S E 1 5 0 9 9 9	Q u a n N D D S E 1 5 1 0 0 8	H i e u T K S E 1 4 0 9 0 7
Sprint 12	Release	D	D	D	D
	Report 6 - Software User Guides	R	D	S	I
Sprint 13	Review all features related to project	D	D	D	D
	Report 7 - Final Project Report	D	S	S	S
Sprint 14	Prepare for final presentation	D	D	D	D

Table 12 - Team Responsibilities

5. Project Communications

Communication Item	Who/ Target	Purpose	When, Frequency	Type, Tool, Method (s)
Working in group	Team members	<ul style="list-style-type: none"> - Report code progress and documentation progress - Discuss issues about requirements from customers, and technical when implementing code. - Prepare demos and questions for the next mentor and client meetings. - Division of work. 	3 days/week	Online

Communication Item	Who/ Target	Purpose	When, Frequency	Type, Tool, Method (s)
Mentoring and Support	Team members and supervisor	<ul style="list-style-type: none"> - Review work progress, including code and documentation. - Answer questions related to requirements and techniques. - Control project deadlines, and ensure the project runs on schedule. 	2 days/week	Offline
Project review	Team members and stakeholders	<ul style="list-style-type: none"> - Review work progress. 	1 day/week	Online

Table 13 - Project Communications

6. Configuration Management

6.1 Document Management

- Use Google Drive for collaboration.
- Upload diagrams, images, media,... to categorized folders for easy management.

Link:

https://drive.google.com/drive/folders/1dXXzpw_LAyqHhqlVWn8v9vEKpGupoJ1P?usp=sharing

6.2 Source Code Management

- Use GitHub.

Link: <https://github.com/HAPPY-3-FRIENDS>

6.3 Meeting minutes

- Use Google Drive to store meeting minutes.

Link: <https://drive.google.com/drive/folders/1gPd1ieHeQAXsp0VuhiLjyTdRiXAf2-zd?usp=sharing>

6.4 Tools & Infrastructure

Category	Tools / Infrastructure
Technology	ReactJS (Node v16.14.2, React v18.2.0), Flutter (App Flutter v3.7.8), Java Spring Boot v2.7.8
Database	SQL Server 2019, FireBase
IDEs/Editors	Visual Studio Code v1.78.2, Android Studio v2021.2.1, IntelliJ v2022.3.2

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Category	Tools / Infrastructure
Diagramming	StarUML, DrawIO
Documentation	Microsoft Office, Google Docs/Sheets
Version Control	GitHub (Source Codes), SourceTree (Source Codes), Google Drive (Documents)
Deployment server	Azure App Service
Project management	Google Sheets

Table 14 - Tools & Infrastructure

III. Software Requirement Specification

1. Product Overview

The Social Toilet Map System is a system that provides users with an application that helps to search for toilets near them quickly and in accordance with their standards, while also assisting them in their payment operations. The context diagram below illustrates the external entities and system interfaces. The system is expected to resolve some public toilet issues, and integrate into a part of a large application system of Dịch vụ Công ích Quận 1 (combining Toilet Map with other public services, for example, public buses, public bicycles...) and based on the location of the toilets to advertise for shops, supermarkets... nearby.

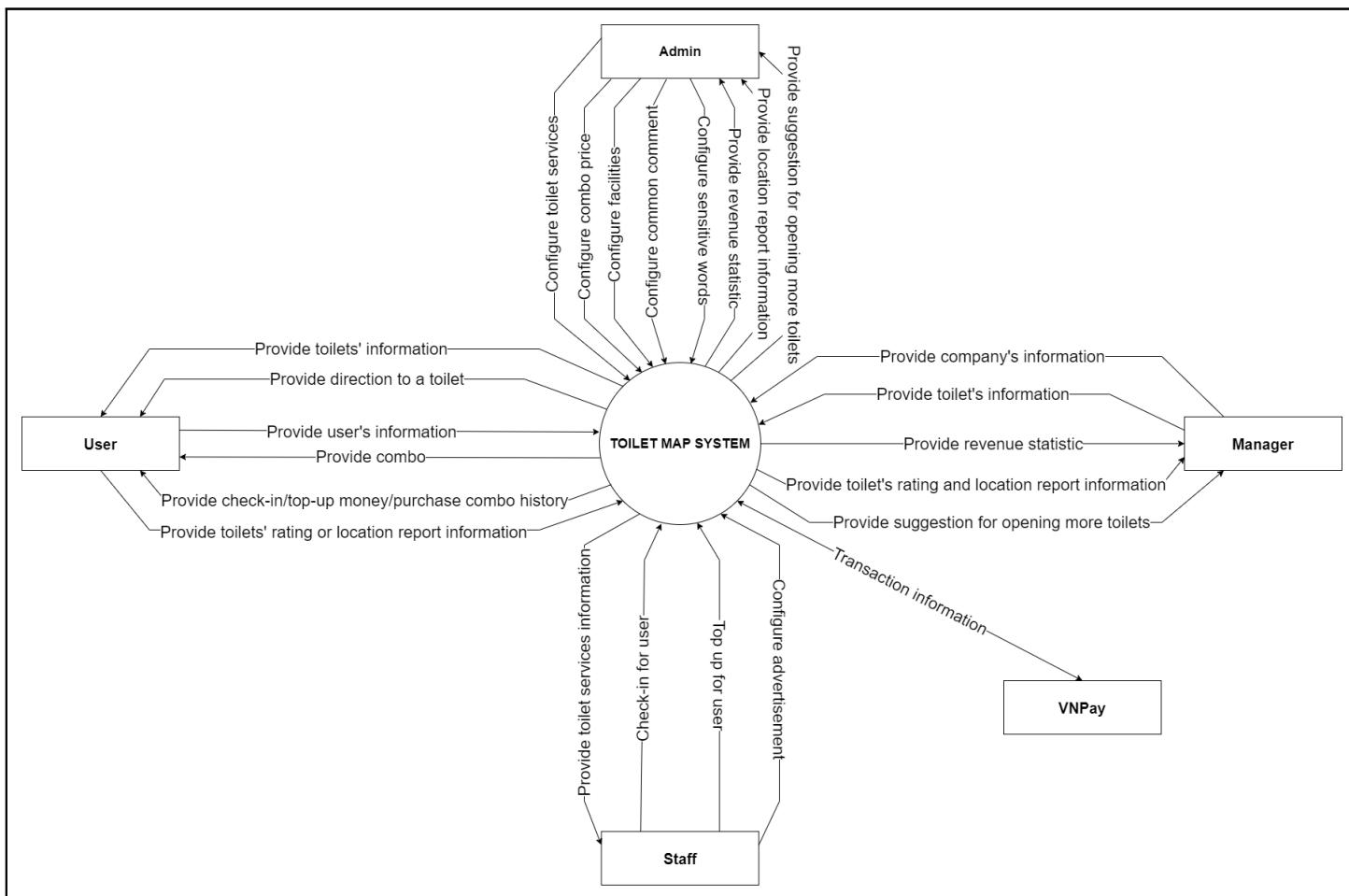


Figure 02 - Product Overview

2. User Requirements

2.1 Actors

#	Actor	Description
1	Guest	<p>Guest is a person who has not been in the Toilet Map System. Guest has the limited permission to some functions, only:</p> <ul style="list-style-type: none"> - Login - Sign up
2	User	<p>User is a person who has access to the Toilet Map System. User has permission with the following functions:</p> <ul style="list-style-type: none"> - Get the list of check-in - Get the list of top up - Get the list of purchase combo - Get user's information - Update user's information - Purchase combo - Get services - Get the list of toilets nearby user - Get toilet detail - Get the list of ratings - Rate - Top up - Logout
3	Staff	<p>Staff is a person who has access to the Toilet Map System. Staff has permission with the following functions:</p> <ul style="list-style-type: none"> - Top up - Get user's information - Check-in - Manage room - Logout

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#	Actor	Description
4	Manager	<p>Manager is a person who has access to the Toilet Map System. Manager has permission with the following functions:</p> <ul style="list-style-type: none"> - Create a toilet - Create staff account - Get the list of toilets - Get toilet detail - Update toilet - Get the list of rating - Update rating - Get company's information - Update manager account - Export file excel - Make statistics - Logout
5	Admin	<p>Admin is a person who has access to the Toilet Map System. Admin has permission with the following functions:</p> <ul style="list-style-type: none"> - Add a combo - Update a sensitive word - Delete a sensitive word - Add a sensitive word - Update a combo - Delete a combo - Add a toilet facility - Update a toilet facility - Delete a toilet facility - Add a common comment - Update a common comment - Delete a common comment - Add a toilet service - Update a toilet service - Add a toilet type - Update a toilet type - Delete a toilet type - Export file excel - Make statistics - Create a company - Create manager account - Get the list of companies - Get the company detail - Update company information - Logout

Table 15 - Actors

2.2 Use Cases

2.2.1 Diagram

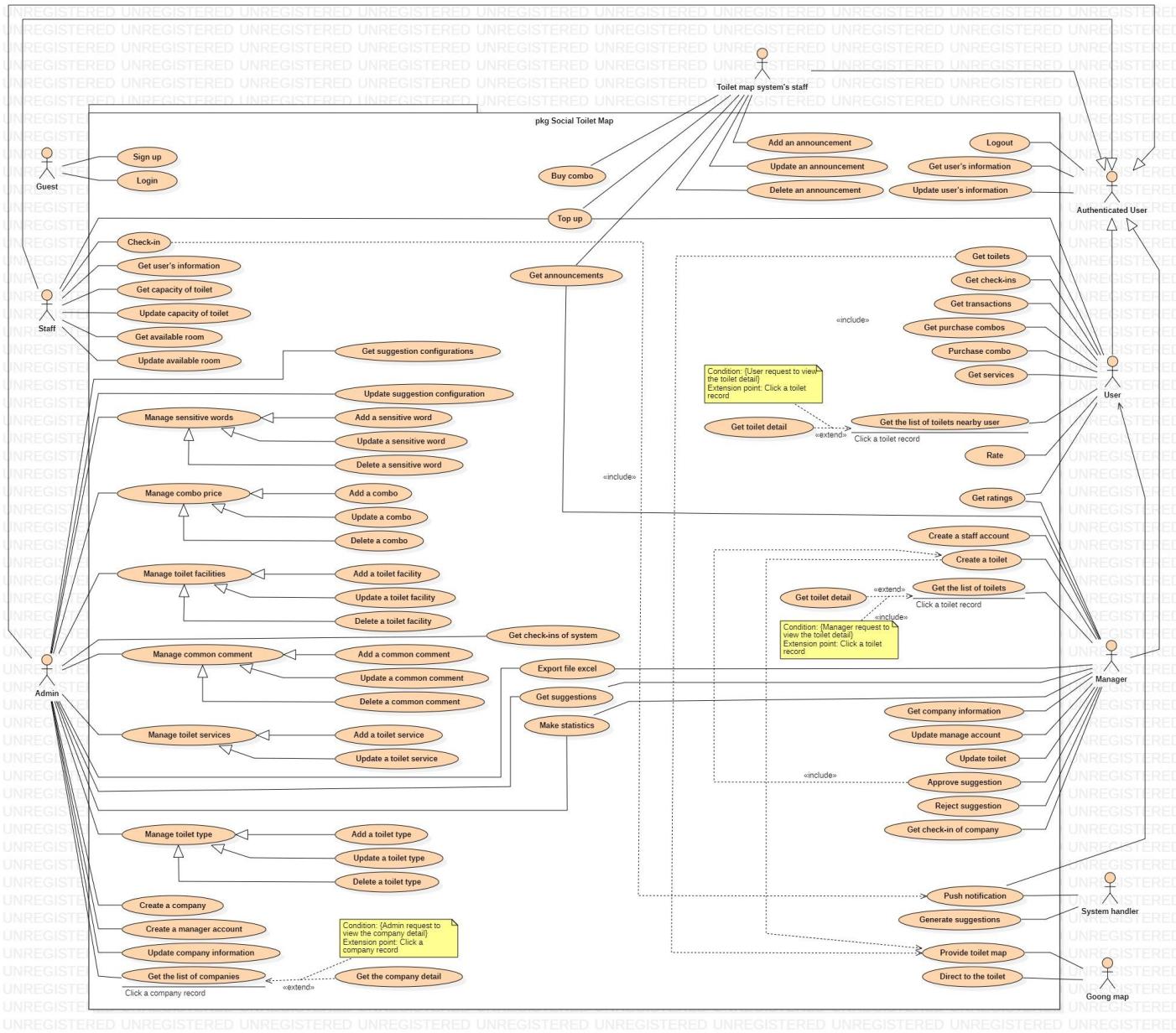


Figure 03 - Use Cases Diagram

2.2.2 Descriptions

ID	Use cases	Actors	Use case description
UC_1	Sign Up	Guest	This use case allow Guests to sign up account for using mobile app as User. To be able to use the app, Guests must sign up with Phone number. After verifying phone number that Guests have entered successfully, Guests will enter name and use the app.
UC_2	Login	Guest	This use case allow Guests to login after they have registered an account on the system as User with phone number. After verify phone number that Guests have entered successfully, Guests can use app. This login state will be kept until the user logs out of the system.
UC_3	Login	Guest	<p>This use case allow Guests to log in after they have an account in the system as Admin, Manager, or Staff.</p> <ul style="list-style-type: none"> - Admin account is provided by the toilet system with username, password. - Manager account is provided by Admin with username, password. - Staff account is provided by Manager with username, password.
UC_4	Logout	Authenticated User	<p>This use case allow Authenticated User in system to logout system if they do not want to use the system anymore. If want to login again:</p> <ul style="list-style-type: none"> - Admin, Manager, Staff must enter username, password. - User must enter Phone number to verify.
UC_5	Get user's information	Authenticated User	This use case allows Authenticated User to see his/her information that he/she have created in system before, if this information is wrong, Authenticated User can edit it.

ID	Use cases	Actors	Use case description
UC_6	Update user's information	Authenticated User	<p>This use case allows Authenticated User to update his/her information that he/she have created in system before.</p> <ul style="list-style-type: none"> - If User want to update new phone number, he/she must confirm with OTP SMS code sent to the new phone number.
UC_7	Get check-ins	User	<p>This use case allows users to retrieve a historical list of toilet checkins they've made, including information:</p> <ul style="list-style-type: none"> - Name of the toilet - Time. - Price (According to payment method) - Type of cleaning service <p>For recent and unreviewed checkins, users can choose to rate the service for those checkins.</p>
UC_8	Get transactions	User	<p>This use case allows the user to retrieve a historical list of transactions to their account, including the User's app top-ups (using VNPay) and the top-ups through Staff's app (User directly gives cash to staff of 1 toilet). The information of 1 deposit includes:</p> <ul style="list-style-type: none"> - Time. - Amount deposited. - Recharge method (via User app or Staff app).
UC_9	Get purchase combos	User	<p>This use case allows the user to be able to retrieve a historical list of package purchases that the user has made. There are 1 method to buy the package: using the existing money in the user's application to buy. The information of 1 package purchase includes:</p> <ul style="list-style-type: none"> - Time. - Number of purchases.

ID	Use cases	Actors	Use case description
UC_10	Purchase combo	User	<p>This use case allow User to purchase combo. The required fields include:</p> <ul style="list-style-type: none"> - The combo that have been created in the system (turn/price). <p>The system will use the money that User had in the system to purchase the combo if enough.</p>
UC_11	Get services.	User	<p>This use case allow User to get list of services. Each service will include the corresponding amount for each use and the corresponding number of turns for each use. There are a total of 3 types of services in the system: Urination, defecation, bathing.</p>
UC_12	Get toilets nearby user	User	<p>This use case allows User to retrieve the 10 closest toilets to him/her based on the time it takes to get from his/her current location to that location. The toilets will also have the necessary basic information for User to choose from.</p>
UC_13	Get toilet detail	User	<p>This use case allows the user to be able to retrieve the information of a specific Toilet. The information includes:</p> <ul style="list-style-type: none"> - The pictures of the toilet. - Basic information: Opening hours, prices,... - Overall rating of the toilet: Average number of stars, Number of reviews. - Some of the most recent reviews. <p>Based on that information, users can choose the most suitable toilet for them.</p>
UC_14	Get ratings	User	<p>This use case allows User to be able to retrieve a specific Toilet's ratings, which will be sorted by time. Users can also filter ratings based on number of stars (1 star, 2 star,...). For negative, misinformed ratings, users can choose to report the rating.</p>

ID	Use cases	Actors	Use case description
UC_15	Rate	User	<p>In this use case, after making a checkin, using a cleaning service in a particular toilet on the system, the User can make an assessment of the quality of that toilet. An rating includes the following fields:</p> <ul style="list-style-type: none"> - The star rating for the service. - Bad common comments tag (optional). - Comments. - Images (optional). <p>Upon completion of the rating, the rating will be checked. If the review is violated with profanity, the rating will be hidden.</p>
UC_16	Top up	Staff, User	<p>In this use case, the User can make a deposit to the account by 2 methods: Top up with VNPay or cash.</p> <ul style="list-style-type: none"> - If the User chooses VNPay, they will use the User Application to log in and select the amount to top up, then confirm on VNPay service to perform the top-up operation. - If the User chooses cash, they need to give the cash to the Employee of a certain Toilet. At this time, the Employee will use the Employee Application, enter the User's information and proceed to top up the User's system.

ID	Use cases	Actors	Use case description
UC_17	Check-in	Staff	<p>In this use case, the Staff can make Check-in for the Users when they use the service at the restroom. There are two cases when checking-in: Checkin for customers using the User application to pay (using QR code) and Checkin for visitors (using cash).</p> <ul style="list-style-type: none"> - If User uses QR code: Staff will scan QR code for payment. If the payment is successful, the system will display transaction information on both the User and Employee sides. - If User uses cash: Staff will select Checkin for current guests, then enter the number of visitors corresponding to each service and receive cash from guests.
UC_18	Manage Room	Staff	<p>In this use case, the Staff can change the number of rooms in the toilet base on the actual situation of the toilet. There are 2 types of manage room:</p> <ul style="list-style-type: none"> - Mark a room as not available to use. - Update the current available room.
UC_19	Create a toilet	Manager	<p>This use case allows Manager to create a toilet. After Manager creates a toilet, if Manager sets status "Đang hoạt động" for the toilet, it will appear in Toilet Map for users to see and use. The required fields include:</p> <ul style="list-style-type: none"> - Toilet name. - Address. - Commune. - District. - Province. - Images. - Open - Close time. - Number of toilet's room for each toilet type. - Facilities. - Free or charge. - Status. - Account username, password.

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ID	Use cases	Actors	Use case description
UC_20	Create a staff account	Manager	<p>Create staff account includes in create a toilet, 1 staff account will be attached to 1 toilet. Staff at toilet will use this account to checkin, topup for users, guest. The required fields include:</p> <ul style="list-style-type: none"> - Account username, password.
UC_21	Get the list of toilets	Manager	<p>This use case allow Manager to see name, account toilet, district, status, suggestion for open/close of all toilets in company. Manager will have a comprehensive view of the toilet system in the company.</p>
UC_22	Get toilet detail	Manager	<p>This use case allow Manager to see, manage toilet report, account toilet, general information, config toilet, rating, report.</p>
UC_23	Update toilet	Manager	<p>In this use case, Manager will update general information, configuration of toilet. Manager will use this use case to update location, toilet facility, toilet images, account toilet password, update status if toilet close/lock. The following fields can be updated:</p> <ul style="list-style-type: none"> - Toilet name. - Address. - Commune. - District. - Province. - Images. - Open - Close time. - Number of toilet's room for each toilet type. - Facilities. - Free or charge. - Status. - Account password.
UC_24	Get ratings	Manager	<p>In this use case, Manager will see all rating of users for toilet which include date, comment, comment tag, star, resolve. Parallel with that, Manager can see average rating of toilet to have an overview, easy to manage the toilet based on the perception of users.</p>

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ID	Use cases	Actors	Use case description
UC_25	Get company information	Manager	In this use case, Manager can see company's information that Admin have created in system, if this info is wrong, Manager can contact to Admin to edit information.
UC_26	Update manager account	Manager	In this use case, Manager can change password of Manager account after Admin provide account for company. If Manager want to update new password, they must enter old password first.
UC_27	Add a combo	Admin	In this use case, Admin will create new combo in system that users can buy for using to go to toilet or staff can buy combo for users if they want to pay with cash. The required fields include: <ul style="list-style-type: none"> - Package price. - Package turn.
UC_28	Update a combo	Admin	In this use case, Admin will update a combo in system if price increase/decrease. The following fields can be updated: <ul style="list-style-type: none"> - Package price. - Package turn.
UC_29	Delete a combo	Admin	In this use case, Admin will delete a combo in system. After deleted, this combo does not appear on the combo purchase screen of user, staff anymore.
UC_30	Add a sensitive word	Admin	In this use case, Admin will create a sensitive word for system to check if comment have this word, it will be removed. This sensitive word after created will be applied to system. The following fields can be created: <ul style="list-style-type: none"> - Sensitive word.

ID	Use cases	Actors	Use case description
UC_31	Update a sensitive word	Admin	In this use case, Admin will update sensitive word if Admin types wrong. This sensitive word after update will be applied to which comment ratings have this word. The following fields can be updated: - Sensitive word.
UC_32	Delete a sensitive word	Admin	In this use case, Admin will delete sensitive word if this word is not worth listing as sensitive word. This sensitive word after delete will be removed to which comment ratings have this word.
UC_33	Add a toilet facility	Admin	In this use case, Admin will create a toilet facility for Manager use to create a toilet. After Admin create new facility, Manager will see it in choosing facility for toilet in create a toilet. The required fields include: - Facility name.
UC_34	Update a toilet facility	Admin	In this use case, Admin will update a toilet facility for Manager use to create a toilet. After Admin update facility, Manager will see it in choosing facility for toilet in create a toilet. The following fields can be updated: - Facility name.
UC_35	Delete a toilet facility	Admin	In this use case, Admin will delete a toilet facility if this facility no longer exists in the toilet system. After Admin delete facility, Manager will no longer be able to see this facility to select. It will not be possible to delete if being used at the toilet.
UC_36	Add a common comment	Admin	In this use case, Admin will create a common comment for user easy to comment when rating. It will appear as select box when users rate for toilet after using service of toilet. The required fields include: - Common comment tag.

ID	Use cases	Actors	Use case description
UC_37	Update a common comment	Admin	In this use case, Admin will update a common comment for user easy to comment when rating. The following fields can be updated: - Common comment tag.
UC_38	Delete a common comment	Admin	In this use case, Admin will delete a common comment when it's unused or rarely used to tidy up the rating screen.
UC_39	Update a toilet service	Admin	In this use case, Admin will update price and date approve of service. Currently, the partner only agrees to use 3 services, so the system is fixing 3 services and cannot update service name as well as delete service. The following fields can be updated: - Service price. - Date approve.
UC_40	Update a toilet type	Admin	In this use case, Admin will update status of toilet type is available in the system. Currently, the partner only agrees to use 3 toilet types, so the system is fixing 3 toilet types and cannot delete toilet types. The following fields can be updated: - Status.
UC_41	Export file excel	Admin, Manager	This use case allow Admin/Manager to export file excel about statistic of list of all company/all toilets/toilet in company in system for easy calculation and statistics of the amount of temporary collection. - In Admin role, it will export all companies with amount of temporary money. - In Manager role, it will export amount of temporary money of all toilets under the management of Manager's company as well as 1 toilet specifically.

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ID	Use cases	Actors	Use case description
UC_42	Make statistics	Admin, Manager	<p>In this use case, Admin/Manager will see amount of temporary money as well as average turn number of Company/All toilets/Toilet with date range filter for easy to compare, manage.</p> <ul style="list-style-type: none"> - In Admin role, Admin will see statistics of all companies in toilet system. - In Manager role, Manager will see statistics of all toilets under the management of Manager's company or 1 toilet specifically.
UC_43	Create a company	Admin	<p>In this use case, Admin will create a company with information that the company participating in the system has given. After created, the company will be joined to the system and operate. The required fields include:</p> <ul style="list-style-type: none"> - Company name. - Address. - Commune. - District. - Province. - Logo.
UC_44	Create manager account	Admin	<p>In this use case, Admin will create manager account that attached to a company. This use case will include in create a company to make sure 1 Manager account is associated with 1 company. The required fields include:</p> <ul style="list-style-type: none"> - Account username, password.
UC_45	Get the list of companies	Admin	<p>In this use case, Admin will see all companies in system that can easily manage how many companies have joined the system. Admin can see name, address, status of all companies here.</p>
UC_46	Get the company detail	Admin	<p>In this use case, Admin can review the information created for company as well as easily correct the information if there are any errors.</p>

ID	Use cases	Actors	Use case description
UC_47	Update company information	Admin	<p>In this use case, Admin will update a company information if the company has a request to update. Admin can also change status of company if it close or unsubscribe from the toilet system. The following fields can be updated:</p> <ul style="list-style-type: none"> - Company name. - Address. - Commune. - District. - Province. - Logo. - Status.
UC_48	Push notification	System handler	<p>In this use case, after the Staff makes a checkin for a User to go to the toilet, the system will process and send a notification to the User about the information of that checkin. User can check or rate the toilet service.</p>
UC_49	Provide map	Goong Map	<p>In this use case, Goong Map will provide the User/Manager with a map system based on the location of the User's mobile device or the Manager's input location. User's map will be used to look up and search for toilets. Manager's map is used to create new toilets.</p>
UC_50	Direct to the toilet	Goong Map	<p>In this use case, when the User needs directions to a specific toilet, Goong Map will provide a system of locations to help create a specific path from the User's location to that toilet. Users can also enter a different starting location than their current location.</p>

Table 16 - Use Cases Descriptions

3. Functional Requirements

3.1 System Functional Overview

3.1.1 Screens Flow

3.1.1.1 Screens flow - Mobile module (User site)

3.1.1.1.1 Unauthenticated

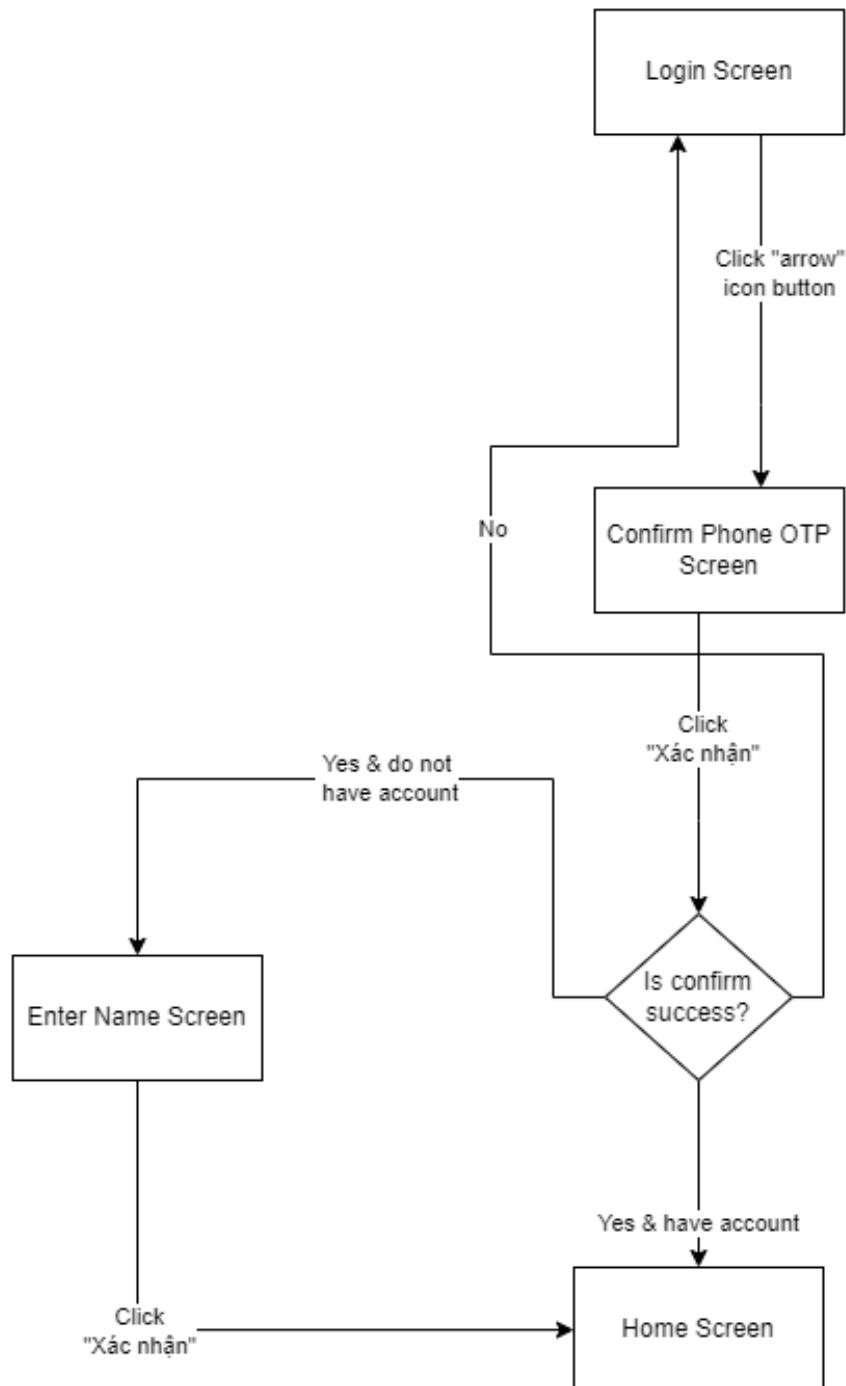


Figure 04 - Screens flow - Mobile module (User site) - Unauthenticated

3.1.1.1.2 User Information

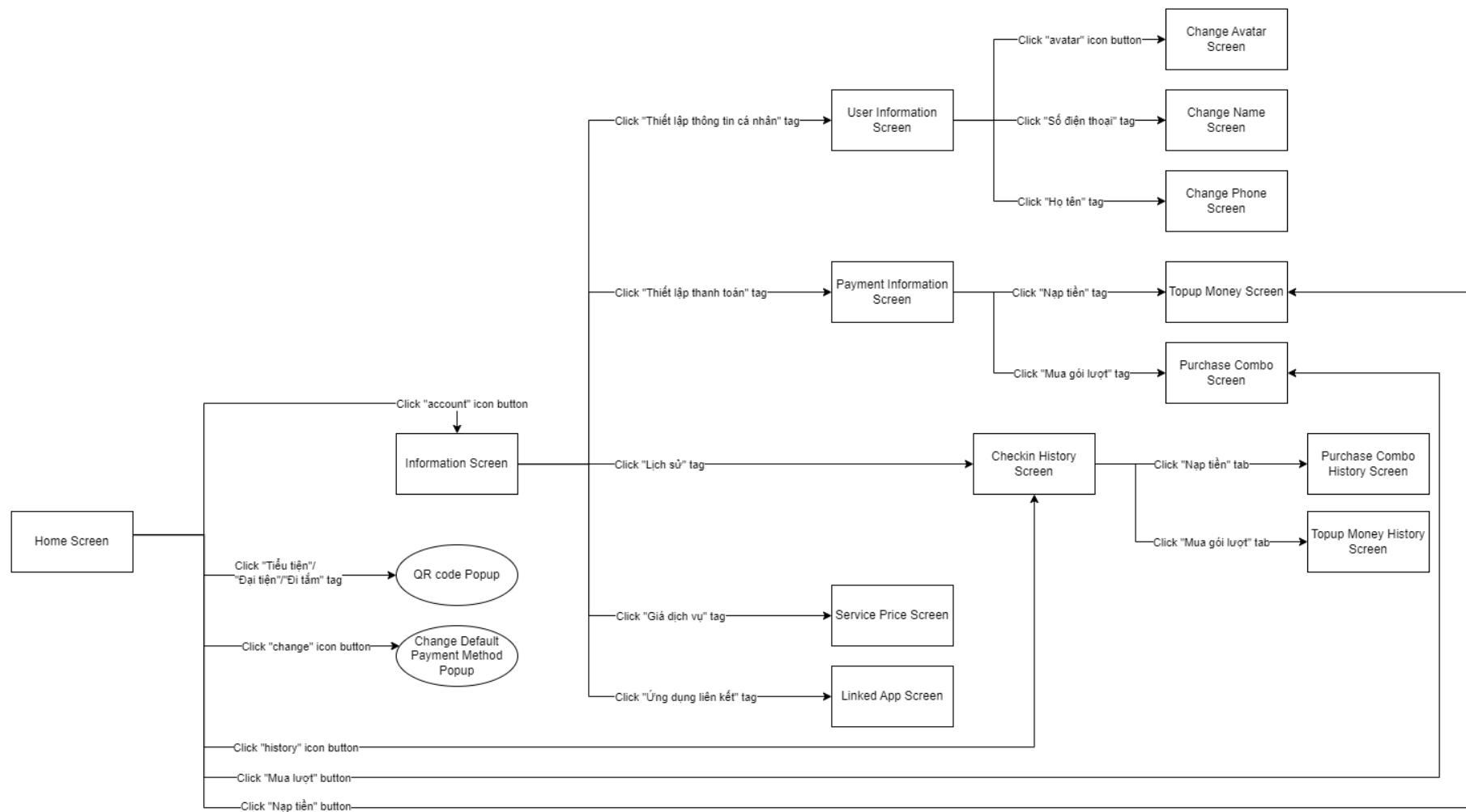


Figure 05 - Screens flow - Mobile module (User site) - User Information

3.1.1.3 Other

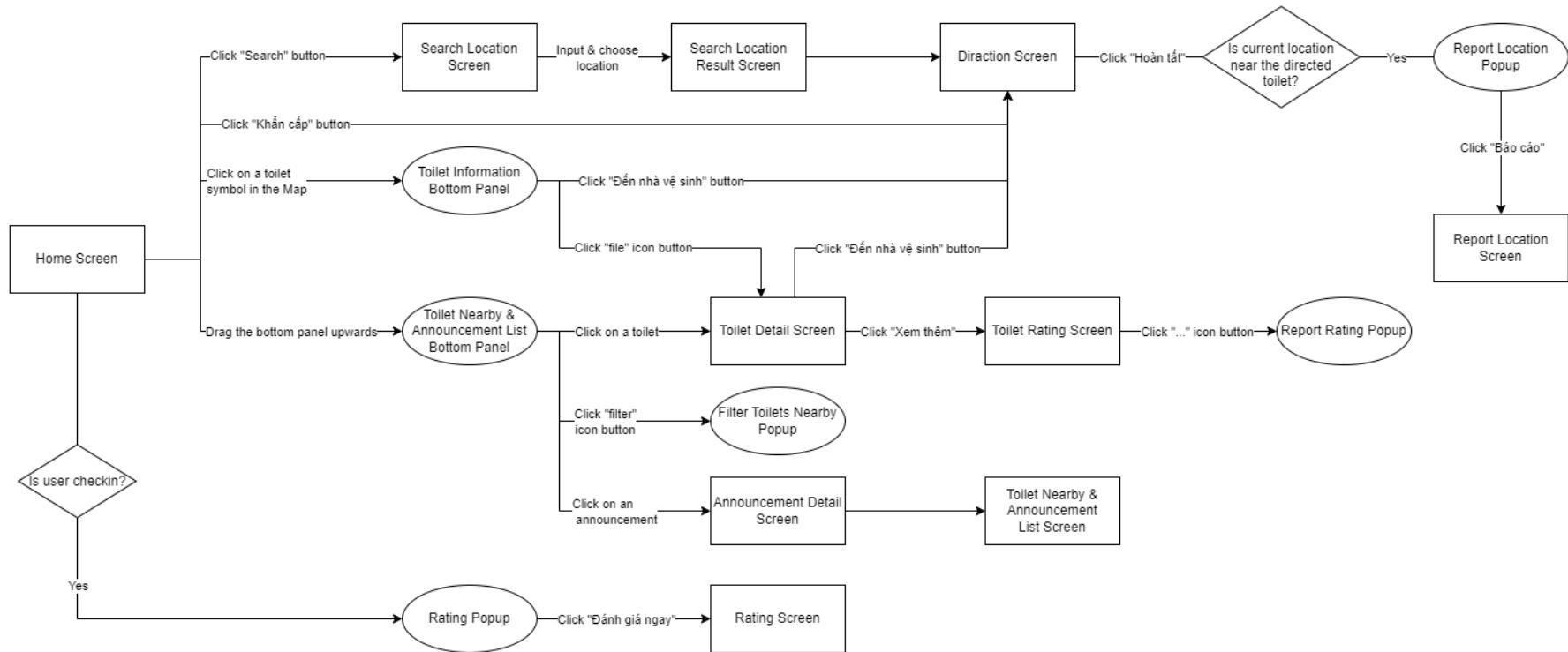


Figure 06 - Screens flow - Mobile module (User site) - Other

3.1.1.2 Screens flow - Mobile module (Staff site)

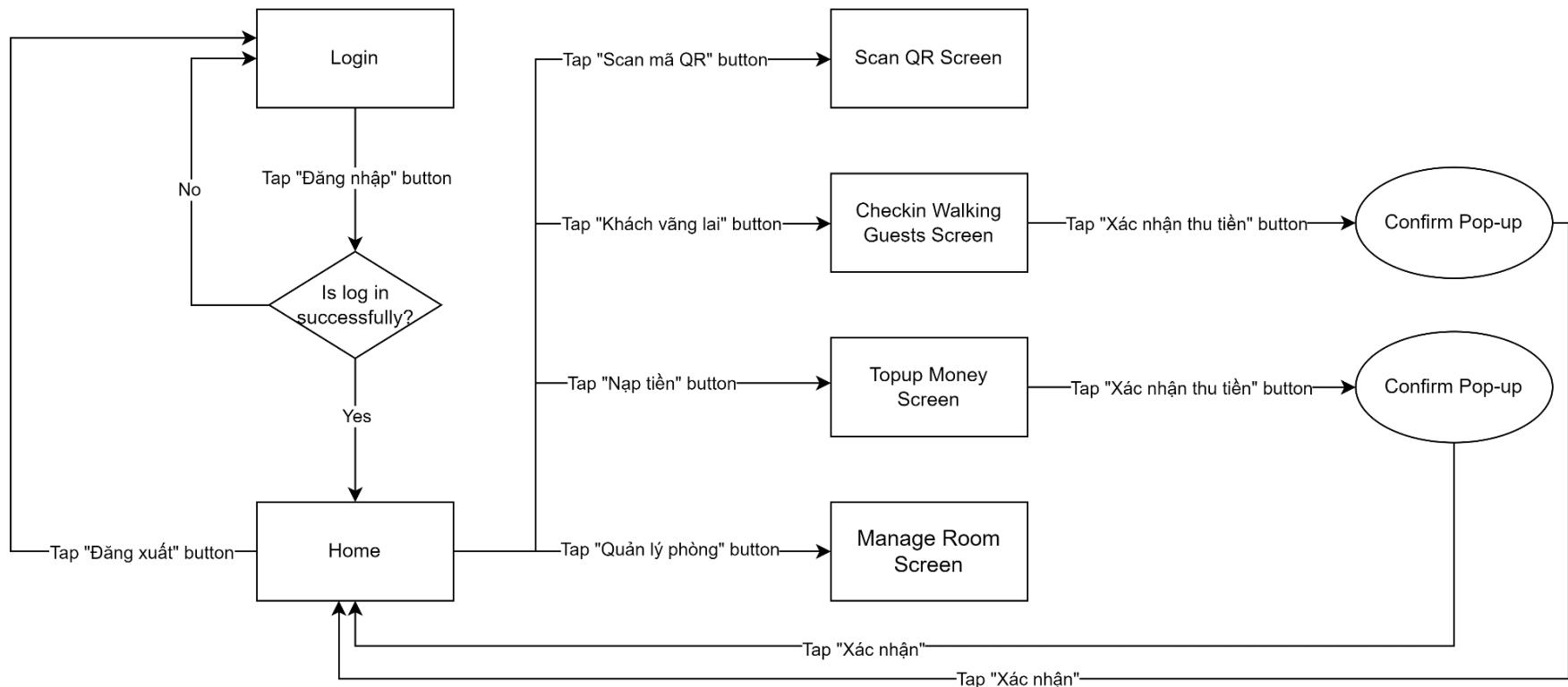


Figure 07 - Screens flow - Mobile module (Staff site)

3.1.1.3 Screens flow - Web module (Manager side)

3.1.1.3.1 Main menu

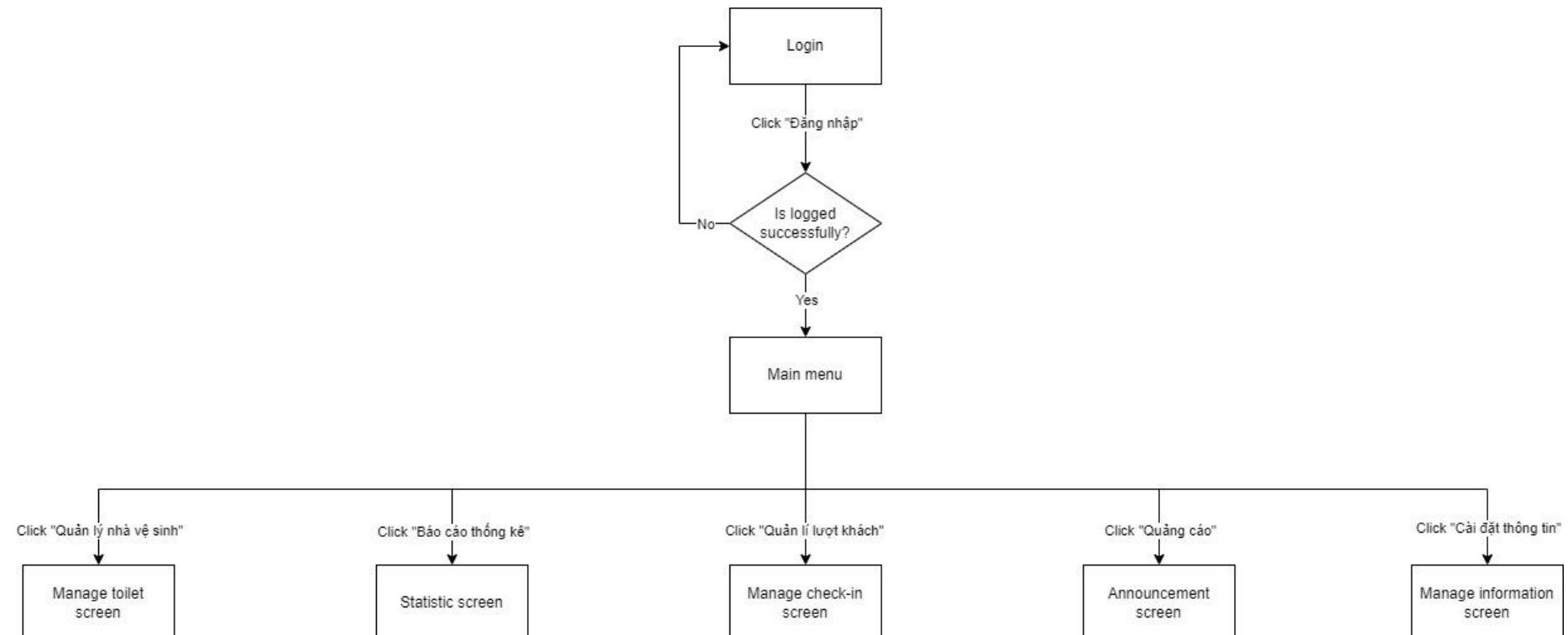


Figure 08 - Screens flow - Web module (Manager side) - Main menu

3.1.1.3.2 Toilet management

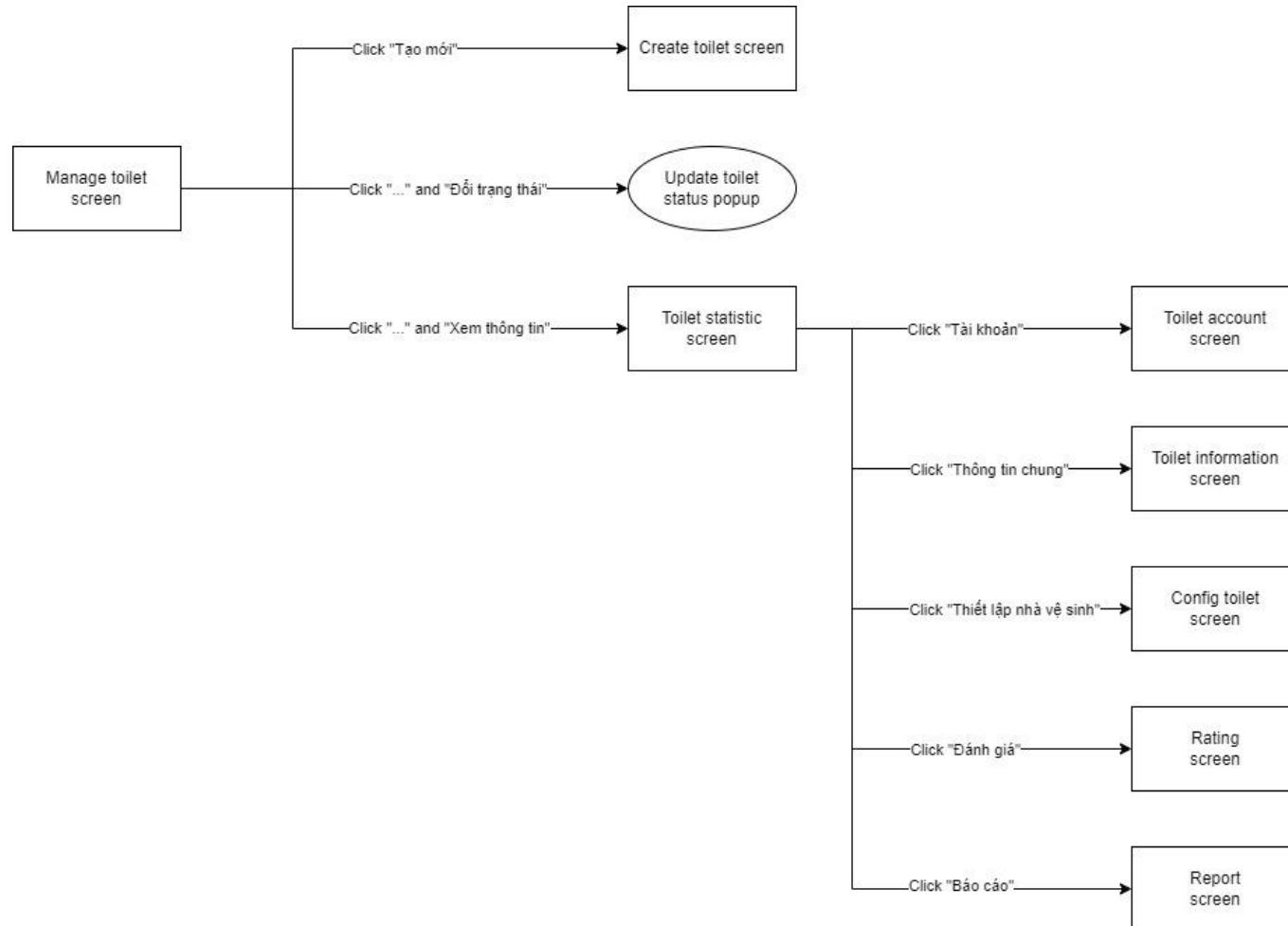


Figure 09 - Screens flow - Web module (Manager side) - Toilet management

3.1.1.3.3 Statistics

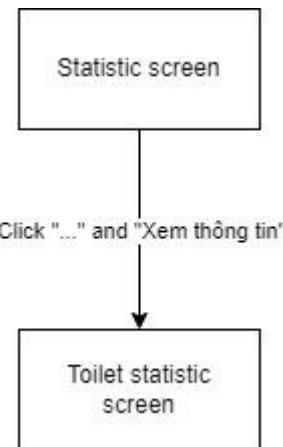


Figure 10 - Screens flow - Web module (Manager side) - Statistics

3.1.1.3.4 Announcement management

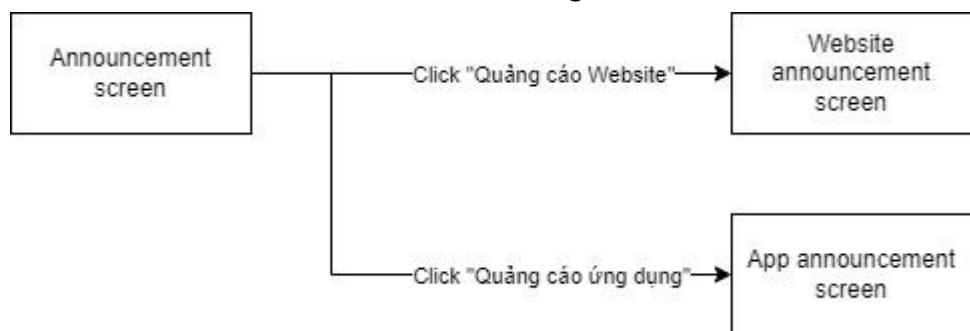


Figure 11 - Screens flow - Web module (Manager side) - Announcement management

3.1.1.3.5 Information management

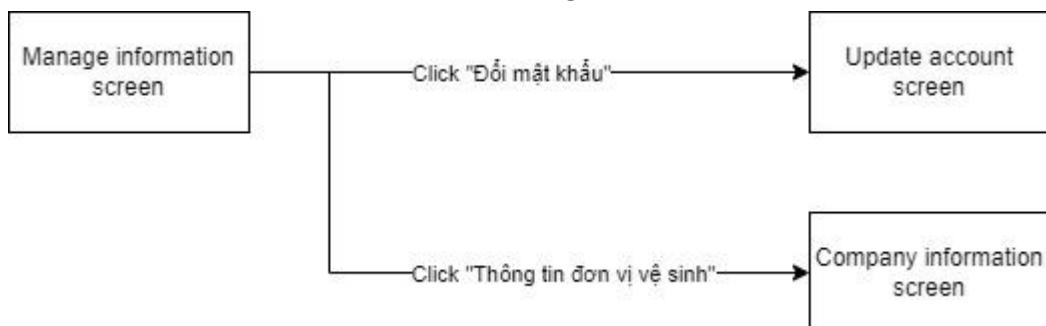


Figure 12 - Screens flow - Web module (Manager side) - Information management

3.1.1.4 Screens flow - Web module (Admin side)

3.1.1.4.1 Main menu

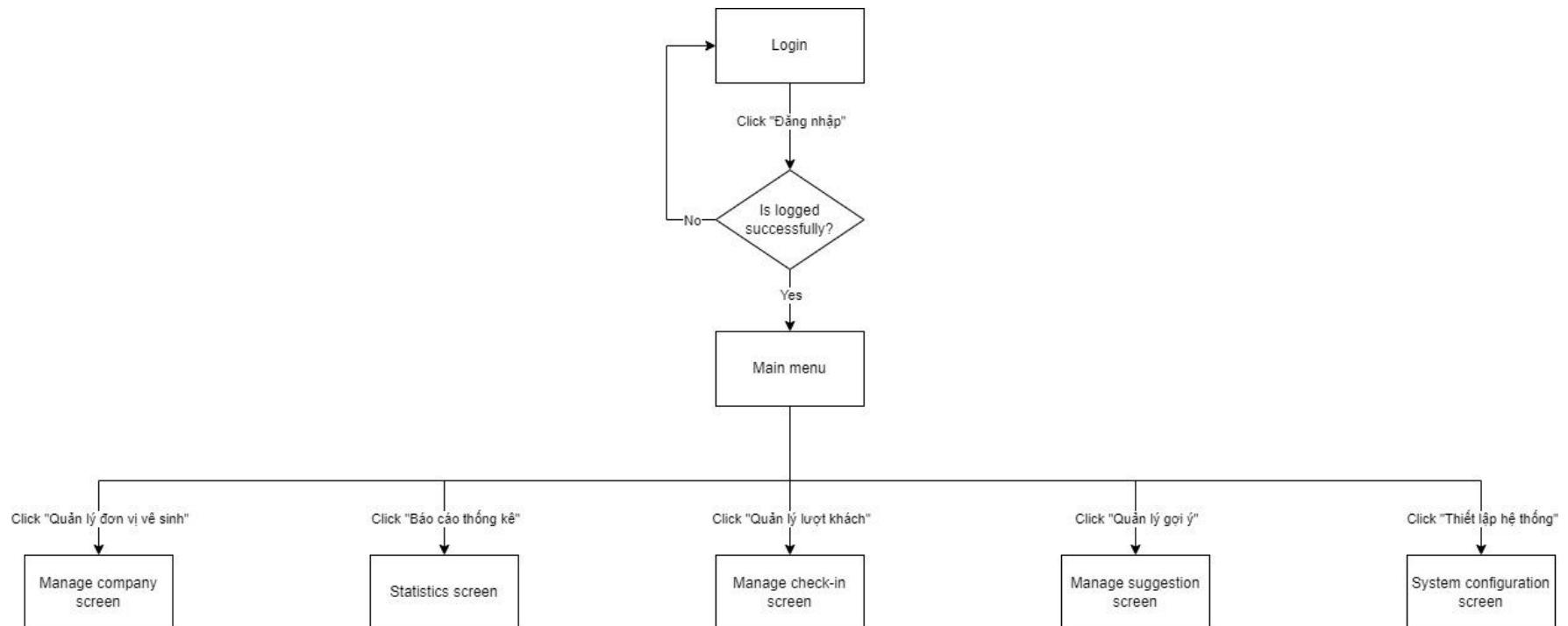


Figure 13 - Screens flow - Web module (Admin side) - Main menu

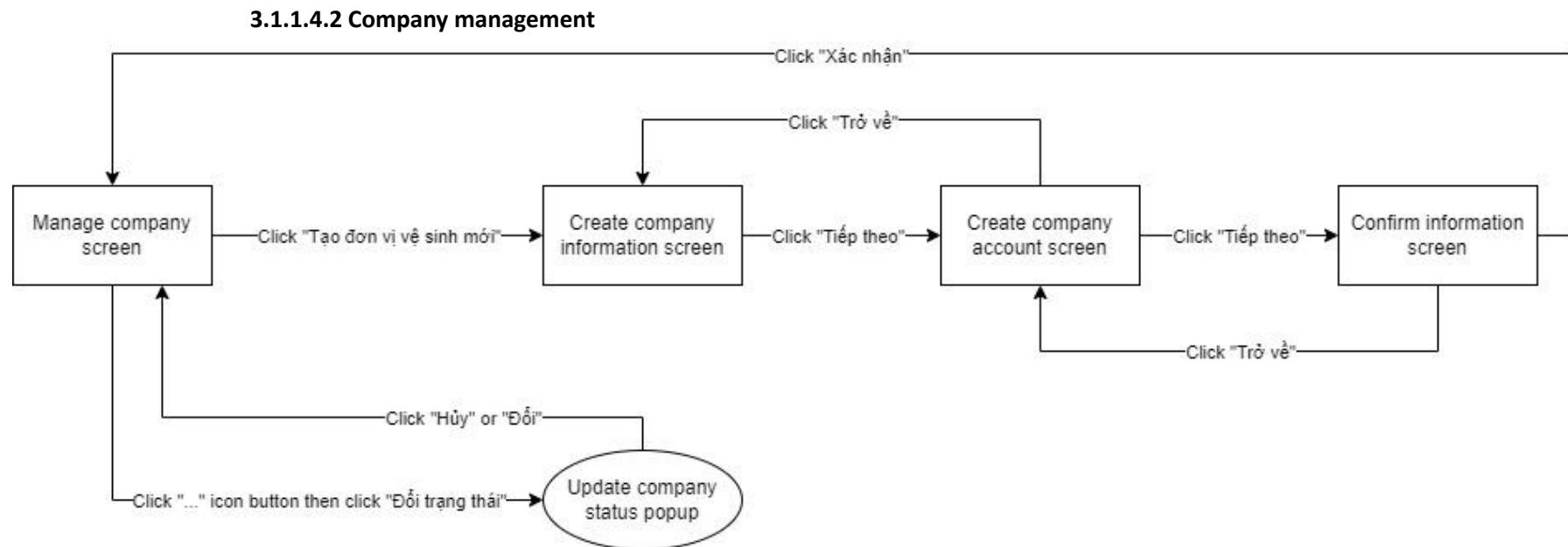


Figure 14 - Screens flow - Web module (Admin side) - Company management

3.1.1.4.3 Statistics

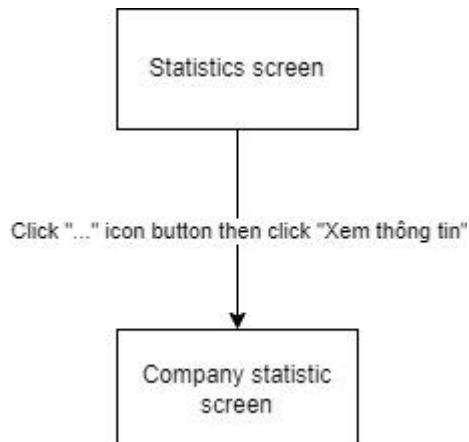


Figure 15 - Screens flow - Web module (Admin side) - Statistics

3.1.1.4.4 Suggestion management

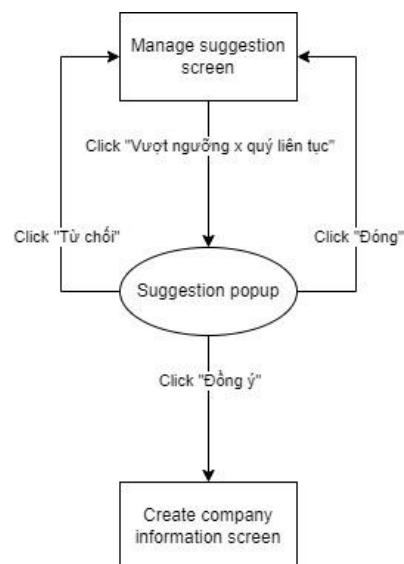


Figure 16 - Screens flow - Web module (Admin side) - Suggestion management

3.1.1.4.5 System configuration

3.1.1.4.5.1 Service management

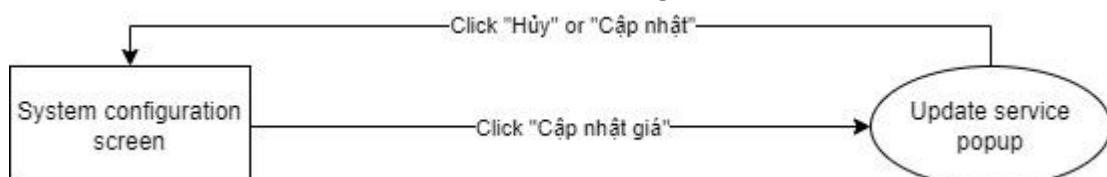


Figure 17 - Screens flow - Web module (Admin side) - Service management

3.1.1.4.5.2 Facility management

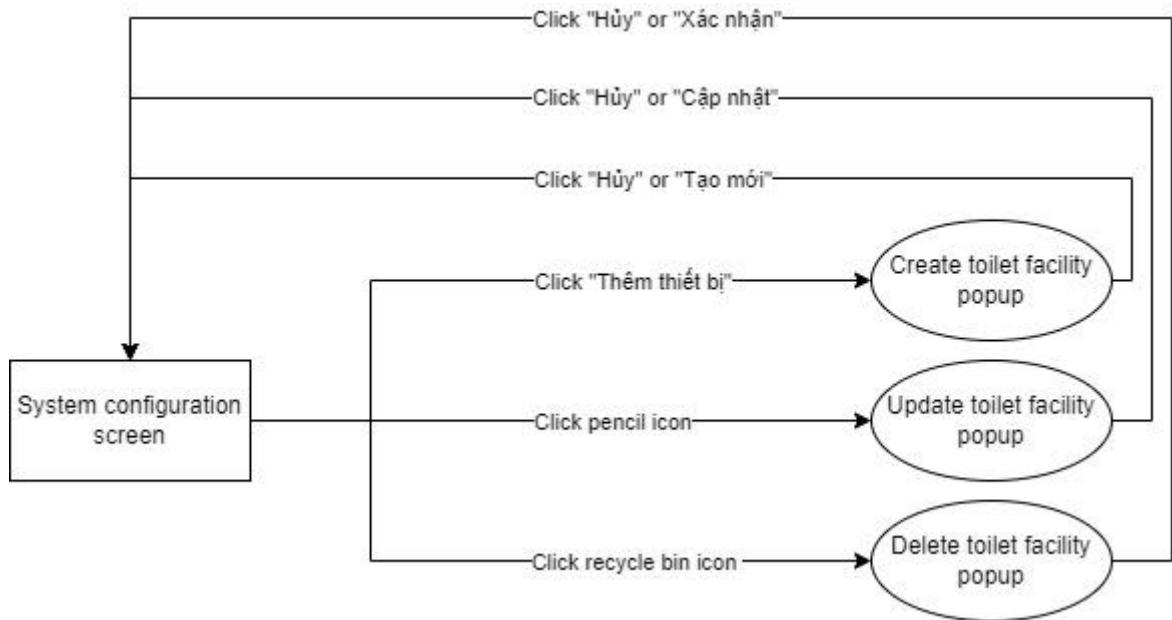


Figure 18 - Screens flow - Web module (Admin side) - Facility management

3.1.1.4.5.3 Common comment management

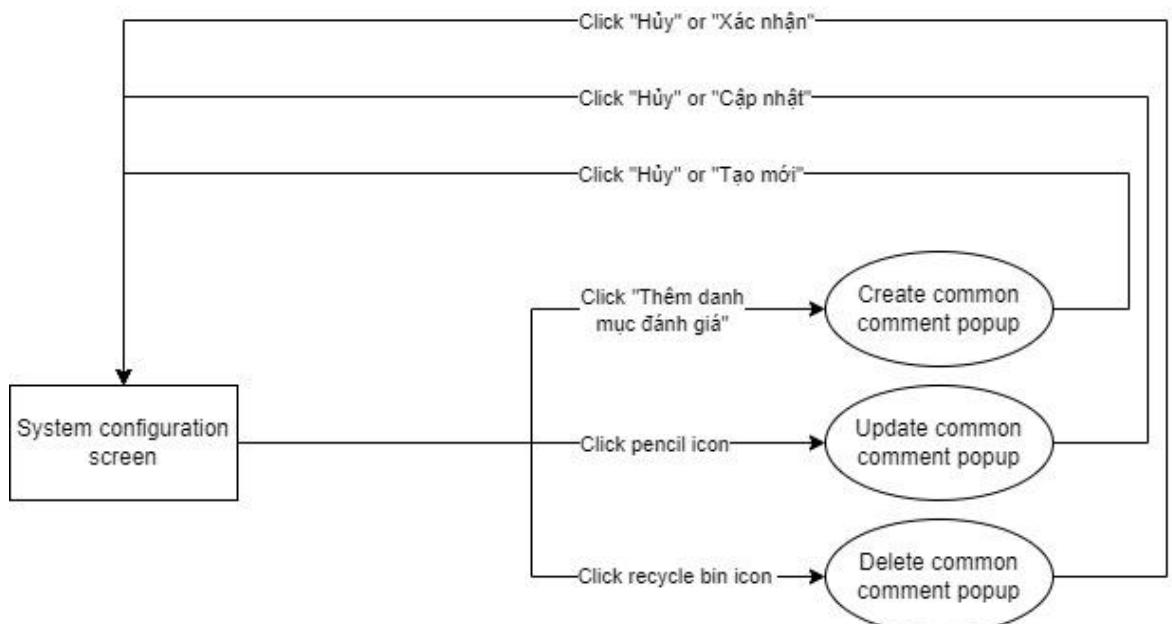


Figure 19 - Screens flow - Web module (Admin side) - Common comment management

3.1.1.4.5.4 Combo management

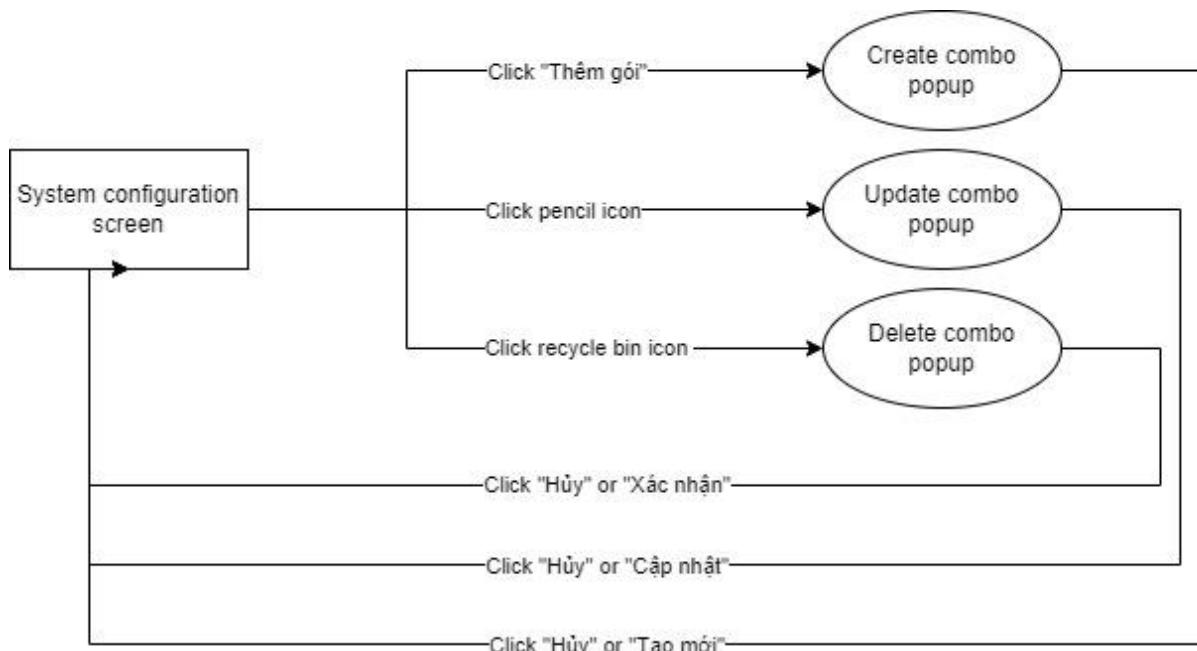


Figure 20 - Screens flow - Web module (Admin side) - Combo management

3.1.1.4.5.5 Sensitive word management

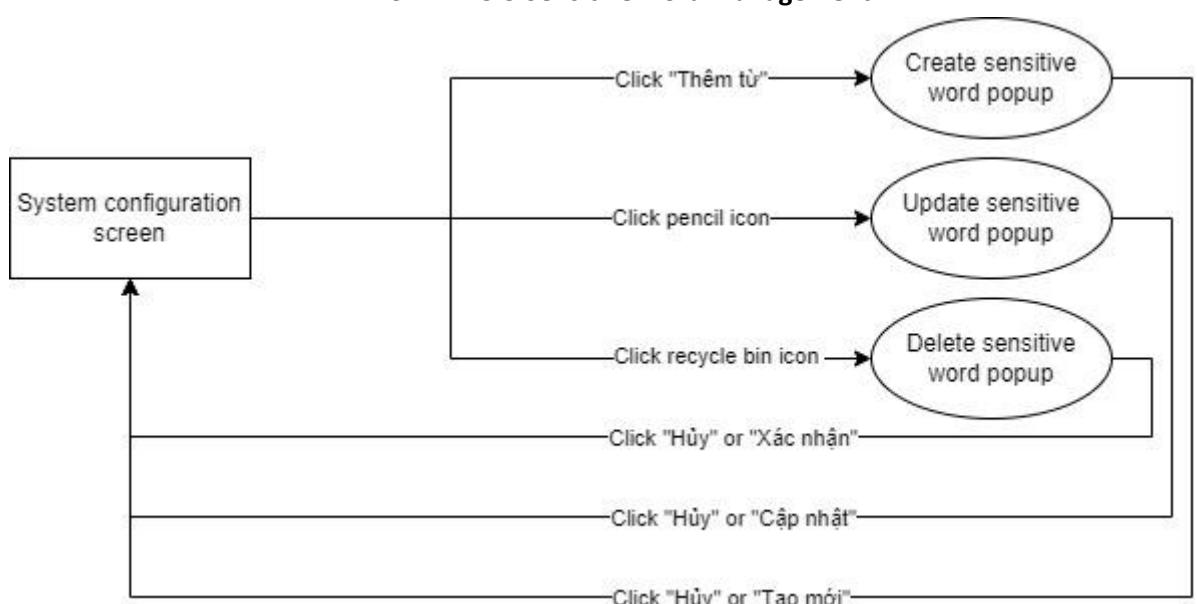


Figure 21 - Screens flow - Web module (Admin side) - Sensitive word management

3.1.2 Screen Descriptions

3.1.2.1 User System

#	Feature	Screen	Description
1	Login	Login Screen	This screen is used for unauthenticated users to log in to the User's mobile application. The login screen includes: - Phone number.
2	Confirm phone OTP	Confirm Phone OTP Screen	This screen is after the Login Screen, used for unauthenticated users to confirm their phone number by inputting SMS OTP to log in to the application or for Users to change their phone number. The confirmed phone OTP Screen includes: - OTP.
3	Enter name	Enter Name Screen	This screen is used to enter the User's Name if he/she logs in for the first time. The Enter name Screen includes: - Name.
4	Get map	Home Screen	This screen is the main screen of the application (Home Screen). On this screen, the User can see/interact with many features, including getting the map feature: - The map of their current location includes symbols of all toilets nearby them. - Users can click on the symbol to see the detail of the toilet. The toilet's detail here include: <ul style="list-style-type: none">● Toilet name.● Rating.● Toilet address.● Open/close time.● Price.● Images of the toilet. - Function: <ul style="list-style-type: none">● Button to open toilet detail screen.● "Đến nhà vệ sinh" button to open direction screen to the toilet.

#	Feature	Screen	Description
5	Choose service to create QR code	Home Screen	<p>This screen is the main screen of the application (Home Screen). On this screen, the User can see/interact with many features, including choosing services to get the QR code for payment:</p> <ul style="list-style-type: none"> - There are 3 buttons corresponding to 3 services in the system: <ul style="list-style-type: none"> ● "Tiểu tiện" button. ● "Đại tiện" button. ● "Đi tắm" button. <p>After clicking a button, a pop-up with the QR code will appear within 30 seconds. After 30 seconds, the pop-up will disappear.</p>
6	Get the nearest toilet	Home Screen	<p>This screen is the main screen of the application (Home Screen). On this screen, the User can see/interact with many features, including getting the nearest toilet feature. Users can click on the button "Khẩn cấp" to get directions to the nearest toilet.</p>
7	Get toilets nearby list	Home Screen	<p>This screen is the main screen of the application (Home Screen). On this screen, the User can see/interact with many features, including getting toilets nearby list:</p> <ul style="list-style-type: none"> - At the end of the home screen, Users can drag up "Hiển thị danh sách nhà vệ sinh gần đây" tag to see the toilets nearby list. The list will be sorted by distance. - Each toilet includes: <ul style="list-style-type: none"> ● Toilet name. ● Toilet's rating star. ● Price. ● Distance - estimated time. ● Nearby list. ● Room's amount. ● Facility's list.
8	Search toilet by location	Home Screen	<p>This screen is the main screen of the application (Home Screen). On this screen, the User can see/interact with many features, including search toilets nearby a specific location.</p> <ul style="list-style-type: none"> - On the screen, User can enter a location in "Tìm kiếm địa chỉ" Textbox to search.

#	Feature	Screen	Description
9	Logout	Information Screen	<p>This screen is the user's information screen, Including:</p> <ul style="list-style-type: none"> - User's information: Name, phone. - "Thiết lập thông tin cá nhân" tag. - "Thiết lập thanh toán" tag. - "Lịch sử" tag. - "Giá dịch vụ" tag. - "Tiện ích" tag. - "Đăng xuất" button to logout.
10	Update phone	Change Phone Screen	<p>This screen is used to enter the User's phone number if he/she wants to change the phone number. The Enter phone Screen includes:</p> <ul style="list-style-type: none"> - Phone number.
11	Update name	Change Name Screen	<p>This screen is used to enter the User's Name if he/she wants to change the name. The Enter name Screen includes:</p> <ul style="list-style-type: none"> - Name.
12	Get account money & turn	Payment Information Screen	<p>This screen is the User's payment information screen, including:</p> <ul style="list-style-type: none"> - User money & turn. - "Nạp tiền" tag. - "Mua gói lượt" tag.
13	Topup money	Topup Money Screen	<p>This screen is used to top up money for the User, including:</p> <ul style="list-style-type: none"> - Money list button. - Other amounts of money. - "Nạp tiền" button to open VNPay screen to top up money.
14	Purchase combo	Purchase Combo Screen	<p>This screen is used to purchase combo for the User, including:</p> <ul style="list-style-type: none"> - Combo list button. - "Mua gói" button to purchase combo.

#	Feature	Screen	Description
15	Get check-in, transaction, combo's purchase history	History Screen	<p>This screen is used to track the history of the User activity, including 3 tags:</p> <ul style="list-style-type: none"> - "Đi vệ sinh" tag to track check-in list. Each check-in includes: <ul style="list-style-type: none"> ● DateTime. ● Toilet name. ● Used service. ● Status of the check-in. ● Price/turn pay for the service. - "Nạp tiền" tag to track transaction list. Each transaction includes: <ul style="list-style-type: none"> ● DateTime. ● Payment method. ● The amount of money that has been topped up. - "Mua gói lượt" tag to track combo's purchase. Each purchase includes: <ul style="list-style-type: none"> ● DateTime. ● Payment method. ● Combo's purchase.
16	Get service's price	Service Price Screen	<p>This screen is used to track the list of service price, including:</p> <ul style="list-style-type: none"> - Service's name. - Service's price for each check-in. - Service's turn for each check-in.
17	Get the linked app list	Linked App Screen	<p>This screen is used to get the linked app list. Users can click on an app button to open the app/website.</p>
18	Update default payment method	Change Default Payment Method Pop up	<p>This pop-up is used to change the default payment method. There are 2 methods in the system: Pay by turn & pay by money.</p> <ul style="list-style-type: none"> - "Số lượt" button to choose money as the default payment method. - "Số tiền" button to choose turn as the default payment method. - "Xác nhận" button.

#	Feature	Screen	Description
19	Get QR code	QR Code Pop up	<p>This pop-up appears after User Choose service to create a QR code from the Home Screen. The pop-up includes:</p> <ul style="list-style-type: none"> - Service name. - The QR code. <p>After 30 seconds, the pop-up will be disappear automatically.</p>
20	Get toilet map nearby search location	Search Location Result Screen	<p>This screen appears after the User enters a location on Home Screen. This screen includes:</p> <ul style="list-style-type: none"> - A map with the location and toilets near it. - "Hiển thị danh sách nhà vệ sinh gần đây" tag to drag up to get toilet list.
21	Direct way to a toilet	Direction Screen	<p>This screen shows the user the way from their current location to the toilet. Users can enter another start location.</p>
22	Create location report	Report Location Screen	<p>After getting to a toilet, a Location Report pop-up will appear, User can click on the button to report the location of the toilet. The report location screen includes:</p> <ul style="list-style-type: none"> - Toilet information. - Report reason. - "Gửi" button.

#	Feature	Screen	Description
23	Get toilet detail	Toilet Detail Screen	<p>This screen is used to get toilet detail, includes:</p> <ul style="list-style-type: none"> - Toilet images. - Toilet information: <ul style="list-style-type: none"> ● Toilet name. ● Rating star. ● Address. ● Open/close time. ● Price. ● The amount of room. ● Facilities. - Rating list of the toilet. Each rating includes: <ul style="list-style-type: none"> ● Username. ● Comment. ● DateTime. ● Star. ● Images. (optional) - "Đến nhà vệ sinh" button to direct to the Direction Screen.
24	Get toilet's rating list	Toilet Rating Screen	<p>This screen is used to get rating list of a specific toilet, includes:</p> <ul style="list-style-type: none"> - Toilet name, average star. - Button to filter rating by star. - Rating list. Each rating includes: <ul style="list-style-type: none"> ● Username. ● Comment. ● DateTime. ● Star. ● Images. (optional)
25	Get announcement	Announcement Detail Screen	<p>This screen is used to get the announcement detail, includes:</p> <ul style="list-style-type: none"> - Announcement image. - Description. - "Đi ngay" button to get to the toilet nearby list screen.

#	Feature	Screen	Description
26	Create rating	Rating Screen	<p>This screen is used to rate the service of a toilet after the User check-in in the toilet. The rating form includes:</p> <ul style="list-style-type: none"> - Toilet information. - Report tag (optional). - Star. - Comment. - Images (optional). - "Đánh giá" button to send the rating.

Table 17 - Screen Descriptions - User System

3.1.2.2 Staff System

#	Feature	Screen	Description
1	Login	Login Screen	<p>This screen is used for guests to log in to the Staff's application. The login screen includes:</p> <ul style="list-style-type: none"> - Username. - Password. - "Đăng nhập" button. <p>If the Login is successful, the guest will navigate to the Home Screen.</p> <p>If the Login fails, show a pop-up to warn guests.</p>
2	Logout	Home Screen	<p>This screen is the main screen of the application (Home Screen), includes these buttons & information:</p> <ul style="list-style-type: none"> - Toilet avatar, name. - Scan the QR code button. - "Khách vãng lai" button for check-in for walking guests. - "Nạp tiền" button for top-up money for User. - "Quản lý phòng" button for manage room of the toilet. - "Đăng xuất": button to log out of the application.
3	Scan QR code	Scan QR Screen	<p>This screen is used to scan the QR code to check in for the User. Staff will scan the QR code that the User provides for them.</p> <ul style="list-style-type: none"> - If check-in successfully, show a pop-up about User information. - If check-in fails, show a warning pop-up.

#	Feature	Screen	Description
4	Checkin User without QR code	Checkin Walking Guests Screen	<p>This screen is used to check in for walking guests, includes:</p> <ul style="list-style-type: none"> - Textbox to enter the number of people checking in for each service. - The table about check-in information. - "Xác nhận thu tiền" button to confirm check-in for the walking guests. - After clicking on "Xác nhận thu tiền" button, a pop-up will be shown to confirm that Staff has been received money from Users.
5	Topup money for user	Topup Money Screen	<p>This screen is used to top up money for the User, including:</p> <ul style="list-style-type: none"> - Textbox to enter User's phone number. - If the system finds user information, the information will appear below, including: <ul style="list-style-type: none"> ● User name. ● User phone number. ● User money in the application. - Money list button to choose top-up money. - "Xác nhận thu tiền" button to confirm top up money. - After clicking on "Xác nhận thu tiền" button, a pop-up will be shown to confirm that Staff has received money from Users.
6	Manage Room	Manage Room Screen	<p>This screen is used to manage rooms in the toilet, includes:</p> <ul style="list-style-type: none"> - Information table about the number of rooms in the toilet. - Textbox to enter the current available room for each type. - "Xác nhận" button to change the current available room.

#	Feature	Screen	Description
7	Recharge/Buy combo	Recharge - Buy Combo	<p>This screen is used to top up money and buy combo for the User in Web Application, if:</p> <ul style="list-style-type: none"> - User want to top up money, Staff click tab "Nạp tiền" then type User's phone number, the User's information will appear below, including: User name, User phone number. Then, it has a money list button to choose top-up money or type other money. After choosing money, Staff click "Nạp tiền" button to confirm top up money. Then, pop-up will be shown to confirm that Staff recharge for right User with right money. Then click "Xác nhận" to top-up for User. - User want to buy combo, Staff click tab "Mua gói" then type User's phone number, the User's information will appear below, including: User name, User phone number. Then, it has a combo list button to choose. After choosing combo, Staff click "Nạp lượt" button to confirm top up money. Then, pop-up will be shown to confirm that Staff buy combo for right User with right money. Then click "Xác nhận" to buy combo for User.
8	Get announcement	Manage announcement	<p>This screen is used for see announcement running in User app. This screen has 3 tabs:</p> <ul style="list-style-type: none"> - Promotion In-app Announcement. - Website Announcement for Public Service Company. - App Announcement of Public Service Company.
9	Delete announcement	Manage announcement	<p>This screen is used for delete announcement running in User app when announcement ends. When Staff want to delete announcement, Staff will click on icon delete and a pop-up will be shown to confirm delete. Then, click "Xác nhận" to delete without condition.</p>

#	Feature	Screen	Description
10	Create announcement	Create announcement	This screen is used for create an announcement running in User app. Staff can create announcement with image, title, description, start date and end date. After creating, Staff will click "Tạo mới" to create announcement.
11	Update announcement	Update announcement	This screen is used for update announcement running in User app when Staff want to edit information. Staff can edit image, title, description, start date and end date. After editing, Staff will click "Cập nhật" to update announcement.

Table 18 - Screen Descriptions - Staff System

3.1.2.3 Manager System

#	Feature	Screen	Description
1	Login	Login	<p>This screen is used for guest to log in to the Manager's Web application. The login screen includes:</p> <ul style="list-style-type: none"> - Username. - Password. <p>If Login successful, guest will navigate to Get toilet list page.</p> <p>If Login fail, system will notify to guest.</p>
2	Get toilet list	Manage toilets	<p>This screen is used for Manager manage all toilet in manager's company. In this screen, Manager can see toilet name, toilet account, address, status, threshold (which system suggest for Manager to improve service quality of company). In this screen, manager can find particular toilet, easily change status of toilet and can navigate to toilet details.</p>
3	Change toilet status	Manage toilets	<p>This screen is used for Manager to change status of toilet when it has problem or permanently closed. It has 2 status for Manager to change:</p> <ul style="list-style-type: none"> - Đang hoạt động. - Không hoạt động.
4	Search toilet	Manage toilets	<p>This screen is used for Manager easily to find a particular toilet. Manager can find toilet by name, address, toilet account.</p>

#	Feature	Screen	Description
5	Get toilet information	Manage toilet details	This screen is used for Manager to see details of toilet like statistic, account, information, configuration, rating, report of toilet.
6	Update toilet information	Update toilet details	<p>This screen is used for Manager to update toilet.</p> <ul style="list-style-type: none"> - If Manager want to update toilet account, Manager will click on "Tài khoản" tab → "Đổi mật khẩu". If Manager want to change password, Manager must type old password. - If Manager want to update toilet information, Manager will click on "Thông tin chung" tab → "Chỉnh sửa". Manager can edit toilet name, address, toilet's images. - If Manager want to update toilet configuration, Manager will click on "Thiết lập nhà vệ sinh" tab → "Chỉnh sửa". Manager can edit open - close time, number of toilet, facility, status, free or charge.
7	Create new toilet	Create toilet	<p>This screen has 4 step for Manager to create toilet.</p> <ul style="list-style-type: none"> - Step 1: Create information like name, address, images. Additional, if Address and Mark location in Goong maps is different, Manager can drag the marker to pin right location. - Step 2: Create configuration like open - close time, number of toilet, facility, status, free or charge. - Step 3: Create toilet account with username, password. - Step 4: Check created information again and then create.

#	Feature	Screen	Description
8	Make statistic	Statistic	<p>This screen is used for Manager to see amount of temporary money in toilet. In this screen, Manager can:</p> <ul style="list-style-type: none"> - Manage Number of guest and amount of temporary money in current month. - Manage details of company statistic by table with some fields like toilet name, amount of temporary money (include guest and member) and total number of visitors. - Filter details of company statistic by date range. - Export file excel of this statistic.
9	Get announcement	Announcement	<p>This screen is used for see announcement running in User app, which is set by Staff. This screen has 3 tabs:</p> <ul style="list-style-type: none"> - Promotion In-app Announcement. - Website Announcement for Public Service Company. - App Announcement of Public Service Company.
10	Change password	Information settings	<p>In this screen, if Manager want to change password, Manager must type old password. (Manager just can change password, cannot change username).</p>
11	Get company information	Information settings	<p>This screen is used for Manager to check information if necessary (After Admin have created Manager account). If Admin create wrong information, Manager can contact to Admin to change information.</p>

Table 19 - Screen Descriptions - Manager System

3.1.2.4 Admin System

#	Feature	Screen	Description
1	Login	Login	<p>This screen is used for guest to log in to the Admin's Web application. The login screen includes:</p> <ul style="list-style-type: none"> - Username. - Password. <p>If Login successful, guest will navigate to get company list page. If Login fail, system will notify to guest.</p>
2	Get company list	Manage company	<p>This screen is used for Admin manage all company in system. In this screen, Admin can see company name, address, status. In this screen, Admin can find particular company, easily change status of company and can navigate to company details.</p>
3	Change company status	Manage company	<p>This screen is used for Admin to change status of company when it has problem or permanently closed. It has 2 status for Admin to change:</p> <ul style="list-style-type: none"> - Đang hoạt động. - Không hoạt động.
4	Create new company	Create company	<p>This screen has 4 step for Admin to create company.</p> <ul style="list-style-type: none"> - Step 1: Create information like name, address, phone, logo. - Step 2: Create company account with username, password. - Step 3: Check created information again and then create.
5	Update company	Manage details company	<p>This screen is used for Admin to update company information. If Admin want to update company information, Admin will click on "Chỉnh sửa". Admin can edit company name, address, logo.</p>

#	Feature	Screen	Description
6	Make statistic	Statistic	<p>This screen is used for Admin to see amount of temporary money in system. In this screen, Admin can:</p> <ul style="list-style-type: none"> - Manage number of guest and amount of temporary money in current month. - Manage details of all company statistic by table with some fields like company name, amount of temporary money (include guest and member) and total number of visitors. - Filter details of all company statistic by date range. - Export file excel of this statistic.
7	Get service price	System settings	<p>This screen is used for Admin manage service price in system. In this screen, Admin can see service's name, service's price, service's turn and date approved for current price. Service price will apply for all user in system.</p>
8	Get toilet types	System settings	<p>This screen is used for Admin manage toilet type in system. In this screen, Admin can see toilet type that approve in system. Toilet types will apply in create new toilet (create configuration) in Manager role.</p>
9	Get facilities	System settings	<p>This screen is used for Admin manage facilities in system. In this screen, Admin can see facility name that approve in system. Facilities will apply in create new toilet (create configuration) in Manager role.</p>
10	Get common comment	System settings	<p>This screen is used for Admin manage common comment in system. In this screen, Admin can see facility name that approve in system. Common comment is used when User rating toilet after using service.</p>
11	Get package price	System settings	<p>This screen is used for Admin manage package price in system. In this screen, Admin can see turn number, price, date approve this price. Members can buy this package for use toilet service cheaper.</p>

#	Feature	Screen	Description
12	Get sensitive word	System settings	This screen is used for Admin manage sensitive word in system. In this screen, Admin can see sensitive word that set to system for checking if user's rating have sensitive word.
13	Create facility	Create facility	This screen is used for Admin to create more facility for toilet. Admin will click on "Thêm thiết bị" and then create pop up is shown, Admin must type facility name and then click "Tạo mới". <ul style="list-style-type: none"> - If Admin creates right, a success message will be displayed. - If Admin creates duplicate facility, system will notify.
14	Create common comment	Create common comment	This screen is used for Admin to create more common comment for toilet. Admin will click on "Thêm danh mục đánh giá" and then create pop up is shown, Admin must type new common comment and then click "Tạo mới". <ul style="list-style-type: none"> - If Admin creates right, a success message will be displayed. - If Admin creates duplicate common comment, system will notify.
15	Create package price	Create package price	This screen is used for Admin to create more package for toilet. Admin will click on "Thêm gói" and then create pop up is shown, Admin must type turn number, date approved, price and then click "Tạo mới". <ul style="list-style-type: none"> - If Admin creates right, a success message will be displayed. - If Admin creates duplicate turn number or price, system will notify.
16	Create sensitive word	Create sensitive word	This screen is used for Admin to create more sensitive word for toilet. Admin will click on "Thêm từ" and then create pop up is shown, Admin must type sensitive word and then click "Tạo mới". <ul style="list-style-type: none"> - If Admin creates right, a success message will be displayed. - If Admin creates duplicate sensitive word, system will notify.

#	Feature	Screen	Description
17	Update facility	Update service	<p>This screen is used for Admin to update facility if types wrong. Admin will click on edit button and then updated pop up is shown, Admin must type new facility name and then click "Cập nhật".</p> <ul style="list-style-type: none"> - If Admin updates right, a success message will be displayed. - If Admin updates duplicate facility name, system will notify.
18	Update service price	Update toilet	<p>This screen is used for Admin to update service price. Admin will click on edit button and then updated pop up is shown, Admin must type new price, date approves this price and then click "Cập nhật".</p> <ul style="list-style-type: none"> - If Admin updates right, a success message will be displayed. - If Admin updates wrong (over price range), system will notify.
19	Update common comment	Update common comment	<p>This screen is used for Admin to update common comment if it not fit with the system anymore. Admin will click on edit button and then updated pop up is shown, Admin must type new common comment and then click "Cập nhật".</p> <ul style="list-style-type: none"> - If Admin updates right, a success message will be displayed. - If Admin updates duplicate common comment, system will notify.
20	Update package price	Update package price	<p>This screen is used for Admin to update package price. Admin will click on edit button and then updated pop up is shown, Admin must type new turn number or price, date approves this price and then click "Cập nhật".</p> <ul style="list-style-type: none"> - If Admin updates right, a success message will be displayed. - If Admin updates wrong (over price range), system will notify.

#	Feature	Screen	Description
21	Update sensitive word	Update sensitive word	<p>This screen is used for Admin to update sensitive word if it not fit with the system anymore. Admin will click on edit button and then updated pop up is shown, Admin must type new sensitive word and then click "Cập nhật".</p> <ul style="list-style-type: none"> - If Admin updates right, a success message will be displayed. - If Admin updates duplicate sensitive word, system will notify.
22	Delete facility	System settings	<p>This screen is used for Admin to delete facility if it not fit with the system anymore. Admin will click on delete button and then deleted pop up: "Bạn có chắc chắn muốn xóa thiết bị này không?" is shown, if Admin click:</p> <ul style="list-style-type: none"> - "Xóa". If there is no toilet using this facility, it can be deleted, otherwise it cannot be deleted. - "Hủy". Not delete.
23	Delete common comment	System settings	<p>This screen is used for Admin to delete common comment if it not fit with the system anymore. Admin will click on delete button and then deleted pop up: "Bạn có chắc chắn muốn xóa danh mục này không?" is shown, if Admin click:</p> <ul style="list-style-type: none"> - "Xóa". Deleted without conditional. - "Hủy". Not delete.
24	Delete package price	System settings	<p>This screen is used for Admin to delete package. Admin will click on delete button and then deleted pop up: "Bạn có chắc chắn muốn xóa gói này không?" is shown, if Admin click:</p> <ul style="list-style-type: none"> - "Xóa". Deleted without conditional. - "Hủy". Not delete.
25	Delete sensitive word	System settings	<p>This screen is used for Admin to delete sensitive word if it not fit with the system anymore. Admin will click on delete button and then deleted pop up: "Bạn có chắc chắn muốn xóa từ nhạy cảm này không?" is shown, if Admin click:</p> <ul style="list-style-type: none"> - "Xóa". Deleted without conditional. - "Hủy". Not delete.

Table 20 - Screen Descriptions - Admin System

3.1.3 Screen Authorization

#	Screen	Guest	User	Staff	Manager	Admin
1	Login	x				
2	Manage company					x
3	Create company					x
4	Manage details company					x
5	Statistic				x	x
6	System settings					x
7	Create service					x
8	Create toilet					x
9	Create facility					x
10	Create common comment					x
11	Create package price					x
12	Create sensitive word					x
13	Update service					x
14	Update toilet					x
15	Update facility					x
16	Update common comment					x
17	Update package price					x
18	Update sensitive word					x
19	Manage toilets				x	
20	Manage toilet details				x	
21	Update toilet details				x	
22	Create toilet				x	
23	Information settings				x	
24	Recharge - Buy Combo			x		
25	Manage announcement			x	x	
26	Create announcement			x		

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#	Screen	Guest	User	Staff	Manager	Admin
27	Update announcement			x		
28	Home Screen			x		
29	Scan QR Screen			x		
30	Checkin Screen			x		
31	Manage Room Screen			x		
32	Topup money Screen		x	x		
33	Login Screen		x	x		
34	Confirm Phone OTP Screen		x			
35	Enter Name Screen		x			
36	Home Screen		x	x		
37	Information Screen		x			
38	User Information Screen		x			
39	Change Avatar Screen		x			
40	Change Phone Screen		x			
41	Change Name Screen		x			
42	Payment Information Screen		x			
43	Topup Money Screen		x	x		
44	Purchase Combo Screen		x			
45	Checkin History Screen		x			
46	Topup Money History Screen		x			
47	Purchase Combo History Screen		x			
48	Service Price Screen		x			
49	Linked App Screen		x			
50	Change Default Payment Method Screen		x			
51	QR Code Screen		x			
52	Search Location Screen		x			

#	Screen	Guest	User	Staff	Manager	Admin
53	Search Location Result Screen		x			
54	Direction Screen		x			
55	Report Location Screen		x			
56	Toilets Nearby List Screen		x			
57	Filter Toilets Nearby Screen		x			
58	Toilet Detail Screen		x			
59	Toilet Rating Screen		x			
60	Announcement Detail Screen		x			
61	Rating Screen		x			
62	Report Rating Screen		x			
63	Scan QR Screen		x			
64	Checkin Screen		x			
65	Topup Money Screen		x			

Table 21 - Screen Authorization

3.1.4 Non-Screen Functions

#	Feature	System Function	Description
1	Filter sensitive-word	Filter sensitive-word in Comment	Detect if the comment includes the sensitive words or not.
2	Suggestion about toilet	Suggestion about opening more toilets	Every quarter, the system will automatically calculate based on the check-in in each toilet to give advice to open more toilets for the Manager.
3	Suggestion about toilet	Suggestion about the toilets are being used by too few people	Every quarter, the system will automatically calculate based on the check-in in each toilet to notice that there are too few people used the toilet.
4	Manage the capacity of the toilet	Check the room of the toilet is used when there is a new check-in	Based on the type of service that the User check-in, the system will update the status of the room that is being used. If the status of all rooms in the toilet is being used, the toilet status will be changed to full.

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#	Feature	System Function	Description
5	Check for toilet status before direct to the nearest	Direct to the nearest toilet for the User	Before directing to the nearest toilet for the User, the system will check if that toilet is available or not. If not, the system will find another toilet.
6	Check for toilet status while direct to the nearest	Direct to the nearest toilet for the User	While directing to the nearest toilet for the User, the system also checks if that toilet is available or not, and give User recommend to go to another toilet.
7	Announcement for the linked application, website	Direct User to another app, website	An announcement can be used to advertise, for a certain website or application. Users can tap on the announcement to be directed to that website or to where to download the app.

Table 22 - Non-Screen Functions

3.1.5 Entity Relationship Diagram

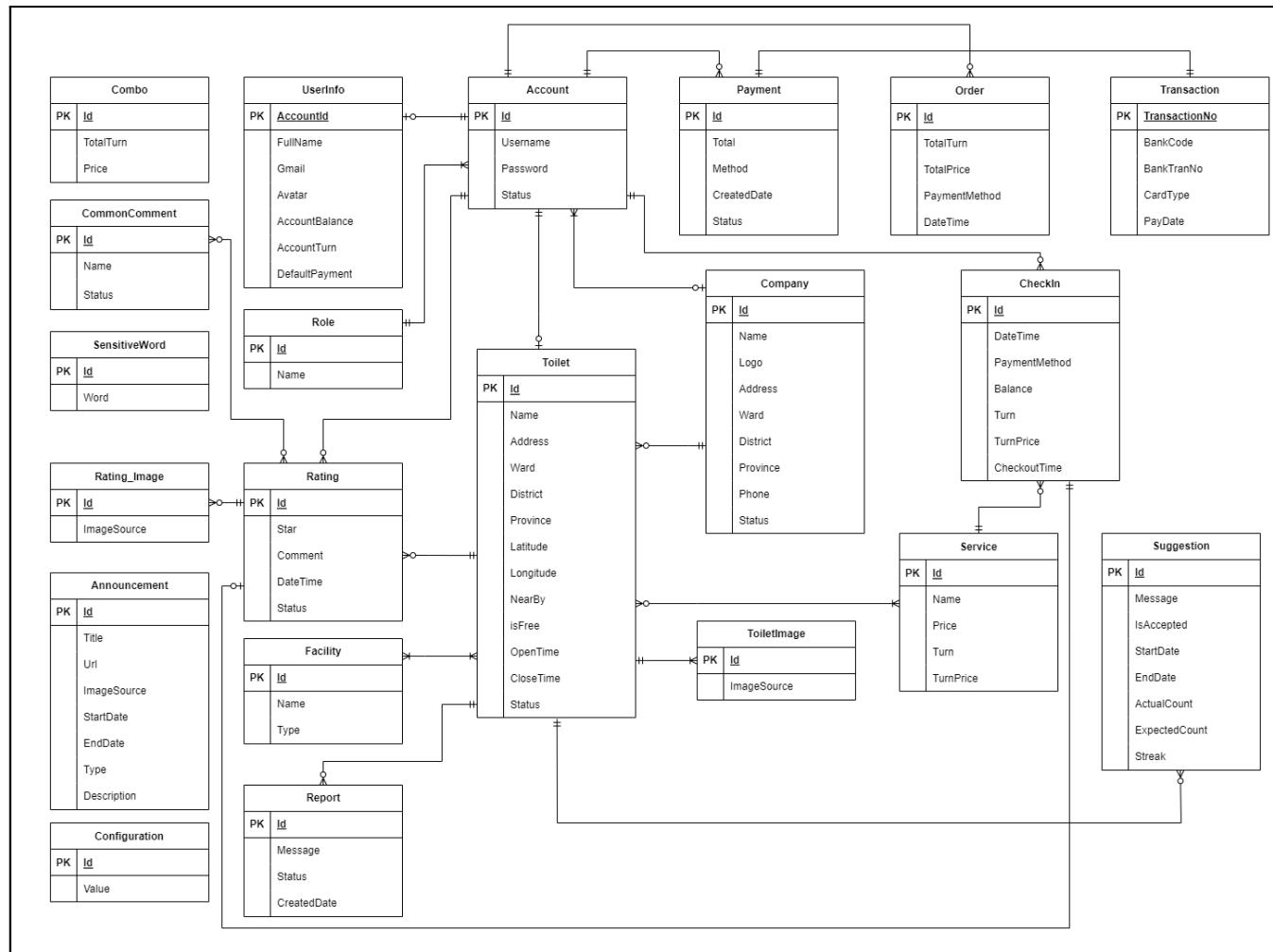


Figure 22 - Entity Relationship Diagram

Entities Description

#	Entity	Description
1	Account	An entity represents the login information of authenticated users such as username, password... in the system.
2	Announcement	An entity represents announcement information in the system such as title, url, description, date time, type of the announcement..
3	CheckIn	An entity represents the information on toilet users' check-in for a toilet's service in the system. This entity contains check-in information such as date time, used service, service's price, payment method for this check-in.
4	Combo	An entity represents combos with turn and price for the toilet user check-in by turn from this combo when using a toilet service.
5	CommonComment	An entity represents common comments for a rating in the system which help the toilet user comment more easily.
6	Company	An entity represents the information of companies in the system such as name, address, phone,...
7	Configuration	An entity represents configuration information in the system
8	Facility	An entity represents toilet facilities in the system which have 2 attributes name and type.
9	Order	An entity represents the information when toilet users purchase combos in the system, such as the total turn of this combo, the total price for this combo, the date time, and the payment method for this.
10	Payment	An entity represents the information when a toilet user tops up for an account in the system, such as the total, the date time, and the payment method for this.
11	Rating	An entity represents the rating of a toilet in the system after the toilet user check-in a service. This entity contains stars for rating, comments from toilet user, date time,...
12	RatingImage	An entity represents the rating's image for description in the system with the source link for the image.
13	Report	An entity represents report information in the system such as wrong location, wrong direction, wrong opening time of a toilet.
14	Role	An entity represents the role of each authenticated user in the system. There are 4 roles in the system: Admin, Manager, Staff, User

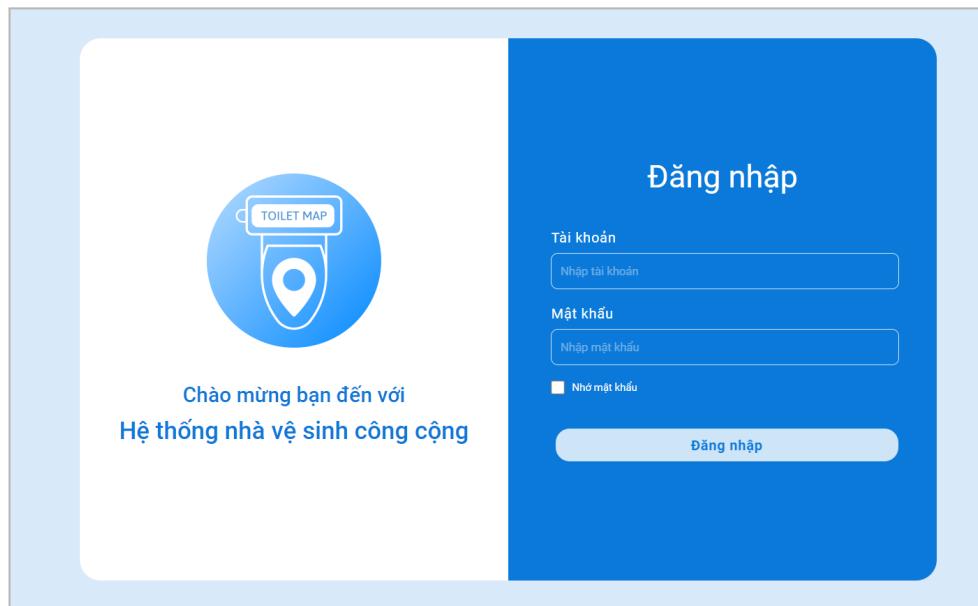
#	Entity	Description
15	SensitiveWord	An entity represents sensitive words for filtering the toilet user's rating in the system when they comment after using a toilet service.
16	Service	An entity represents toilet services in the system which has basic information such as name, price, turn.
17	Suggestion	An entity represents suggestions for a toilet in the system such as suggestion messages, suggestion time,...
18	Toilet	An entity represents the information of toilets in the system such as phone, address, opening time, latitude, longitude,...
19	ToiletImage	An entity represents the toilet's image for description in the system with the source link for the image.
20	Transaction	An entity represents the transaction when the toilet user tops up for an account in the system by VNPay Method which contains transaction information from VNPay service such as bank code, card type, date time, transaction no.
21	UserInfo	An entity represents the information of toilet users in the system such as full name, balance and turn, avatar,...

Table 23 - Entities Description

3.2 Web Application

3.2.1 <Guest> Authentication/Authorization

- Function trigger: Guest requests login into the system by clicking on the “Đăng nhập” button.
- Function description: Guest login to the system to verify role, give them access to more features in the system.
- Screen layout:



- Function details:
 - Guest input username, password and clicks on “Đăng nhập” button.
 - System queries the username and password in the database to verify the account exists.
 - System validates the resolving content:
 - Success: System generates a JWT and returns the JWT back to the browser. Guests can navigate to screen with right role.
 - Fail: System returns and shows error message.

3.2.2 <Manager> Manage toilets

3.2.2.1 Get toilet list

- Function trigger: Manager clicks on “Quản lý nhà vệ sinh” on top of menu.
- Function description: Manager can manage all toilets in company.
- Screen layout:

STT	Tên nhà vệ sinh	Tên dân...	Địa chỉ	Trạng thái	Vượt ngưỡng	Dưới ngưỡng
1	Nhà vệ sinh lưu động số 1 - ...	toilet-1	447 Lê Văn Việt, Tăng Nhơn Phú A, Thủ ...	Đang hoạt động	3 quý liên tục	-
2	Nhà vệ sinh lưu động số 2	toilet-2	79 Nguyễn Huệ, Bến Nghé, Quận 1, Thủ ...	Đang hoạt động	3 quý liên tục	-
3	Toilet 3	toilet-3	Trịnh Phong Đáng, Long Thành Bắc, Hò ...	Đang hoạt động	-	-
4	Toilet 3	toilet-4	Trịnh Phong Đáng, Long Thành Bắc, Hò ...	Không hoạt động	-	-
5	Nhà vệ sinh số 7	nvs-q1-s8	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Không hoạt động	-	-
6	Nhà vệ sinh số 7	nvs-q1-s9	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Đang hoạt động	-	-
7	Nhà vệ sinh số 7	nvs-q1-s10	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Đang hoạt động	-	-
8	Nhà vệ sinh số 7	nvs-q1-s11	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Đang hoạt động	-	-
9	Nhà vệ sinh số 7	nvs-q1-ss10	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Đang hoạt động	-	-
10	Nhà vệ sinh số 7	nvs-q1-sss10	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Đang hoạt động	-	-

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- Function details:
 - This function requires the guest to login to the system with the role “Manager”.
 - This function returns a list of all toilets of the company which Manager belongs to in form of table, which includes: STT, toilet name, toilet account, address, status, over threshold (which is calculated by system for giving suggestion for Company to open more toilets), below threshold (which is calculated by system for giving suggestion for company to close/resolve toilet that have few visitors).

3.2.2.2 Search toilet

- Function trigger: Manager fill in the search bar on the top of screen “Quản lý nhà vệ sinh” and click search icon.
- Function description: Manager searches the toilet based on the toilet name, toilet account, address.
- Screen layout:

- Function details:

- This function requires the guest to login to the system with the role “Manager”.
- The system required the keyword to filter the toilet.
- If found, the system responds with the list of toilets with the keyword. If not, the system return a message “Không tìm thấy nhà vệ sinh”.

3.2.2.3 Change toilet status

- Function trigger:

- Manager click on button ..., then click on button “Đổi trạng thái” in screen “Quản lý nhà vệ sinh”.

- Function description: Manager can change toilet status in order to manage toilets which are open/close in system easily.

- Screen layout:

- Function details:

- This function requires the guest to login to the system with the role “Manager”.
- After clicking button “Đổi trạng thái”, popup confirm will appear. If Manager changes:

- Success: Status will be changed from “Đang hoạt động” to “Không hoạt động” and vice versa.
- Fail: Status will not be changed.

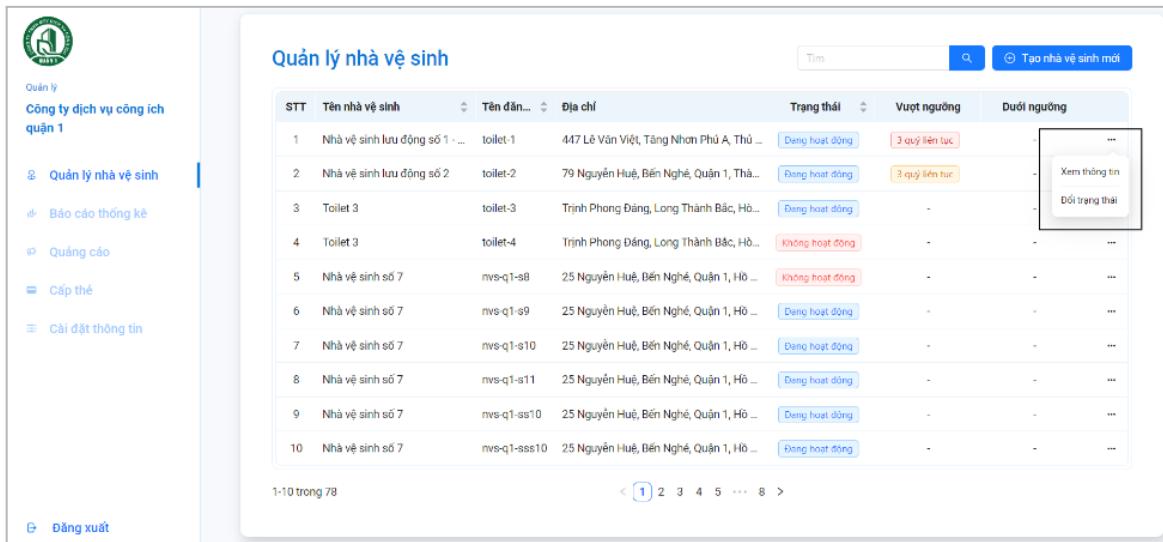
3.2.3 <Manager> Manage toilet details

- Function trigger:

- Manager click on button  , then click on button “Xem thông tin” in screen “Quản lý nhà vệ sinh”.
- In the details screen, Manager clicks on tab “Báo cáo thống kê” to view toilet configuration.
- In the details screen, Manager clicks on tab “Tài khoản” to view toilet account.
- In the details screen, Manager clicks on tab “Thông tin chung” to view toilet information.
- In the details screen, Manager clicks on tab “Thiết lập nhà vệ sinh” to view toilet configuration.
- In the details screen, Manager clicks on tab “Đánh giá” to view toilet rating.
- In the details screen, Manager clicks on tab “Báo cáo” to view toilet report.

- Function description: Manager can manage general information of toilet in single page.

- Screen layout:



STT	Tên nhà vệ sinh	Địa chỉ	Trạng thái	Vuột ngưỡng	Dưới ngưỡng
1	Nhà vệ sinh lưu động số 1 ...	toilet-1 447 Lê Văn Việt, Tăng Nhơn Phú A, Thủ ...	Đang hoạt động	3 quý liên tục	
2	Nhà vệ sinh lưu động số 2	toilet-2 79 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Đang hoạt động	3 quý liên tục	
3	Toilet 3	toilet-3 Trịnh Phong Đáng, Long Thành Bắc, Hô ...	Đang hoạt động	-	
4	Toilet 3	toilet-4 Trịnh Phong Đáng, Long Thành Bắc, Hô ...	Không hoạt động	-	
5	Nhà vệ sinh số 7	nvs-q1-s8 25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Không hoạt động	-	
6	Nhà vệ sinh số 7	nvs-q1-s9 25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Đang hoạt động	-	
7	Nhà vệ sinh số 7	nvs-q1-s10 25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Đang hoạt động	-	
8	Nhà vệ sinh số 7	nvs-q1-s11 25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Đang hoạt động	-	
9	Nhà vệ sinh số 7	nvs-q1-ss10 25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Đang hoạt động	-	
10	Nhà vệ sinh số 7	nvs-q1-sss10 25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ ...	Đang hoạt động	-	

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Quản lý
Công ty dịch vụ công ích
quận 1

- [Quản lý nhà vệ sinh](#)
- [Báo cáo thống kê](#)
- [Quảng cáo](#)
- [Cấp thẻ](#)
- [Cài đặt thông tin](#)

[Đăng xuất](#)

← Quản lý nhà vệ sinh > Nhà vệ sinh lưu động số 1 - Dịch vụ vệ sinh quận 9

Báo cáo thống kê Tài Khoán Thông tin chung Thiết lập nhà vệ sinh Đánh giá Báo cáo

582
3,190,000 VND
Xuất file excel số tiền tạm thu

Tổng lượt khách trong tháng
01/07/2023 - 29/07/2023
Tổng số tiền tạm thu trong tháng
01/07/2023 - 29/07/2023

STT	Dịch vụ	Tổng số tiền tạm thu (VND)	Khách vãng lai		Thành viên sử dụng gói	
			Số tiền tạm thu (V...)	Số lượt khách	Số tiền tạm thu (V...)	Số lượt khách
1	Đi vệ sinh (tiểu tiện)	529,000	115,000	23	414,000	138
2	Đi vệ sinh (đại tiện)	2,388,000	90,000	9	2,298,000	383
3	Đi tắm	273,000	30,000	2	243,000	27



Quản lý
Công ty dịch vụ công ích
quận 1

- [Quản lý nhà vệ sinh](#)
- [Báo cáo thống kê](#)
- [Quảng cáo](#)
- [Cấp thẻ](#)
- [Cài đặt thông tin](#)

[Đăng xuất](#)

← Quản lý nhà vệ sinh > Nhà vệ sinh lưu động số 1 - Dịch vụ vệ sinh quận 9

Báo cáo thống kê Tài Khoán Thông tin chung Thiết lập nhà vệ sinh Đánh giá Báo cáo

Tài khoản: toilet-1
Mật khẩu: ****

[Đổi mật khẩu](#)



Quản lý
Công ty dịch vụ công ích
quận 1

- [Quản lý nhà vệ sinh](#)
- [Báo cáo thống kê](#)
- [Quảng cáo](#)
- [Cấp thẻ](#)
- [Cài đặt thông tin](#)

[Đăng xuất](#)

← Quản lý nhà vệ sinh > Nhà vệ sinh lưu động số 1 - Dịch vụ vệ sinh quận 9

Báo cáo thống kê Tài Khoán Thông tin chung Thiết lập nhà vệ sinh Đánh giá Báo cáo



[Chỉnh sửa](#)

Tên nhà vệ sinh: Nhà vệ sinh lưu động số 1 - Dịch vụ vệ sinh quận 9
 Địa chỉ: 447 Lê Văn Việt
 Phường/Xã: Tăng Nhơn Phú A
 Quận/Huyện: Thủ Đức
 Tỉnh/Thành phố: Hồ Chí Minh

Capstone Project Document - Social Toilet Map



Quản lý
Công ty dịch vụ công ích
quận 1

- [Quản lý nhà vệ sinh](#)
- [Báo cáo thống kê](#)
- [Quảng cáo](#)
- [Cấp thẻ](#)
- [Cài đặt thông tin](#)

[Đăng xuất](#)

← Quản lý nhà vệ sinh > Nhà vệ sinh lưu động số 1 - Dịch vụ vệ sinh quận 9

Báo cáo thống kê Tài Khoản Thông tin chung Thiết lập nhà vệ sinh Đánh giá Báo cáo

Giờ mở cửa	09:00 - 23:00
Phòng vệ sinh	8
Phòng vệ sinh dành cho người khuyết tật	1
Vòi xịt	1
Thiết lập nhà vệ sinh	Tính phí
Trạng thái	Đang hoạt động

[Chỉnh sửa](#)

← Quản lý nhà vệ sinh > Nhà vệ sinh lưu động số 1 - Dịch vụ vệ sinh quận 9

Báo cáo thống kê Tài Khoản Thông tin chung Thiết lập nhà vệ sinh **Đánh giá** Báo cáo

Tổng đánh giá: 4.5 sao

Bộ lọc

STT	Ngày	Nội dung	Đánh giá (*)	Giải quyết
51	16/04/2023 - 13:40:06	Nhà vệ sinh rất sạch, có thể sử dụng thường xuyên	5	Từ chối giải quyết ...
52	16/04/2023 - 13:34:46	Nhà vệ sinh cũng được	3	Đã giải quyết ...
53	16/04/2023 - 13:32:58	Nhà vệ sinh rất đẹp, thái độ nhân viên không hề tham thiêng, hôm nay mình đi nhà vệ ...	2	Từ chối giải quyết ...
54	14/04/2023 - 16:45:00	Nhà vệ sinh tuyệt vời	5	Đã giải quyết ...
55	14/04/2023 - 16:45:00	Nhà vệ sinh sạch quá	4	Đã giải quyết ...

41-45 trong 45

< 1 2 3 4 5 6 >

[Đăng xuất](#)

← Quản lý nhà vệ sinh > Nhà vệ sinh lưu động số 1 - Dịch vụ vệ sinh quận 9

Báo cáo thống kê Tài Khoản Thông tin chung Thiết lập nhà vệ sinh Đánh giá **Báo cáo**

Tổng lượt báo cáo: 6 lượt

Bộ lọc

STT	Ngày	Nội dung	Giải quyết
1	08/07/2023 - 16:28:25	Nhà vệ sinh không tồn tại	Đã từ chối
2	08/07/2023 - 16:28:48	Nhà vệ sinh đóng cửa	Đã từ chối
3	08/07/2023 - 16:28:53	Nhà vệ sinh không tồn tại	Đã từ chối
4	09/07/2023 - 16:29:07	Nhà vệ sinh đóng cửa	Đã đồng ý
5	10/07/2023 - 16:29:17	Nhà vệ sinh không tồn tại	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
6	10/07/2023 - 16:29:18	Nhà vệ sinh không đúng vị trí định vị	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

1-6 trong 6

< 1 >

[Đăng xuất](#)

- Function details:

- This function requires the guest to login to the system with the role “Manager”.
- In the tab “Báo cáo thống kê”, Manager can view toilet statistic in current month or can change to other month by date filter.

- In the tab “Tài khoản”, Manager can view toilet username.
- In the tab “Thông tin chung”, Manager can view toilet images, name, address.
- In the tab “Thiết lập nhà vệ sinh”, Manager can view open/close time, number of room, facility, status, free.
- In the tab “Đánh giá”, Manager can view the total ratings, rating date, comment, rating star and resolution.
- In the tab “Báo cáo”, Manager can view the total report, report date, content, resolution.

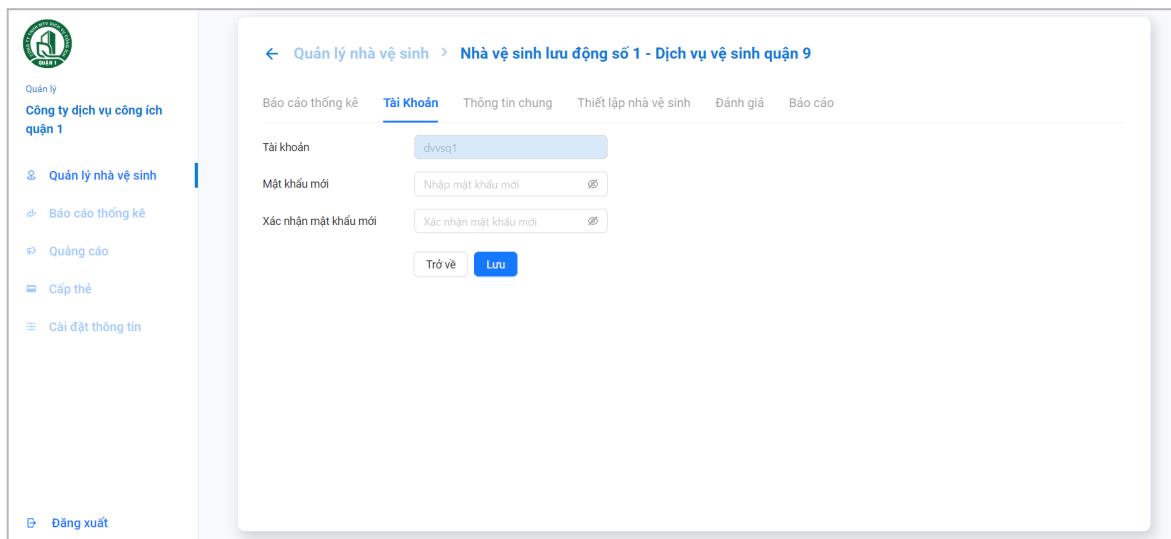
3.2.4 <Manager> Update toilet details

- Function trigger:

- Manager click on button , then click on button “Xem thông tin” in screen “Quản lý nhà vệ sinh”.
- In the details screen, Manager clicks on tab “Tài khoản”, then click “Đổi mật khẩu” to update toilet account. After that, click “Lưu” to save.
- In the details screen, Manager clicks on tab “Thông tin chung”, then click “Chỉnh sửa” to update toilet information. After that, click “Lưu” to save.
- In the details screen, Manager clicks on tab “Thiết lập nhà vệ sinh”, then click “Chỉnh sửa” to update toilet configuration. After that, click “Lưu” to save.

- Function description: Manager can update general information of toilet if needed.

- Screen layout:



Capstone Project Document - Social Toilet Map

The application interface consists of two main sections:

- Left Sidebar:** Includes a logo, navigation menu with items like Quản lý, Công ty dịch vụ công ích quận 1, Quản lý nhà vệ sinh, Báo cáo thống kê, Quảng cáo, Cáp thê, Cài đặt thông tin, and Đăng xuất.
- Right Content Area:**
 - Top Screenshot:** Shows the 'Thông tin chung' tab. Fields include Tên nhà vệ sinh (Nhà vệ sinh lưu động số 1 - Dịch vụ vệ sinh quận 9), Địa chỉ (447 Lê Văn Việt), Phường/Xã (Tăng Nhơn Phú A), Quận/Huyện (Thủ Đức), and Tỉnh/Thành phố (Hồ Chí Minh). Below these are four small images of the toilet. Buttons at the bottom are Trở về and Lưu.
 - Bottom Screenshot:** Shows the 'Thiết lập nhà vệ sinh' tab. Fields include Giờ mở cửa (09:00 → 23:00), Phòng vệ sinh (0-99), Phòng tắm (0-99), Phòng vệ sinh dành cho người khuyết tật (0-99), Tiện ích bổ sung (Chọn tiện ích), and Thiết lập nhà vệ sinh (Tính phí, Miễn phí). Status checkboxes include Mở cửa cả ngày, Đang hoạt động. Buttons at the bottom are Trở về and Lưu.

- Function details:

- This function requires the guest to login to the system with the role “Manager”.
- In updating “Tài khoản”, Manager must type a new password and confirm it. If updated successfully, it will return to manage toilet details tab, else, message error will appear below each error field.
- In updating “Thông tin chung”, Manager can type a new toilet name, new address and confirm it. If updated successfully, it will return to manage toilet details tab, else, message error will appear below each error field.
- In updating “Thiết lập nhà vệ sinh”, Manager can choose new open/close time, type number of each room, choose facility, tick or not tick status, or set free/charge toilet and confirm it. If updated successfully, it will return to manage toilet details tab, else, message error will appear below each error field.

3.2.5 <Manager> Create toilet

- Function trigger:

- Manager click on button “Tạo mới nhà vệ sinh”.

Capstone Project Document - Social Toilet Map

- After each step in creating, Manager will click button “Tiếp theo” to continue creating, else, if Manager want to return to previous step, Manager can click button “Trở về”.
 - After checking information in last step, Manager will click button “Tạo mới” to create new toilet.

- Function description: Manager can create new toilet, so that new toilet can appear in user's toilet map.

- Screen layout:



Công ty dịch vụ công ích
quận 1

- [Quản lý nhà vệ sinh](#)
- [Báo cáo thống kê](#)
- [Quảng cáo](#)
- [Cấp thẻ](#)
- [Cài đặt thông tin](#)

[Đăng xuất](#)

Quản lý nhà vệ sinh

Tìm

 Tạo nhà vệ sinh mới

STT	Tên nhà vệ sinh	Tên dân... nhà	Địa chỉ	Trạng thái	Vượt ngưỡng	Dưới ngưỡng
1	Nhà vệ sinh lưu động số 1 - ...	toilet-1	447 Lê Văn Việt, Tăng Nhơn Phú A, Thủ... Thị trấn Thủ Đức, TP. Hồ Chí Minh, Việt N... Đang hoạt động	3 quý liên tục	-	...
2	Nhà vệ sinh lưu động số 2	toilet-2	79 Nguyễn Huệ, Bến Nghé, Quận 1, Thủ... Thị trấn Thủ Đức, TP. Hồ Chí Minh, Việt N... Đang hoạt động	3 quý liên tục	-	...
3	Toilet 3	toilet-3	Trịnh Phong Đáng, Long Thành Bắc, Hô... Thị trấn Thủ Đức, TP. Hồ Chí Minh, Việt N... Đang hoạt động	-	-	...
4	Toilet 3	toilet-4	Trịnh Phong Đáng, Long Thành Bắc, Hô... Thị trấn Thủ Đức, TP. Hồ Chí Minh, Việt N... Không hoạt động	-	-	...
5	Nhà vệ sinh số 7	nvs-q1-s8	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ... Thị trấn Thủ Đức, TP. Hồ Chí Minh, Việt N... Không hoạt động	-	-	...
6	Nhà vệ sinh số 7	nvs-q1-s9	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ... Thị trấn Thủ Đức, TP. Hồ Chí Minh, Việt N... Đang hoạt động	-	-	...
7	Nhà vệ sinh số 7	nvs-q1-s10	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ... Thị trấn Thủ Đức, TP. Hồ Chí Minh, Việt N... Đang hoạt động	-	-	...
8	Nhà vệ sinh số 7	nvs-q1-s11	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ... Thị trấn Thủ Đức, TP. Hồ Chí Minh, Việt N... Đang hoạt động	-	-	...
9	Nhà vệ sinh số 7	nvs-q1-ss10	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ... Thị trấn Thủ Đức, TP. Hồ Chí Minh, Việt N... Đang hoạt động	-	-	...
10	Nhà vệ sinh số 7	nvs-q1-sss10	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ... Thị trấn Thủ Đức, TP. Hồ Chí Minh, Việt N... Đang hoạt động	-	-	...



Quản lý
Công ty dịch vụ công ích
quận 1

- [Quản lý nhà vệ sinh](#)
- [Báo cáo thống kê](#)
- [Quảng cáo](#)
- [Cấp thẻ](#)
- [Cài đặt thông tin](#)
- [Đăng xuất](#)

←
Quản lý nhà vệ sinh > Tạo nhà vệ sinh mới

1 Tạo thông tin
2 Tạo nhà vệ sinh
3 Tạo tài khoản
4 Xác nhận

Tên nhà vệ sinh *

Địa chỉ *

Phường/Xã

Quận/Huyện

Tỉnh/Thành phố

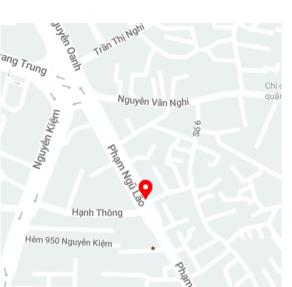
Hình ảnh *

Chọn tệp
Không có tệp nào được chọn


X


X

Tiếp theo



Capstone Project Document - Social Toilet Map



Quản lý
Công ty dịch vụ công ích
quận 1

- [Quản lý nhà vệ sinh](#)
- [Báo cáo thống kê](#)
- [Quảng cáo](#)
- [Cấp thẻ](#)
- [Cài đặt thông tin](#)

[Đăng xuất](#)

← Quản lý nhà vệ sinh > Tạo nhà vệ sinh mới

1 Tạo thông tin 2 Tạo nhà vệ sinh 3 Tạo tài khoản 4 Xác nhận

Giờ mở cửa	08:00 → 20:00
<input type="checkbox"/> Mở cửa cả ngày	
Phòng vệ sinh	8
Phòng tắm	2
Phòng vệ sinh dành cho người khuyết tật	1
Tiện ích bổ sung	<input checked="" type="checkbox"/> Vòi xịt <input checked="" type="checkbox"/> Máy sấy tay <input checked="" type="checkbox"/> Giấy vệ sinh
Thiết lập nhà vệ sinh	<input checked="" type="radio"/> Tính phí <input type="radio"/> Miễn phí
Trạng thái hoạt động	<input checked="" type="checkbox"/> Đang hoạt động

[Trở về](#) [Tiếp theo](#)

← Quản lý nhà vệ sinh > Tạo nhà vệ sinh mới

1 Tạo thông tin 2 Tạo nhà vệ sinh 3 Tạo tài khoản 4 Xác nhận

Tài khoản *	nvss4_dvvs_gv
Mật khẩu *	...
Xác nhận mật khẩu *	...

[Trở về](#) [Tiếp theo](#)

← Quản lý nhà vệ sinh > Tạo nhà vệ sinh mới

1 Tạo thông tin 2 Tạo nhà vệ sinh 3 Tạo tài khoản 4 Xác nhận

Tên nhà vệ sinh	Nhà vệ sinh số 4 - Quận Gò Vấp	Giờ mở cửa	08:00 - 20:00
Tài khoản	nvss4_dvvs_gv	Phòng vệ sinh	8
Địa chỉ	220 Phạm Ngũ Lão	Phòng tắm	2
Phường/Xã	Phường 7	Phòng vệ sinh dành cho ngư...	1
Quận/Huyện	Gò Vấp	Tiện ích bổ sung	Vòi xịt - Máy sấy tay - Giấy vệ...
Tỉnh/Thành phố	Hồ Chí Minh	Thiết lập nhà vệ sinh	Tính phí
Hình ảnh	 	Trạng thái hoạt động	Đang hoạt động

[Trở về](#) [Xác nhận](#)

[Đăng xuất](#)

- Function details:

- This function requires the guest to login to the system with the role “Manager”.
- In all steps, Manager must fill in all required information to continue to the next step.

- In create account step, Manager must type new username, if duplicate, error message will appear.
- If there is any error, it will throw in the last step when Manager clicks “Xác nhận”.

3.2.6 <Manager> Make statistic

- Function trigger:
 - Manager click on tab “Báo cáo thống kê” to view statistic of all toilets in company.
- Function description: Manager can view all temporary money of all toilets in company.
- Screen layout:

STT	Tên nhà vệ sinh	Tổng số tiền tạm ...	Khách vãng lai		Thành viên sử dụng gói	
			Số tiền tạm thu ...	Số lượt khách	Số tiền tạm thu ...	Số lượt khách
1	Nhà vệ sinh quận 9	3,480,000	N/A	N/A	3,480,000	507
2	Nhà vệ sinh lưu động số 1 - Dịch vụ vệ sinh...	3,190,000	235,000	34	2,955,000	548
3	Nhà vệ sinh số 2 - dịch vụ vệ sinh quận 9	1,920,000	N/A	N/A	1,920,000	300
4	Nhà vệ sinh lưu động số 2	934,000	10,000	1	924,000	140
5	Nhà vệ sinh số 7	324,000	15,000	1	309,000	69
6	Nhà vệ sinh quận 1	255,000	N/A	N/A	255,000	36
7	Nhà vệ sinh số 7			Chưa có dữ liệu		
8	Nhà vệ sinh số 10			Chưa có dữ liệu		

- Function details:
 - This function requires the guest to login to the system with the role “Manager”.
 - Manager can see number of visitors, temporary money in current month on the top of screen.
 - Manager can change date range to see temporary of other day, month, year.

3.2.7 <Manager> Get announcement

- Function trigger:
 - Manager click on tab “Quảng cáo” to access to announcement.
- Function description: Manager can view all announcements that Staff set include promotion, website announcement, application announcement.
- Screen layout:

Capstone Project Document - Social Toilet Map

STT	Tiêu đề	Mô tả	Ngày bắt đầu	Ngày kết thúc
1	Create nè	Description	04-06-2023	09-06-2023
2	Khuyến mãi 7.7	Giảm ngay nửa giá tiền cho tất cả dịch vụ.	02-06-2023	03-06-2023
3	Đi toilet nhận ngay Voucher si...	Deal siêu hot!!! Kể từ ngày 06/06 đến ngày 10/06, nhân dịp khai...	31-05-2023	02-06-2023
4	Mừng dịp lễ 30/4 và 1/5, Giỗ ...	Năm 2023, giáo viên được nghỉ dịp lễ 30/4 và 1/5, Giỗ Tổ Hùng ...	28-04-2023	02-05-2023

1-4 trong 4 < 1 >

- Function details:

- This function requires the guest to login to the system with the role “Manager”.
- Manager can view all promotions in app as well as control the source of revenue and expenditure, closer dates will be placed at the top.

3.2.8 <Manager> Change password

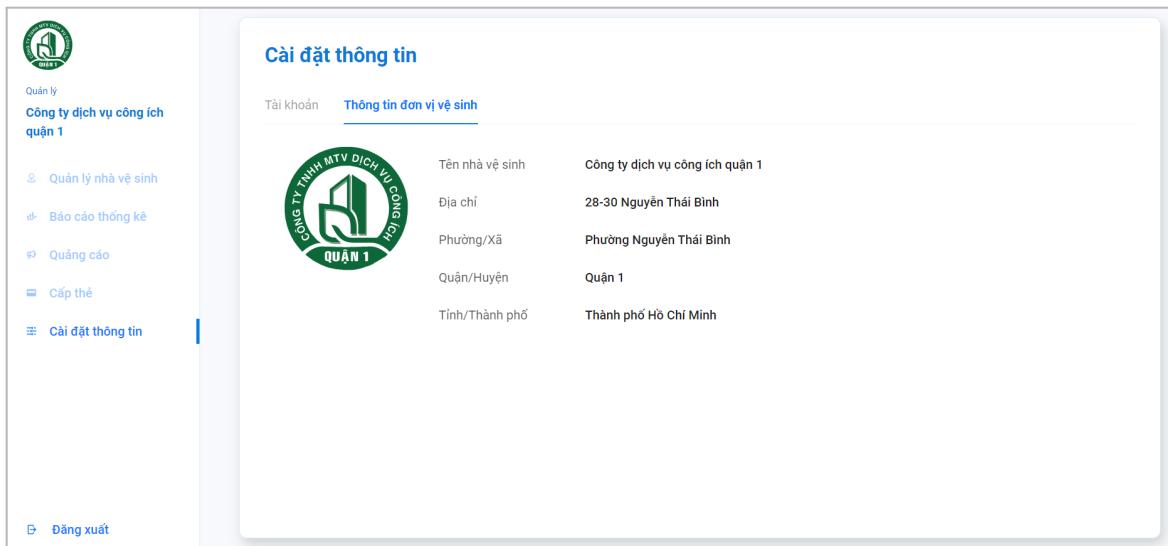
- Function trigger:
 - Manager click on tab “Cài đặt thông tin”, “Tài khoản” to access to change password.
 - After that, Manager click button “Đổi mật khẩu” to change password.
- Function description: This function is used for Manager to change password after Admin gives account for Manager or for more security.
- Screen layout:

- Function details:

- This function requires the guest to login to the system with the role “Manager”.
- Manager must type old password as well as new password and confirm new password to change password successfully.

3.2.9 <Manager> Get company information

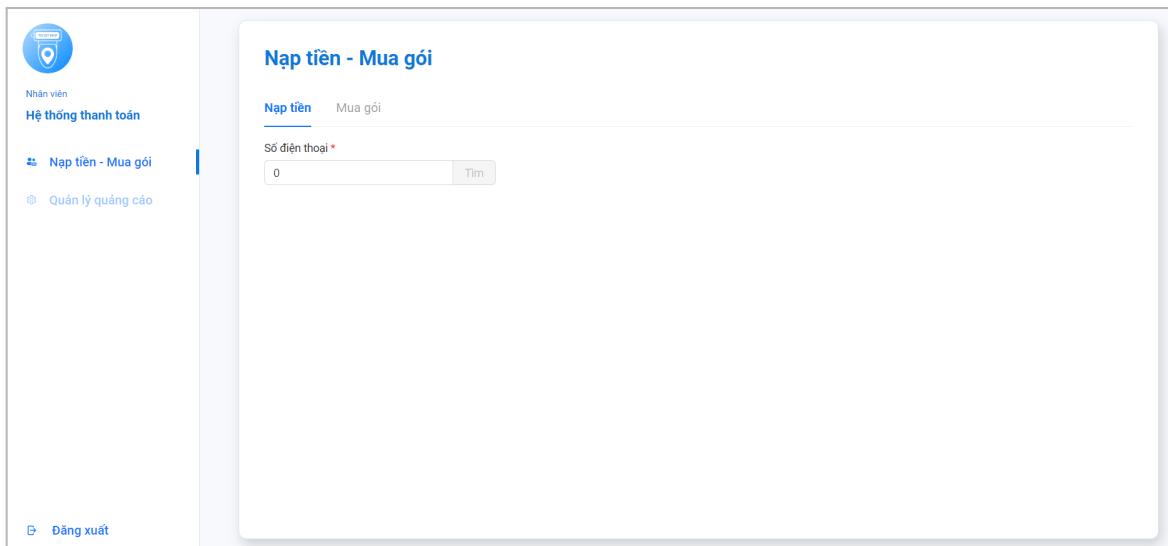
- Function trigger:
 - Manager click on tab “Cài đặt thông tin”, “Thông tin đơn vị vệ sinh”.
- Function description: This function is used for Manager to see information that Admin creates for the company.
- Screen layout:



- Function details:
 - This function requires the guest to login to the system with the role “Manager”.
 - Manager just can see information, but cannot edit, so if Manager wants to edit information, Manager will contact to Admin.

3.2.10 <Staff> Recharge/Buy combo:

- Function trigger:
 - Staff click on tab “Nạp tiền - Mua gói” on the top of menu to recharge/buy combo for user.
 - Staff click on tab “Nạp tiền” to top up for users.
 - Staff click on tab “Mua gói” to buy combo for users.
- Function description: This function is used for Staff to top up/buy combo for user who cannot top up/buy combo in toilet app.
- Screen layout:



- Function details:

- This function requires the guest to login to the system with the role “Staff”.
- Staff will find user information by typing phone number, then it will show user information. With recharge, Staff choose price/types price to top up for users. With buying combo, Staff will choose combo to buy for users.

3.2.11 <Staff> Manage announcement

3.2.11.1 Get announcement

- Function trigger:

- Staff click on tab “Quản lý quảng cáo” to access to announcement.
- Staff click on tab “Quảng cáo khuyến mãi” to view all promotions that will be approved in app, and users can read announcement in app.
- Staff click on tab “Quảng cáo website” to view all announcements that will be announced for websites of public services.
- Staff click on tab “Quảng cáo Ứng dụng” to view all announcements that will be announced for App of public services.

- Function description: Staff can view all announcements that Staff set include promotion, website announcement, application announcement.

- Screen layout:

STT	Tiêu đề	Mô tả	Ngày bắt đầu	Ngày kết thúc			
1	Create nè	Description	04-06-2023	09-06-2023	<input checked="" type="checkbox"/>	<input type="checkbox"/>	...
2	Khuyến mãi 7.7	Giảm ngay nửa giá tiền cho tất cả dịch vụ.	02-06-2023	03-06-2023	<input checked="" type="checkbox"/>	<input type="checkbox"/>	...
3	Đi toilet nhận ngay Vo...	Deal siêu hot!!! Kể từ ngày 06/06 đến ngày 10/06...	31-05-2023	02-06-2023	<input checked="" type="checkbox"/>	<input type="checkbox"/>	...
4	Mừng dịp lễ 30/4 và 1...	Năm 2023, giáo viên được nghỉ dịp lễ 30/4 và 1/...	28-04-2023	02-05-2023	<input checked="" type="checkbox"/>	<input type="checkbox"/>	...

- Function details:

- This function requires the guest to login to the system with the role “Staff”.
- Staff can view all promotions in app as well as control the source of revenue and expenditure, closer dates will be placed at the top.

3.2.11.2 Delete announcement

- Function trigger:

- Staff click on tab “Quản lý quảng cáo” to access to announcement.
- Staff click on delete icon to delete announcement.

- Function description: Staff can delete announcements that it's no longer in the announcement period.

- Screen layout:

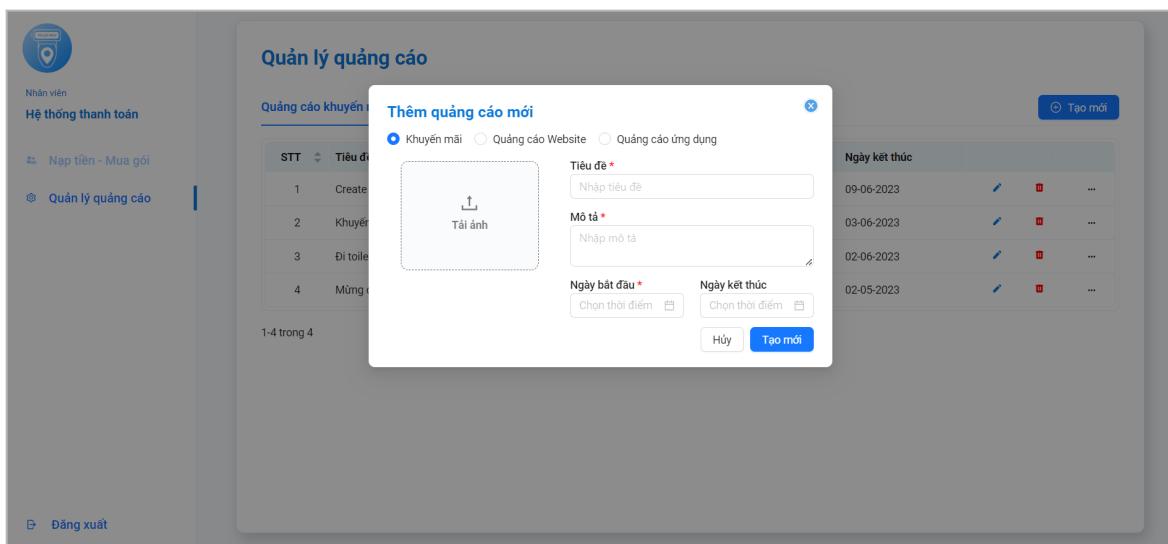
STT	Tiêu đề	Mô tả	Ngày bắt đầu	Ngày kết thúc			
1	Create nè	Description	04-06-2023	09-06-2023	<input checked="" type="checkbox"/>	<input type="checkbox"/>	...
2	Khuyến mãi 7.7	Giảm ngay nửa giá tiền cho tất cả dịch vụ.	02-06-2023	03-06-2023	<input checked="" type="checkbox"/>	<input type="checkbox"/>	...
3	Đi toilet nhận ngay Vo...	Deal siêu hot!!! Kể từ ngày 06/06 đến ngày 10/06...	31-05-2023	02-06-2023	<input checked="" type="checkbox"/>	<input type="checkbox"/>	...
4	Mừng dịp lễ 30/4 và 1...	Năm 2023, giáo viên được nghỉ dịp lễ 30/4 và 1/...	28-04-2023	02-05-2023	<input checked="" type="checkbox"/>	<input type="checkbox"/>	...

- Function details:

- This function requires the guest to login to the system with the role “Staff”.
- When Staff clicks on delete icon, a confirmation pop-up will appear. If Staff:
 - Click button “Đồng ý”: the announcement will be deleted without condition.
 - Click button “Hủy”: the announcement will be retained.

3.2.12 <Staff> Create announcement

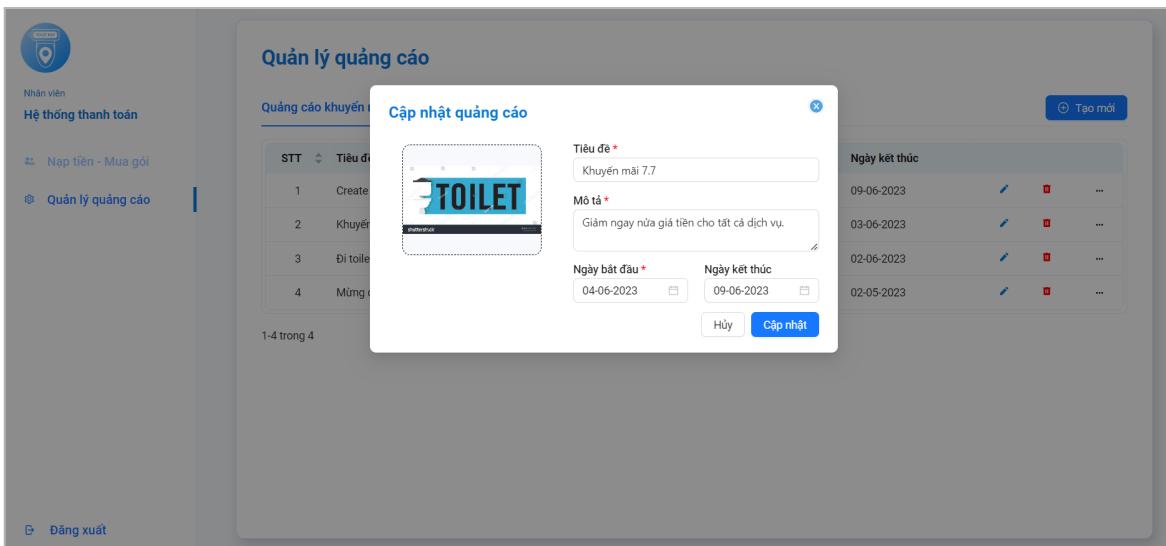
- Function trigger:
 - Staff click on tab “Quản lý quảng cáo” to access to announcement.
 - Staff click on button “Tạo mới” to show pop-up to create new announcement.
 - After choosing button “Tạo mới”, Staff will choose 1 in 3 options “Khuyến mãi”, “Quảng cáo Website”, “Quảng cáo Ứng dụng” suitable for purpose of the announcement.
 - After fill in all fields, Staff will click “Tạo mới” to create new.
- Function description: Staff can create new announcements following company requirements.
- Screen layout:



- Function details:
 - This function requires the guest to login to the system with the role “Staff”.
 - Staff will fill in all required fields and image and then click “Tạo mới” to create new or click “Hủy” to cancel.
 - When clicking “Tạo mới”, if success, it will return to “Quản lý quảng cáo” screen, else, error message will show.

3.2.13 <Staff> Update announcement

- Function trigger:
 - Staff click on tab “Quản lý quảng cáo” to access to announcement.
 - Staff click on edit icon to show pop-up to update announcement.
 - After editing needed fields, Staff will click “Cập nhật” to update.
- Function description: Staff can update announcement if wants to edit title/description/start date/end date following company requirements.
- Screen layout:



- Function details:

- This function requires the guest to login to the system with the role “Staff”.
- Staff will edit needed fields and then click “Cập nhật” to update or click “Hủy” to cancel.
- When clicking “Cập nhật”, if success, it will return to “Quản lý quảng cáo” screen, else, error message will show.

3.2.14 <Admin> Manage company

3.2.14.1 Get company list

- Function trigger: Admin clicks on “Quản lý đơn vị vệ sinh” on top of menu.
- Function description: Admin can manage all companies in system.
- Screen layout:

Quản lý đơn vị vệ sinh			
STT	Tên đơn vị vệ sinh	Địa chỉ	Trạng thái
1	CMN NEW2	40 Lê Văn Việt, Hiệp Phú, Thủ Đức, Hồ Chí Minh	Đang hoạt động
2	CMN NEWW	40 Lê Văn Việt, Hiệp Phú, Thủ Đức, Hồ Chí Minh	Đang hoạt động
3	CMN NEW	40 Lê Văn Việt, Hiệp Phú, Thủ Đức, Hồ Chí Minh	Đang hoạt động
4	TP create new company	218 Nguyễn Văn Luông, Phường 12, Quận 6, Hồ Chí Minh	Không hoạt động
5	dasdsa	Cảng hàng không quốc nội Đà Nẵng, Hòa Thuận Tây, Hải Châu, Đà Nẵng	Đang hoạt động
6	Đơn vị vệ sinh Quận 9	200 Lê Văn Việt, Tăng Nhơn Phú A, Thủ Đức, Hồ Chí Minh	Đang hoạt động
7	123456	FBU, Xuân Định, Bác Tứ Liêm, Hà Nội	Đang hoạt động
8	Dịch vụ vệ sinh Quận Thủ Đức	200 Lê Văn Việt, Tăng Nhơn Phú A, Thủ Đức, Hồ Chí Minh	Đang hoạt động
9	Dịch vụ vệ sinh quận 3	453/200 Lê Văn Sỹ, Phường 12, Quận 3, Hồ Chí Minh	Đang hoạt động
10	Dịch vụ vệ sinh quận 10	400 Đường 3/2, Phường 12, Quận 10, Hồ Chí Minh	Đang hoạt động

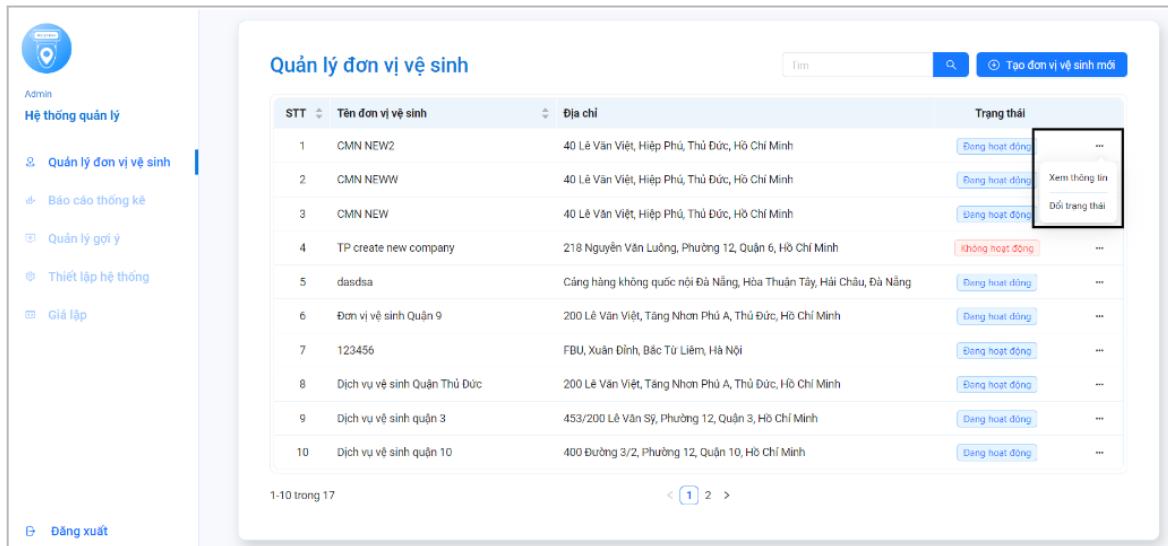
- Function details:

- This function requires the guest to login to the system with the role “Admin”.
- This function returns a list of all toilets of the company which Admin belongs to in form of table, which includes: STT, company name, address, status..

3.2.14.2 Change company status

- Function trigger:

- Admin click on button  , then click on button “Đổi trạng thái” in screen “Quản lý đơn vị vệ sinh”.
- Function description: Admin can change company status in order to manage companies which are open/close in system easily.
- Screen layout:



STT	Tên đơn vị vệ sinh	Địa chỉ	Trạng thái
1	CMN NEW2	40 Lê Văn Việt, Hiệp Phú, Thủ Đức, Hồ Chí Minh	
2	CMN NEWW	40 Lê Văn Việt, Hiệp Phú, Thủ Đức, Hồ Chí Minh	
3	CMN NEW	40 Lê Văn Việt, Hiệp Phú, Thủ Đức, Hồ Chí Minh	
4	TP create new company	218 Nguyễn Văn Luông, Phường 12, Quận 6, Hồ Chí Minh	
5	dasdsa	Cảng hàng không quốc nội Đà Nẵng, Hòa Thuận Tây, Hải Châu, Đà Nẵng	
6	Đơn vị vệ sinh Quận 9	200 Lê Văn Việt, Tăng Nhơn Phú A, Thủ Đức, Hồ Chí Minh	
7	123456	FBU, Xuân Định, Bắc Từ Liêm, Hà Nội	
8	Dịch vụ vệ sinh Quận Thủ Đức	200 Lê Văn Việt, Tăng Nhơn Phú A, Thủ Đức, Hồ Chí Minh	
9	Dịch vụ vệ sinh quận 3	453/200 Lê Văn Sỹ, Phường 12, Quận 3, Hồ Chí Minh	
10	Dịch vụ vệ sinh quận 10	400 Đường 3/2, Phường 12, Quận 10, Hồ Chí Minh	

1-10 trong 17 < 1 2 >

- Function details:
 - This function requires the guest to login to the system with the role “company”.
 - After clicking button “Đổi trạng thái”, popup confirm will appear. If Admin changes:
 - Success: Status will be changed from “Đang hoạt động” to “Không hoạt động” and vice versa.
 - Fail: Status will not be changed

3.2.15 <Admin> Create company

- Function trigger:
 - Admin click on button “Tạo mới đơn vị vệ sinh”.
 - After each step in creating, Admin will click button “Tiếp theo” to continue creating, else, if Admin want to return to previous step, Admin can click button “Trở về”.
 - After checking information in last step, Admin will click button “Tạo mới” to create new company.
- Function description: Admin can create new company, so that new company account will be given to this company to put into operation.
- Screen layout:

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Admin
Hệ thống quản lý

- [Quản lý đơn vị vệ sinh](#)
- [Báo cáo thống kê](#)
- [Quản lý gợi ý](#)
- [Thiết lập hệ thống](#)
- [Giả lập](#)

[Đăng xuất](#)

← Quản lý đơn vị vệ sinh > **Tạo đơn vị vệ sinh mới**

1 Tạo thông tin 2 Tạo tài khoản 3 Xác nhận

Tên đơn vị *	Nhập tên đơn vị vệ sinh (tối đa 50 ký tự)
Địa chỉ *	Nhập địa chỉ
Phường/Xã	
Quận/Huyện	
Tỉnh/Thành phố	
Số điện thoại *	Nhập số điện thoại

[Tiếp theo](#)

← Quản lý nhà vệ sinh > **Tạo nhà vệ sinh mới**

1 Tạo thông tin 2 Tạo tài khoản 3 Xác nhận

Tài khoản *	dvsqtd
Mật khẩu *	...
Xác nhận mật khẩu *	...

[Trở về](#) [Tiếp theo](#)

← Quản lý nhà vệ sinh > **Tạo nhà vệ sinh mới**

1 Tạo thông tin 2 Tạo tài khoản 3 Xác nhận

	
Tên nhà vệ sinh	Dịch vụ sinh quận Thủ Đức
Tài khoản	dvsqtd
Địa chỉ	200 Lê Văn Việt
Phường/Xã	Tăng Nhơn Phú A
Quận/Huyện	Thủ Đức
Tỉnh/Thành phố	Hồ Chí Minh
Số điện thoại	0921220406

[Trở về](#) [Xác nhận](#)

- Function details:

- This function requires the guest to login to the system with the role “Manager”.
- In all steps, Admin must fill in all required information to continue to the next step.

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- In create account step, Admin must type new username, if duplicate, error message will appear.
- If there is any error, it will throw in the last step when Admin clicks “Xác nhận”.

3.2.16 <Admin> Manage details company

- Function trigger:

- Admin click on button ..., then click on button “Xem thông tin” in screen “Quản lý đơn vị vệ sinh”.
- In the details screen, Admin clicks on tab “Thông tin chung” to view company information.
- In the details screen, Admin clicks on tab “Báo cáo” to report of all toilets in company.

- Function description: Admin can manage general information of company.

- Screen layout:

The screenshots show the 'Quản lý đơn vị vệ sinh' (Manage Sanitation Unit) section of the application. On the left is a sidebar with navigation links: 'Hệ thống quản lý', 'Quản lý đơn vị vệ sinh' (selected), 'Báo cáo thống kê', 'Quản lý gợi ý', 'Thiết lập hệ thống', and 'Giả lập'. On the right, there are two tabs: 'Thông tin chung' (selected) and 'Báo cáo'. Under 'Thông tin chung', a company logo for 'CÔNG TY TNHH MTV DỊCH VỤ CÔNG ÍCH QUẬN 1' is displayed, along with its address (28-30 Nguyễn Thái Bình, Phường Nguyễn Thái Bình, Quận 1, Thành phố Hồ Chí Minh) and status (Đang hoạt động). Under 'Báo cáo', a table shows reports for two toilets: 'Nhà vệ sinh lưu động số 1 - Dịch vụ vệ sinh quận 9' (3 reports) and 'Nhà vệ sinh lưu động số 2' (1 report).

- Function details:

- This function requires the guest to login to the system with the role “Admin”.
- In the tab “Thông tin chung”, Admin can view company logo, name, address.

- In the tab “Báo cáo”, Manager can view the toilet name, total report, and status solving.

3.2.17 <Admin> Statistic

- Function trigger:
 - Admin click on tab “Báo cáo thống kê” to view statistic of all companies in system.
- Function description: Admin can view all temporary money of all companies in system.
- Screen layout:

The screenshot shows the Admin Statistic interface. On the left, there's a sidebar with navigation links: Admin, Hệ thống quản lý, Quản lý đơn vị vệ sinh, Báo cáo thống kê (selected), Quản lý gợi ý, Thiết lập hệ thống, Giá lập, and Đăng xuất. The main area displays two large numbers: 1,818 (Tổng lượt Khách trong tháng) and 10,850,000 (Tổng số tiền tạm thu trong tháng). Below these are date range filters (01/07/2023 - 31/07/2023) and a "Xuất file excel số tiền tạm thu" button. A table follows, showing data for two service providers:

STT	Tên đơn vị vệ sinh	Tổng số tiền tạm thu (...)	Khách vãng lai		Thành viên sử dụng gói	
			Số tiền tạm thu ...	Số lượt khách	Số tiền tạm thu ...	Số lượt khách
1	Công ty dịch vụ công ích quận 1	10,103,000	260,000	36	9,843,000	1,600
2	Hieu company 190423	747,000	-	-	747,000	182

At the bottom, it says "1-2 trong 2" and has navigation arrows (< 1 >).

- Function details:
 - This function requires the guest to login to the system with the role “Admin”.
 - Admin can see number of visitors, temporary money in current month on the top of screen.
 - Admin can change date range to see temporary of other day, month, year.

3.2.18 <Admin> System settings

3.2.18.1 Get service price

- Function trigger:
 - Admin click on tab “Thiết lập hệ thống” to access to system settings.
- Function description: Admin can view all service prices in table “Dịch vụ” that default setting by system.
- Screen layout:

Dịch vụ

STT	Dịch vụ	Giá (VND)	Lượt	Ngày áp dụng
1	Tiểu tiện	5,000	1	11/04/2023
2	Đại tiện	10,000	2	11/04/2023
3	Đi tím	15,000	3	11/04/2023

1-3 trong 3 < 1 >

Phòng vệ sinh

STT	Loại phòng
1	Phòng vệ sinh
2	Phòng tắm
3	Phòng vệ sinh dành cho người khuyết tật

1-3 trong 3 < 1 >

Thiết bị vệ sinh

STT	Thiết bị vệ sinh
1	Vòi xịt
2	Máy sấy tay
3	Giấy vệ sinh
4	Nước rửa tay

Danh mục đánh giá

STT	Thiết bị vệ sinh
1	Thái độ nhân viên kém
2	Nhà vệ sinh bẩn, hôi
3	Trang thiết bị hư hỏng
4	Thiếu nước - giấy vệ sinh

- Function details:

- This function requires the guest to login to the system with the role “Admin”.
- Admin can view all prices of 3 services in system as well as adjust to good price.

3.2.18.2 Get toilet types

- Function trigger:

- Admin click on tab “Thiết lập hệ thống” to access to system settings.

- Function description: Admin can view all service prices in table “Phòng vệ sinh” that default setting by system.

- Screen layout:

Dịch vụ

STT	Dịch vụ	Giá (VND)	Lượt	Ngày áp dụng
1	Tiểu tiện	5,000	1	11/04/2023
2	Đại tiện	10,000	2	11/04/2023
3	Đi tím	15,000	3	11/04/2023

1-3 trong 3 < 1 >

Phòng vệ sinh

STT	Loại phòng
1	Phòng vệ sinh
2	Phòng tắm
3	Phòng vệ sinh dành cho người khuyết tật

1-3 trong 3 < 1 >

Thiết bị vệ sinh

STT	Thiết bị vệ sinh
1	Vòi xịt
2	Máy sấy tay
3	Giấy vệ sinh
4	Nước rửa tay

Danh mục đánh giá

STT	Thiết bị vệ sinh
1	Thái độ nhân viên kém
2	Nhà vệ sinh bẩn, hôi
3	Trang thiết bị hư hỏng
4	Thiếu nước - giấy vệ sinh

- Function details:

- This function requires the guest to login to the system with the role “Admin”.
- Admin can view 3 toilet types in system that will show for Manager to create new toilet.

3.2.18.3 Get facilities

- Function trigger:

- Admin click on tab “Thiết lập hệ thống” to access to system settings.

- Function description: Admin can view all facilities in table “Thiết bị vệ sinh”.

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- Screen layout:

The screenshot shows the Admin dashboard interface. On the left sidebar, under 'Hệ thống quản lý', there are tabs for: Quản lý đơn vị vệ sinh, Báo cáo thống kê, Quản lý gợi ý, Thiết lập hệ thống, Giá lập, and Đăng xuất. The main content area is divided into four sections: 'Dịch vụ' (Service fees), 'Phòng vệ sinh' (Restroom types), 'Thiết bị vệ sinh' (Cleaning equipment), and 'Danh mục đánh giá' (Rating categories). Each section contains a table with data and a 'Cập nhật giá' (Update price) or 'Thêm danh mục đánh giá' (Add rating category) button.

STT	Dịch vụ	Giá (VND)	Lượt	Ngày áp dụng
1	Tiểu tiện	5,000	1	11/04/2023
2	Đại tiện	10,000	2	11/04/2023
3	Đi tắm	15,000	3	11/04/2023

STT	Loại phòng
1	Phòng vệ sinh
2	Phòng tắm
3	Phòng vệ sinh dành cho người khuyết tật

STT	Thiết bị vệ sinh
1	Vòi xịt
2	Máy sấy tay
3	Giấy vệ sinh
4	Nước rửa tay

STT	Thiết bị vệ sinh
1	Thái độ nhân viên kém
2	Nhà vệ sinh bẩn, hôi
3	Trang thiết bị hư hỏng
4	Thieu nước - giấy vệ sinh

- Function details:

- This function requires the guest to login to the system with the role "Admin".
- Admin can view all facilities in system that will show for Manager to create new toilet.

3.2.18.4 Get common comment

- Function trigger:

- Admin click on tab “Thiết lập hệ thống” to access to system settings.

- Function description: Admin can view all common comments in table “Danh mục đánh giá”.

- Screen layout:

The screenshot shows the Admin dashboard interface. On the left sidebar, under 'Hệ thống quản lý', there are tabs for: Quản lý đơn vị vệ sinh, Báo cáo thống kê, Quản lý gợi ý, Thiết lập hệ thống, Giá lập, and Đăng xuất. The main content area is divided into four sections: 'Dịch vụ' (Service fees), 'Phòng vệ sinh' (Restroom types), 'Thiết bị vệ sinh' (Cleaning equipment), and 'Danh mục đánh giá' (Rating categories). Each section contains a table with data and a 'Cập nhật giá' (Update price) or 'Thêm danh mục đánh giá' (Add rating category) button.

STT	Dịch vụ	Giá (VND)	Lượt	Ngày áp dụng
1	Tiểu tiện	5,000	1	11/04/2023
2	Đại tiện	10,000	2	11/04/2023
3	Đi tắm	15,000	3	11/04/2023

STT	Loại phòng
1	Phòng vệ sinh
2	Phòng tắm
3	Phòng vệ sinh dành cho người khuyết tật

STT	Thiết bị vệ sinh
1	Vòi xịt
2	Máy sấy tay
3	Giấy vệ sinh
4	Nước rửa tay

STT	Thiết bị vệ sinh
1	Thái độ nhân viên kém
2	Nhà vệ sinh bẩn, hôi
3	Trang thiết bị hư hỏng
4	Thieu nước - giấy vệ sinh

- Function details:

- This function requires the guest to login to the system with the role "Admin".
- Admin can view all common comments in system that will show for User to rating faster.

3.2.18.5 Get package price

- Function trigger:

- Admin click on tab “Thiết lập hệ thống” to access to system settings.

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- Function description: Admin can view all packages in table “Giá gói”.
- Screen layout:

The screenshot shows the Admin dashboard with a sidebar menu on the left. The main area is divided into two sections: 'Giá gói' (Price Package) and 'Từ nhạy cảm' (Sensitive Words).

Giá gói (Price Package):

STT	Số lượt	Giá (VND)	Ngày áp dụng
1	2	10,000	20/05/2023
2	4	20,000	20/05/2023
3	6	30,000	20/05/2023
4	3	50,000	20/05/2023
5	3	15,000	20/05/2023
6	3	15,000	20/05/2023
7	3	15,000	20/05/2023
8	3	15,000	20/05/2023

Từ nhạy cảm (Sensitive Words):

STT	Từ nhạy cảm
1	đo mò
2	e
3	ew
4	Góm
5	hem
6	hi
7	hôi hám
8	iaa

- Function details:
 - This function requires the guest to login to the system with the role “Admin”.
 - Admin can view all packages in system that will show for User to buy.

3.2.18.6 Get sensitive word

- Function trigger:
 - Admin click on tab “Thiết lập hệ thống” to access to system settings.
- Function description: Admin can view all sensitive words in table “Từ nhạy cảm”.
- Screen layout:

The screenshot shows the Admin dashboard with a sidebar menu on the left. The main area is divided into two sections: 'Giá gói' (Price Package) and 'Từ nhạy cảm' (Sensitive Words).

Giá gói (Price Package):

STT	Số lượt	Giá (VND)	Ngày áp dụng
1	2	10,000	20/05/2023
2	4	20,000	20/05/2023
3	6	30,000	20/05/2023
4	3	50,000	20/05/2023
5	3	15,000	20/05/2023
6	3	15,000	20/05/2023
7	3	15,000	20/05/2023
8	3	15,000	20/05/2023

Từ nhạy cảm (Sensitive Words):

STT	Từ nhạy cảm
1	đo mò
2	e
3	ew
4	Góm
5	hem
6	hi
7	hôi hám
8	iaa

- Function details:
 - This function requires the guest to login to the system with the role “Admin”.
 - Admin can view all sensitive words that set in system that will automatically filter sensitive comments of users.

3.2.18.7 Create facility

- Function trigger:
 - Admin click on tab “Thiết lập hệ thống” to access to system settings.
 - Admin click on button “Thêm thiết bị” to add new facility.

Capstone Project Document - Social Toilet Map

- After fill in facility name, Admin click on button “Tạo mới” to add new facility.
- Function description: Admin can create new facility that Manager can use it for create new toilet.
- Screen layout:

The screenshot displays the 'Dịch vụ' (Services) section of the application. A central modal window titled 'Tạo thiết bị mới' (Create new device) is open, containing a text input field labeled 'Nhập thiết bị' (Enter device) with placeholder text 'Nhập thiết bị'. Below the input field are two buttons: 'Hủy' (Cancel) and 'Tạo mới' (Create new). The background features several lists and tables:

- Phòng vệ sinh:** A table showing three types of rooms: Phòng sinh, Phòng tắm, and Phòng vệ sinh dành cho người khuyết tật.
- Thiết bị vệ sinh:** A table showing four types of sanitary equipment: Vòi xịt, Máy sấy tay, Giấy vệ sinh, and Nước rửa tay.
- Danh mục đánh giá:** A table showing four evaluation categories: Thái độ nhân viên kém, Nhà vệ sinh bẩn, hôi, Trang thiết bị hư hỏng, and Thiếu nước - giấy vệ sinh.

- Function details:
 - This function requires the guest to login to the system with the role “Admin”.
 - Admin will fill in all required fields and then click “Tạo mới” to create new or click “Hủy” to cancel.
 - When clicking “Tạo mới”, if success, it will return to “Thiết lập hệ thống” screen, else, error message will show.

3.2.18.8 Create common comment

- Function trigger:
 - Admin click on tab “Thiết lập hệ thống” to access to system settings.
 - Admin click on button “Thêm danh mục đánh giá” to add new common comment.
 - After fill in common comment, Admin click on button “Tạo mới” to add new common comment.
- Function description: Admin can create new common comment that User can use it for comment faster.
- Screen layout:

STT	Dịch vụ
1	Tiểu tiện
2	Đại tiện
3	Đi tắm

STT	Loại phòng
1	Phòng vệ sinh
2	Phòng tắm
3	Phòng vệ sinh dành cho người khuyết tật

- Function details:

- This function requires the guest to login to the system with the role "Admin".
- Admin will fill in all required fields and then click "Tạo mới" to create new or click "Hủy" to cancel.
- When clicking "Tạo mới", if success, it will return to "Thiết lập hệ thống" screen, else, error message will show.

3.2.18.9 Create package price

- Function trigger:

- Admin click on tab "Thiết lập hệ thống" to access to system settings.
- Admin click on button "Thêm gói" to add new facility.
- After fill in all required fields, Admin click on button "Tạo mới" to add new package.

- Function description: Admin can create new packages that User/Staff can buy in system.

- Screen layout:

STT	Số lượt
1	2
2	4
3	6
4	3
5	3
6	3
7	3
8	3

STT	Từ nhạy cảm
1	do mo
2	e
3	ew
4	Góm
5	hem
6	hi
7	hôi hám
8	iaa

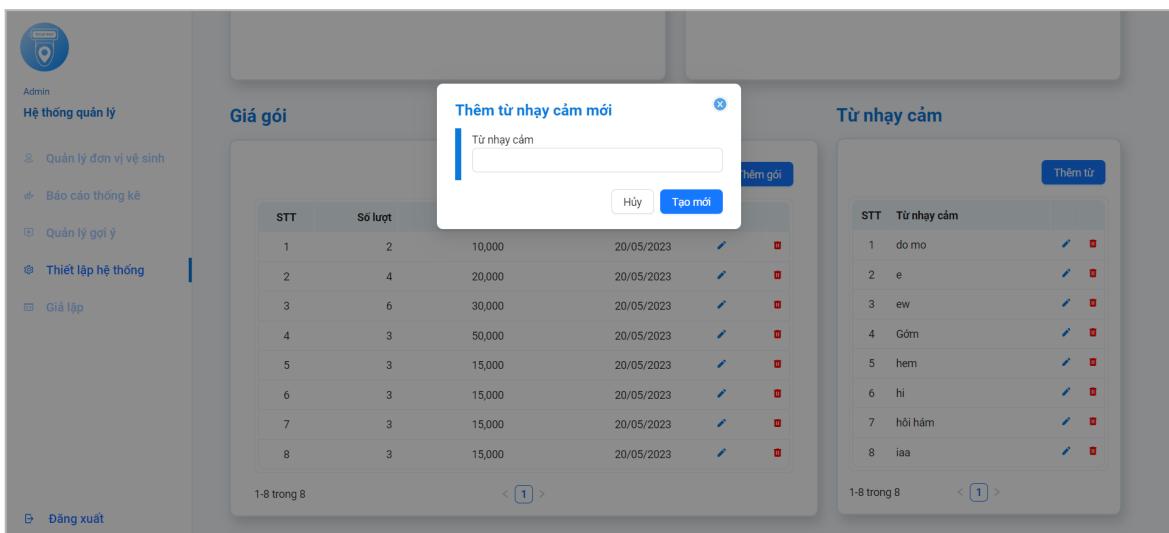
- Function details:

- This function requires the guest to login to the system with the role "Admin".
- Admin will fill in all required fields and then click "Tạo mới" to create new or click "Hủy" to cancel.

- When clicking “Tạo mới”, if success, it will return to “Thiết lập hệ thống” screen, else, error message will show.

3.2.18.10 Create sensitive word

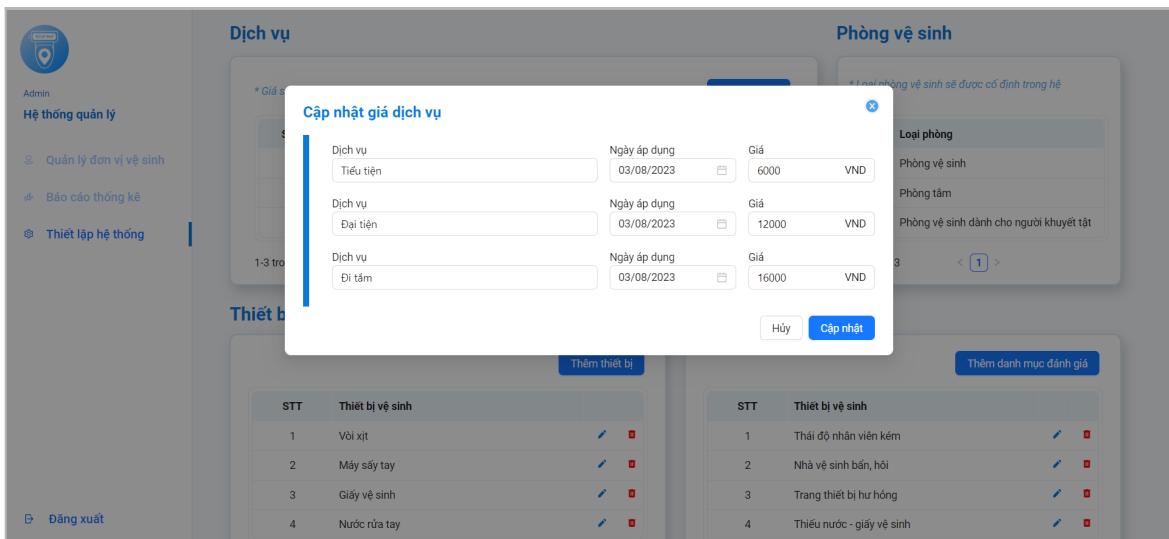
- Function trigger:
 - Admin click on tab “Thiết lập hệ thống” to access to system settings.
 - Admin click on button “Thêm từ nhạy cảm” to add new sensitive word.
 - After fill in sensitive word, Admin click on button “Tạo mới” to add new sensitive word.
- Function description: Admin can create sensitive word that system will automatically filter sensitive comments in system.
- Screen layout:



- Function details:
 - This function requires the guest to login to the system with the role “Admin”.
 - Admin will fill in all required fields and then click “Tạo mới” to create new or click “Hủy” to cancel.
 - When clicking “Tạo mới”, if success, it will return to “Thiết lập hệ thống” screen, else, error message will show.

3.2.18.11 Update service

- Function trigger:
 - Admin click on tab “Thiết lập hệ thống” to access to system settings.
 - Admin click on button “Cập nhật giá” to update service.
 - After editing service price and date change, Admin clicks on button “Cập nhật” to update price and date change of service.
- Function description: Admin can update service price and set date to change price of service in system.
- Screen layout:



- Function details:

- This function requires the guest to login to the system with the role "Admin".
- Admin will edit service price and date change and then click "Cập nhật" to update or click "Hủy" to cancel.
- When clicking "Cập nhật", if success, it will return to "Thiết lập hệ thống" screen, else, error message will show.

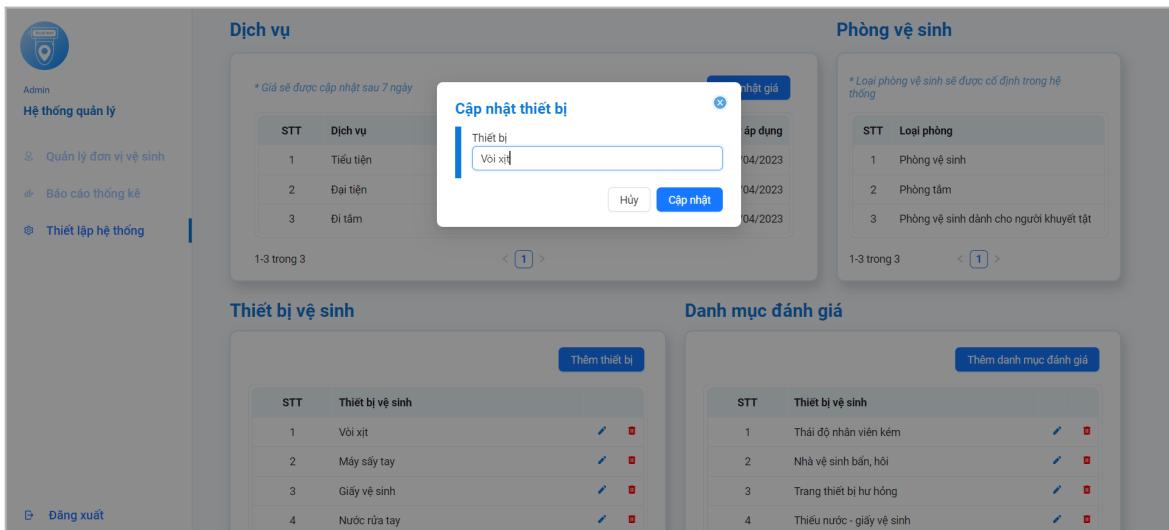
3.2.18.12 Update facility

- Function trigger:

- Admin click on tab "Thiết lập hệ thống" to access to system settings.
- Admin click on edit icon to update facility.
- After editing facility, Admin clicks on button "Cập nhật" to update facility.

- Function description: Admin can update facility that all facility will have batch changes in all toilets which have been set by Manager in system.

- Screen layout:



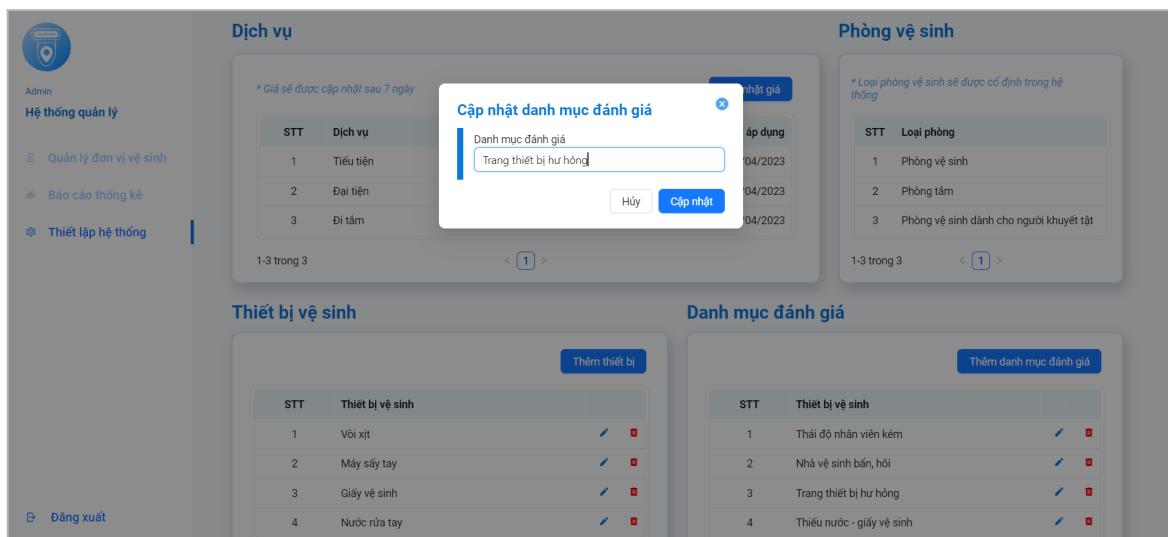
- Function details:

- This function requires the guest to login to the system with the role "Admin".
- Admin will edit facility and then click "Cập nhật" to update or click "Hủy" to cancel.

- When clicking “Cập nhật”, if success, it will return to “Thiết lập hệ thống” screen, else, error message will show.

3.2.18.13 Update common comment

- Function trigger:
 - Admin click on tab “Thiết lập hệ thống” to access to system settings.
 - Admin click on edit icon to update common comment.
 - After editing common comment, Admin clicks on button “Cập nhật” to update common comment.
- Function description: Admin can update common comment that Users can use to comment faster in system.
- Screen layout:



- Function details:
 - This function requires the guest to login to the system with the role “Admin”.
 - Admin will edit common comment and then click “Cập nhật” to update or click “Hủy” to cancel.
 - When clicking “Cập nhật”, if success, it will return to “Thiết lập hệ thống” screen, else, error message will show.

3.2.18.14 Update package price

- Function trigger:
 - Admin click on tab “Thiết lập hệ thống” to access to system settings.
 - Admin click on edit icon to update package price.
 - After editing package price, Admin clicks on button “Cập nhật” to update package price.
- Function description: Admin can update package that User/Staff can buy in system.
- Screen layout:

Capstone Project Document - Social Toilet Map

STT	Số lượt	Giá
1	2	10,000
2	4	20,000
3	6	30,000
4	3	50,000
5	3	15,000
6	3	15,000
7	3	15,000
8	3	15,000

STT	Từ nhạy cảm
1	do mo
2	e
3	ew
4	Göm
5	hem
6	hi
7	hôi hám
8	iaa

- Function details:

- This function requires the guest to login to the system with the role “Admin”.
- Admin will edit package price and then click “Cập nhật” to update or click “Hủy” to cancel.
- When clicking “Cập nhật”, if success, it will return to “Thiết lập hệ thống” screen, else, error message will show.

3.2.18.15 Update sensitive word

- Function trigger:

- Admin click on tab “Thiết lập hệ thống” to access to system settings.
- Admin click on edit icon to update sensitive word.
- After edit sensitive word, Admin click on button “Cập nhật” to update sensitive word.

- Function description: Admin can update sensitive word that system will automatically filter sensitive comments in system.

- Screen layout:

STT	Từ nhạy cảm	Thêm gõ
1	do mo	/dəʊməʊ/
2	e	/eɪ/
3	ew	/eʊ/
4	Göm	/gœm/
5	hem	/hɛm/
6	hi	/hɪ/
7	hôi hám	/hɔɪ hám/
8	iaa	/iə/

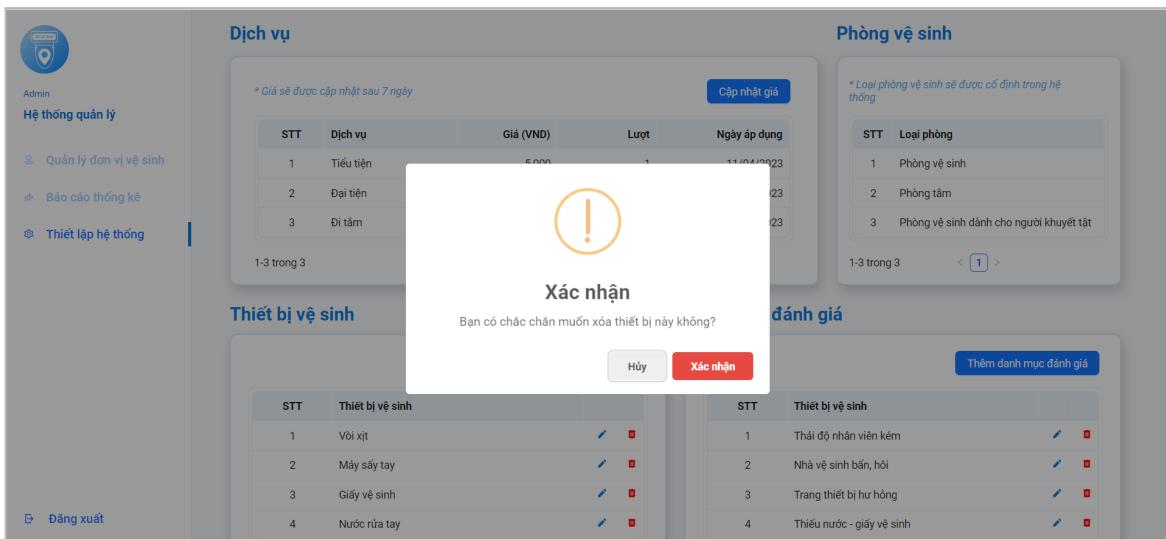
- Function details:

- This function requires the guest to login to the system with the role “Admin”.

- Admin will edit sensitive word and then click “Cập nhật” to update or click “Hủy” to cancel.
- When clicking “Cập nhật”, if success, it will return to “Thiết lập hệ thống” screen, else, error message will show.

3.2.18.16 Delete facility

- Function trigger:
 - Admin click on tab “Thiết lập hệ thống” to access to system settings.
 - Admin click on delete icon to delete facility.
 - Pop-up confirm is shown, Admin click on button “Xác nhận” to delete facility.
- Function description: Admin can delete facility that it's no longer using in system.
- Screen layout:



- Function details:
 - This function requires the guest to login to the system with the role “Admin”.
 - Admin will delete facility and then click “Xác nhận” to confirm delete.
 - When clicking “Xác nhận”, if success, it will return to “Thiết lập hệ thống” and will disappear, else, error message will show.
 - If any toilet has this facility, Admin cannot delete this facility.

3.2.18.17 Delete common comments

- Function trigger:
 - Admin click on tab “Thiết lập hệ thống” to access to system settings.
 - Admin click on delete icon to delete common comment.
 - Pop-up confirm is shown, Admin click on button “Xác nhận” to delete common comments.
- Function description: Admin can delete common comments that it's no longer using in system.
- Screen layout:

Capstone Project Document - Social Toilet Map

Dịch vụ

STT	Dịch vụ	Giá (VND)	Lượt	Ngày áp dụng
1	Tiểu tiện	5.000	1	11/04/2023
2	Đại tiện			23
3	Đi tắm			23

1-3 trong 3

Thiết bị vệ sinh

STT	Thiết bị vệ sinh
1	Vòi xịt
2	Máy sấy tay
3	Giấy vệ sinh
4	Nước rửa tay

Phòng vệ sinh

STT	Loại phòng
1	Phòng vệ sinh
2	Phòng tắm
3	Phòng vệ sinh dành cho người khuyết tật

1-3 trong 3 < 1 >

Xác nhận
Bạn có chắc chắn muốn xóa danh mục đánh giá này không?

Hủy Xác nhận

đánh giá

Thêm danh mục đánh giá

STT	Thiết bị vệ sinh
1	Thái độ nhân viên kém
2	Nhà vệ sinh bẩn, hôi
3	Trang thiết bị hư hỏng
4	Thiếu nước - giấy vệ sinh

- Function details:

- This function requires the guest to login to the system with the role “Admin”.
- Admin will delete common comments and then click “Xác nhận” to confirm delete.
- When clicking “Xác nhận”, if success, it will return to “Thiết lập hệ thống” and will disappear, else, error message will show.

3.2.18.18 Delete package price

- Function trigger:

- Admin click on tab “Thiết lập hệ thống” to access to system settings.
- Admin click on delete icon to delete package price.
- Pop-up confirm is shown, Admin click on button “Xác nhận” to delete package price.

- Function description: Admin can delete package price that it's no longer using in system.

- Screen layout:

Giá gói

STT	Số lượt
1	2
2	4
3	6
4	3
5	3
6	3
7	3
8	3

1-8 trong 8 < 1 >

Từ nhạy cảm

STT	Từ nhạy cảm
1	do mo
2	e
3	ew
4	Góm
5	hem
6	hi
7	hôi hám
8	iaa

1-8 trong 8 < 1 >

Xác nhận
Bạn có chắc chắn muốn xóa gói giá này không?

Hủy Xác nhận

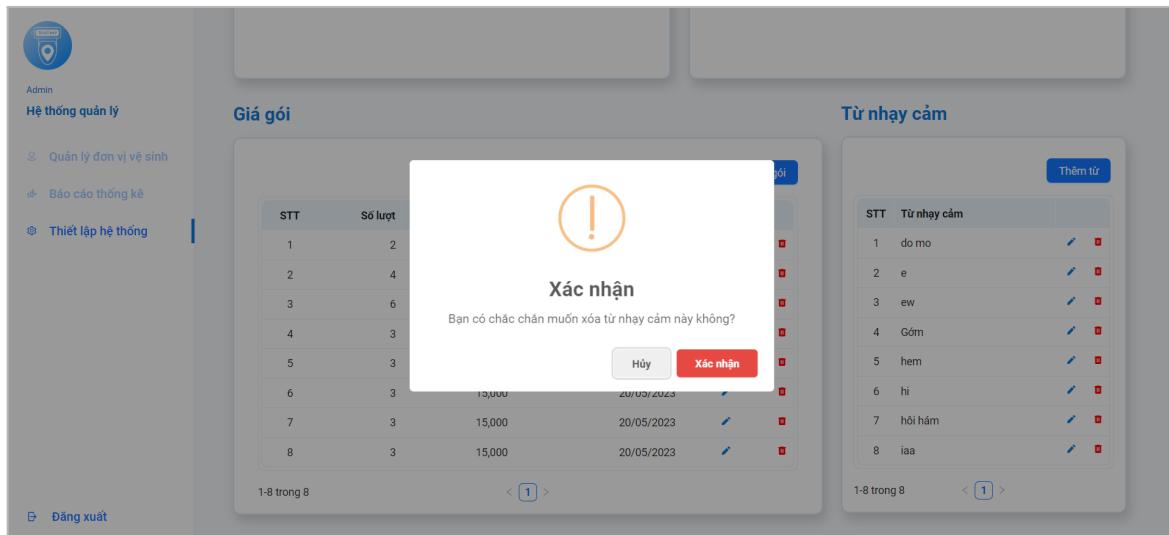
- Function details:

- This function requires the guest to login to the system with the role “Admin”.
- Admin will delete package price and then click “Xác nhận” to confirm delete.

- When clicking “Xác nhận”, if success, it will return to “Thiết lập hệ thống” and will disappear, else, error message will show.

3.2.18.19 Delete sensitive word

- Function trigger:
 - Admin click on tab “Thiết lập hệ thống” to access to system settings.
 - Admin click on delete icon to delete sensitive word.
 - Pop-up confirm is shown, Admin click on button “Xác nhận” to delete sensitive word.
- Function description: Admin can delete sensitive word that it's no longer using in system.
- Screen layout:

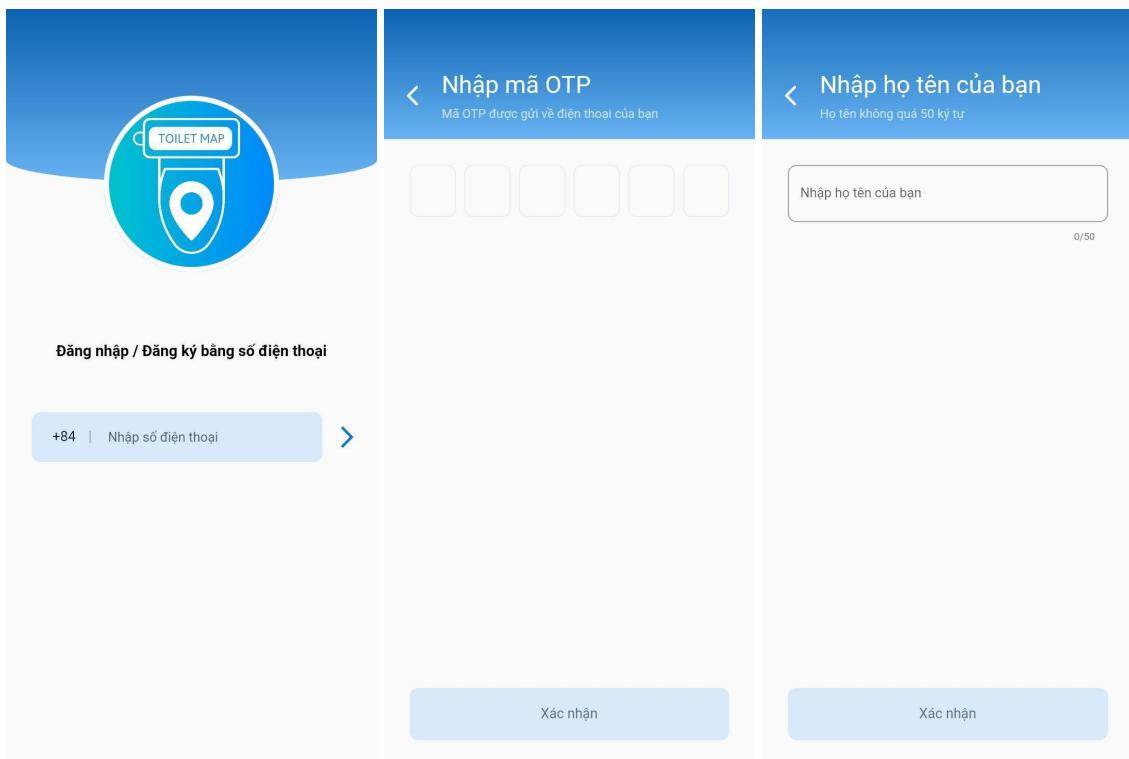


- Function details:
 - This function requires the guest to login to the system with the role “Admin”.
 - Admin will delete sensitive word and then click “Xác nhận” to confirm delete.
 - When clicking “Xác nhận”, if success, it will return to “Thiết lập hệ thống” and will disappear, else, error message will show.

3.3 Mobile Application

3.3.1 <Guest> Authentication/Authorization/Register to User Application

- Function trigger: Guest requests to log into the system by clicking the arrow button.
- Function description: Guest login to the system to verify the User role and give them access to more features in the system.
- Screen layout:



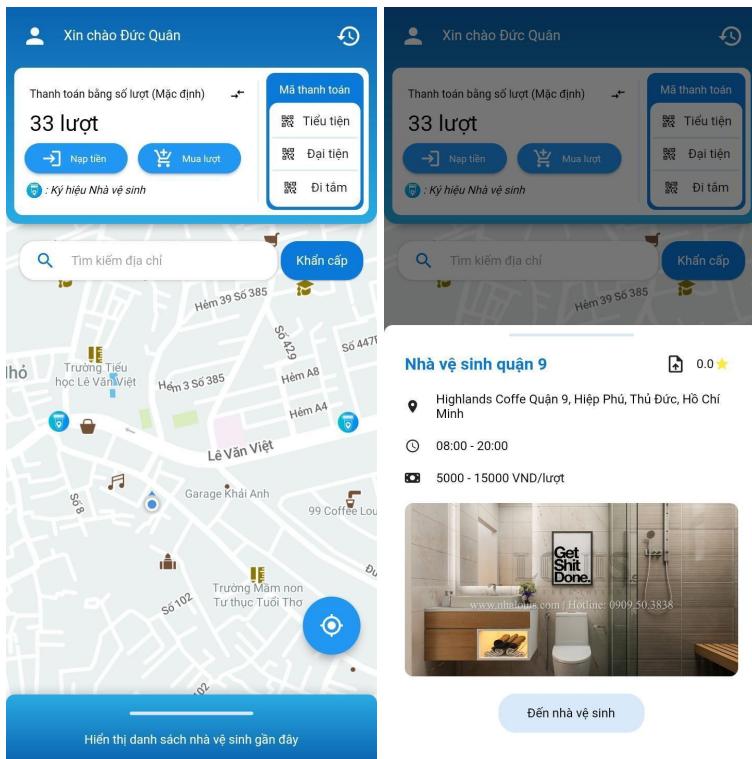
- Function details:
 - Guest input phone number and clicks on the arrow button.
 - After that, the system will send an SMS message to the phone number with a code. User must enter the true code to log in.
 - The system queries the phone number in the database to verify if the account exists.
 - The system validates the resolving content:
 - Success: If the phone number has been registered before, the system generates a JWT and returns the JWT back, navigates the application to the Home Screen. If the phone number hasn't been registered before, the system navigates to the Enter Username Screen (to register for the account).
 - Fail: The system returns and shows an error message.

3.3.2 <User> Get toilets information

3.3.2.1 Get toilets location on the map

- Function trigger: After navigating to the home screen, the User will get the map with toilets.
- Function description: On the home screen, the User will get the map with toilets.
- Screen layout:

Capstone Project Document - Social Toilet Map

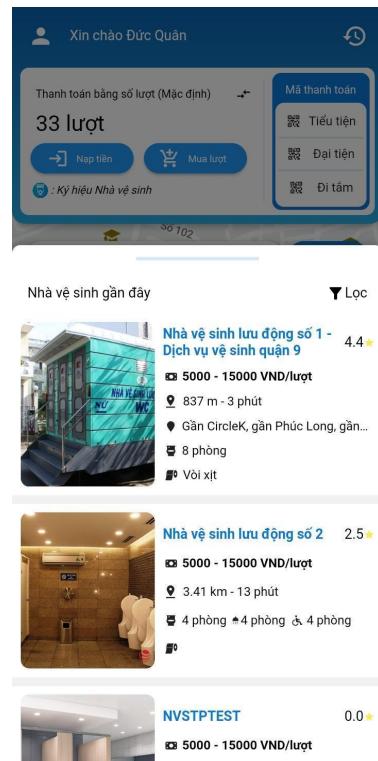


- Function details:

- This function requires the user to log in to the system with the role “User”.
- After navigating to the home screen, the system will generate the toilets’ location and present it on the map.
- User can move the map to see the toilets appear on the map.
- User can click on a symbol to see the basic information about the toilet.

3.3.2.2 Get the list of toilets nearby

- Function trigger: User drags up the bottom panel to see the list of toilets nearby the current location.
- Function description: User get the list of 10 toilets nearby them sorted by distance from the nearest to the furthest.
- Screen layout:



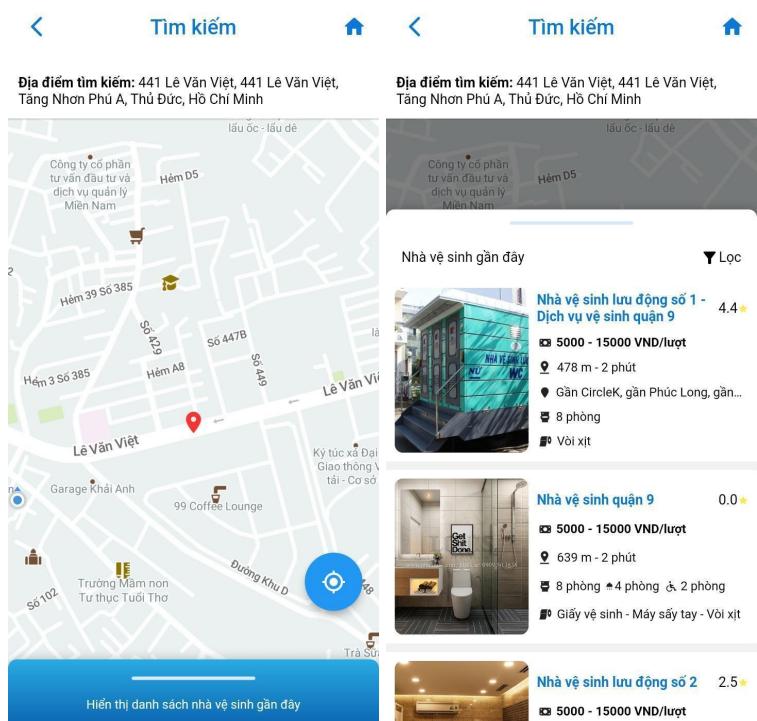
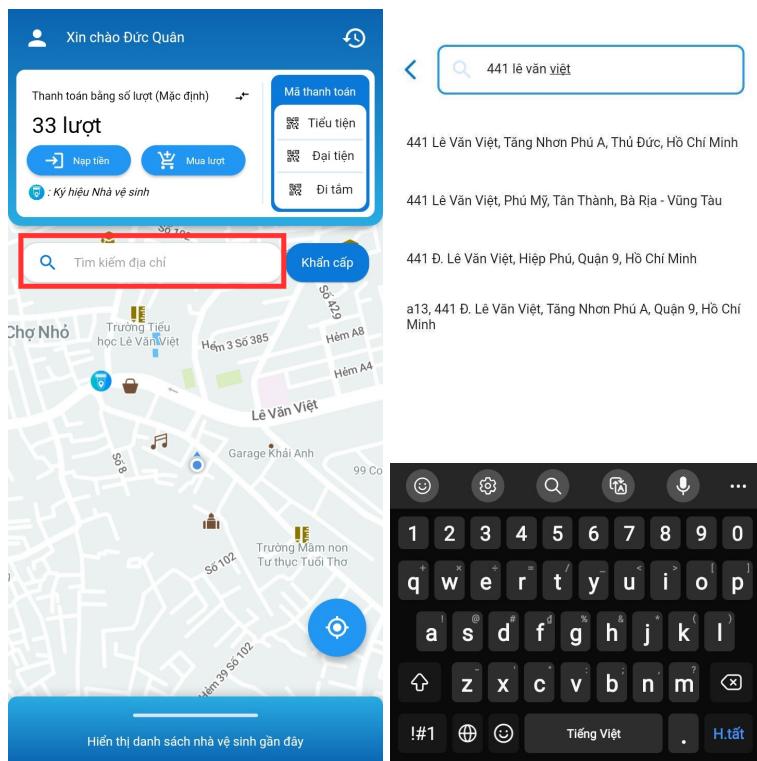
- Function details:

- This function requires the user to log in to the system with the role “User”.
- User can see the list of toilets nearby them sorted by distance with the basic information.
- User can click on a toilet to see detail information about that toilet.

3.3.2.3 Get toilets nearby a specific location by searching for that location

- Function trigger: User clicks on an address that appears on the list that they have been searching for.
- Function description: User can search for toilets nearby a specific location base on entering an address on the search textbox.
- Screen layout:

Capstone Project Document - Social Toilet Map



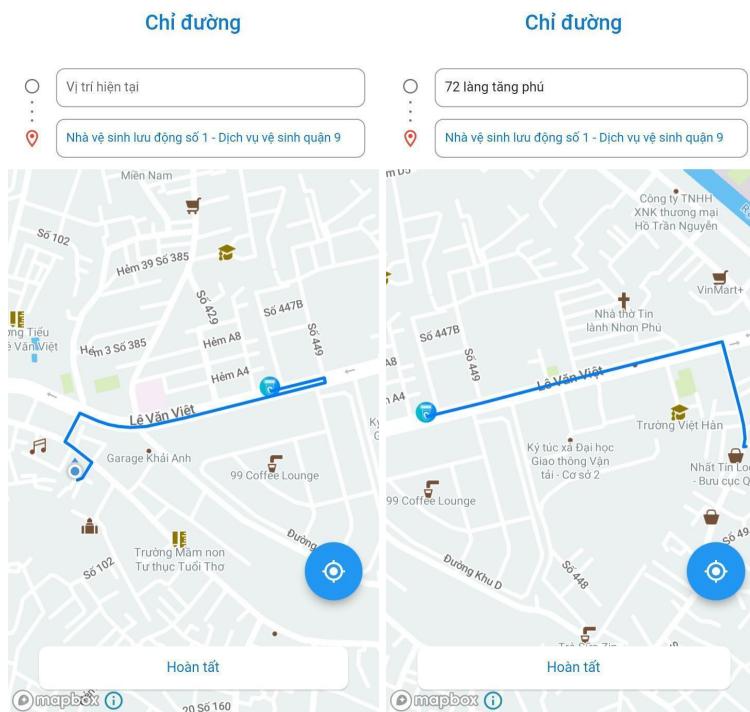
- Function details:

- This function requires the user to log in to the system with the role “User”.
- On the home screen, User can click on the “Tim kiếm địa chỉ” textbox to enter the address they want to search for, then choose an address from the list that appears. The system will navigate to the search screen with the default location as the address.

- User can move the map to look for toilets or drag up the bottom panel to see the toilets nearby that address sorted by distance.

3.3.2.4 Get directions from the current/specific location to a toilet

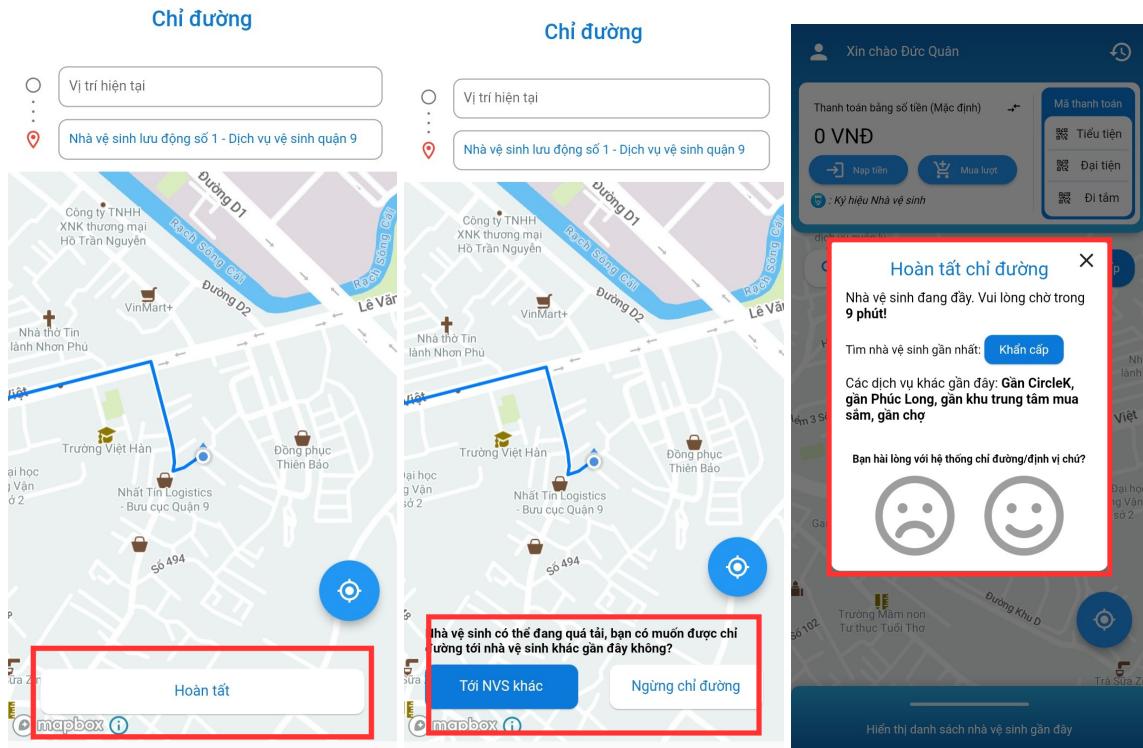
- Function trigger:
 - User click on the “Đến nhà vệ sinh” button on the toilet detail information screen.
 - User click on the “Đến nhà vệ sinh” button in the toilet basic information bottom panel on the home screen.
 - User click on the “Khẩn cấp” button on the home screen to get directions to the nearest toilet.
- Function description: User can get directions from the current/specific location to a toilet.
- Screen layout:



- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - The system will generate a guideline direct to the toilet from the current location of the User.
 - User can enter another address in the “Vị trí hiện tại” textbox to change the start location.

3.3.2.5 Get toilet status (available/full) on the direction screen

- Function trigger: If the User is on the direction screen to a toilet and the toilet status is changed from available to full or vice versa.
- Function description: User can get the toilet status if the toilet is full when the User is in the direction screen to that toilet.
- Screen layout:



- Function details:

- This function requires the user to log in to the system with the role “User”.
- This function requires the user must be on the direction screen to a specific toilet.
- If the toilet status change from available to full, the “Hoàn tất” button will change to a message and buttons for the User to find another toilet or stop direct way.
- After getting to the toilet, if the toilet is full, User can receive the time they must wait to check in.

3.3.2.6 Get toilet detail information

- Function trigger:

- User click on a toilet on the list of nearby toilets on the home screen.
- User click on the “file” symbol in the toilet basic information bottom panel on the home screen.

- Function description: User can get toilet detail information.

- Screen layout:

Thông tin nhà vệ sinh

Nhà vệ sinh lưu động số 1 - Dịch vụ vệ sinh quận 9 4.4★

- 447 Lê Văn Việt, Tăng Nhơn Phú A, Thủ Đức, Hồ Chí Minh
- Gần CircleK, gần Phúc Long, gần khu trung tâm mua ...
- 09:00 - 23:00
- 5000 - 15000 VND/lượt
- 8 phòng
- Vòi xịt

Đánh giá nhà vệ sinh

★★★★★ 4.4/5.0 (48 Đánh giá) Xem thêm

[Đến nhà vệ sinh](#)

Thông tin nhà vệ sinh

10/07/2023 - 14:34:28

★★★★★ Nhà vệ sinh rất sạch, tôi sẽ ghé sử dụng thường xuyên

13/06/2023 - 09:39:24

★★★★★ Nhà vệ sinh rất sạch, tôi sẽ ghé sử dụng thường xuyên

13/06/2023 - 09:37:37

★★★★★ Nhà vệ sinh rất sạch, tôi sẽ ghé sử dụng thường xuyên

13/06/2023 - 09:31:24

[Đến nhà vệ sinh](#)

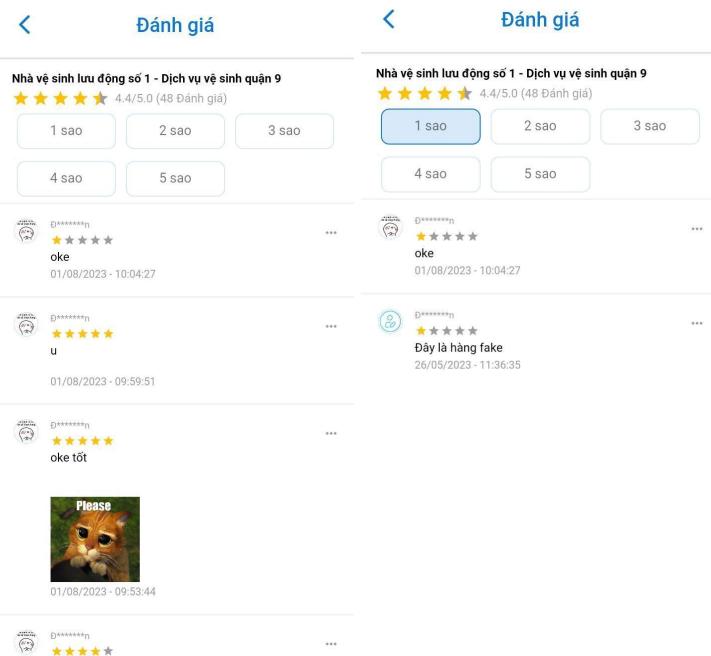
- Function details:

- This function requires the user to log in to the system with the role “User”.
- User can view detailed information about the toilet. User can click on “Đến nhà vệ sinh” to receive directions to the toilet or click “xem thêm” to see more ratings about the toilet.

3.3.2.7 Get ratings of a toilet

- Function trigger: Click on “Xem thêm” on the toilet detail information screen.
- Function description: User can see the list of ratings of a specific toilet.

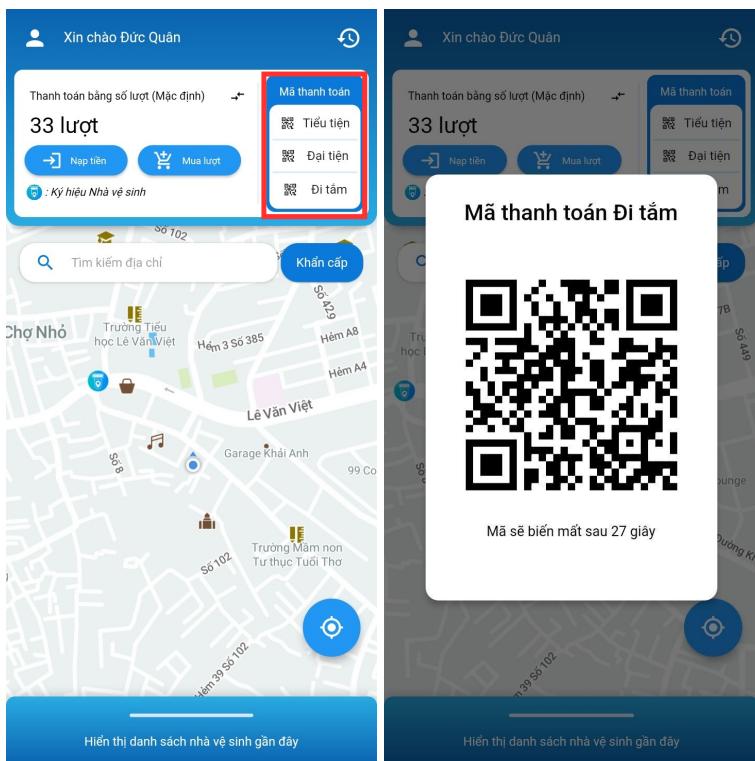
- Screen layout:



- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - User can scroll to the end to load more ratings.
 - The list is sorted by date from the newest to the oldest.
 - User can choose star list buttons to filter ratings by star.

3.3.3 <User> Generate payment QR code

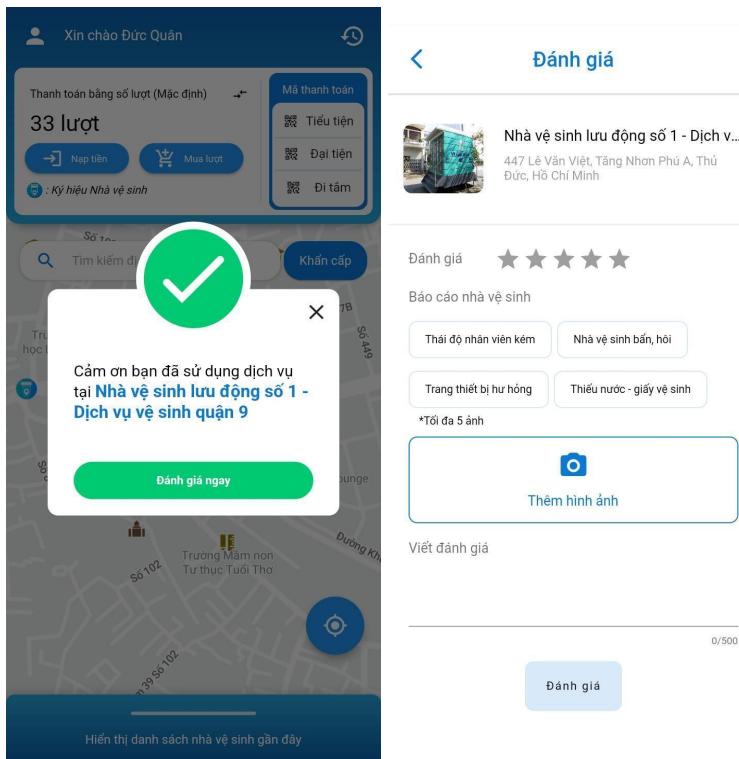
- Function trigger: User chooses the service on the home screen to generate a payment QR code.
- Function description: User can get the payment QR code for check-in to a toilet.
- Screen layout:



- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - The QR code will disappear after 30 seconds.

3.3.4 <User> Rate toilet

- Function trigger:
 - Click on “Đánh giá ngay” button on the pop-up that appears after User check-in successfully.
 - Click on “Đánh giá” button on a check-in record in the history screen.
- Function description: User can rate a toilet after check-in in that toilet.
- Screen layout:



- Function details:

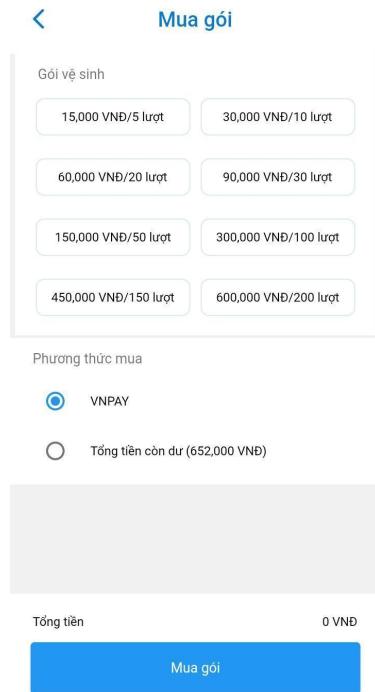
- This function requires the user to log in to the system with the role “User”.
- This function requires User to:
 - Choose the star.
 - Write comment.
 - Optional: include report tag, upload images.
- After filling in all the necessary fields, User can click on “Đánh giá” button to rate the toilet.

3.3.5 <User> Purchase combo

- Function trigger:

- Click on “Mua lượt” button on the home screen.
- Click on “Mua gói lượt” tag in the payment config screen.

- Function description: User can purchase combo in the application.
- Screen layout:



- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - User must choose the combo that they want to purchase and the payment method.
 - After choosing, User can click on “Mua gói” button to purchase the combo.

3.3.6 <User> Top-up money

- Function trigger:
 - Click on “Nạp tiền” button on the home screen.
 - Click on “Nạp tiền” tag in the payment config screen.
- Function description: User can top up money in the application.
- Screen layout:

The screenshot shows the 'Nạp tiền' (Top Up) screen. At the top, there is a back arrow icon and the title 'Nạp tiền'. Below the title, there is a section labeled 'Số tiền nạp (VND)' with a placeholder 'Nhập số tiền khác'. There are several buttons for selecting top-up amounts: 10,000, 20,000, 50,000, 100,000, 200,000, and 500,000. Below these buttons is a text input field with the placeholder 'Nhập số tiền' and a blue 'Nạp tiền' button at the bottom. On the right side of the screen, there is a placeholder for payment method selection, currently showing 'VNPay'.

- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - User must choose the money to top up or enter another value.
 - After choosing, User can click on “Nạp tiền” button to top up money.

3.3.7 <User> Get check-ins information

- Function trigger:
 - User clicks on the “history” symbol on the home screen, chooses “Đi vệ sinh” tag.
 - User clicks on the “lịch sử” tag on the user information screen, chooses “Đi vệ sinh” tag.
- Function description: User can get the check-in history.
- Screen layout:

Lịch sử		
	Đi vệ sinh	Nạp tiền
04/08/2023 - 01:56:32	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi vệ sinh (tiểu tiện)	Đánh giá - 1 lượt
02/08/2023 - 13:58:10	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi vệ sinh (tiểu tiện)	Đã hoàn tất - 1 lượt
01/08/2023 - 10:03:59	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi vệ sinh (tiểu tiện)	Đã đánh giá - 1 lượt
01/08/2023 - 09:38:47	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi tắm	Đã đánh giá - 3 lượt
01/08/2023 - 09:38:47	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi tắm	Đã đánh giá - 3 lượt
31/07/2023 - 22:04:15	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi tắm	Đã hoàn tất - 3 lượt
31/07/2023 - 22:04:15	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi tắm	Đã hoàn tất - 3 lượt

- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - User can scroll to the end to load more check-ins.
 - The list is sorted by date from the newest to the oldest.

3.3.8 <User> Get transactions information

- Function trigger:
 - User clicks on the “history” symbol on the home screen, chooses “Nạp tiền” tag.
 - User clicks on the “lịch sử” tag on the user information screen, chooses “Nạp tiền” tag.
- Function description: User can get the transaction history.
- Screen layout:

Lịch sử		
Đi vệ sinh	Nạp tiền	Mua gói lượt
02/08/2023 - 08:28:39 Nạp tiền vào tài khoản Tiền mặt	+ 10,000 VNĐ	
20/07/2023 - 17:41:15 Nạp tiền vào tài khoản VNPay	+ 10,000 VNĐ	
20/07/2023 - 17:34:08 Nạp tiền vào tài khoản VNPay	+ 12,000 VNĐ	
20/07/2023 - 17:33:21 Nạp tiền vào tài khoản Tiền mặt	+ 10,000 VNĐ	
20/07/2023 - 17:32:48 Nạp tiền vào tài khoản Tiền mặt	+ 10,000 VNĐ	
20/07/2023 - 17:24:12 Nạp tiền vào tài khoản Tiền mặt	+ 10,000 VNĐ	
20/07/2023 - 17:21:53 Nạp tiền vào tài khoản Tiền mặt	+ 10,000 VNĐ	

- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - User can scroll to the end to load more transactions.
 - The list is sorted by date from the newest to the oldest.

3.3.9 <User> Get purchase combos information

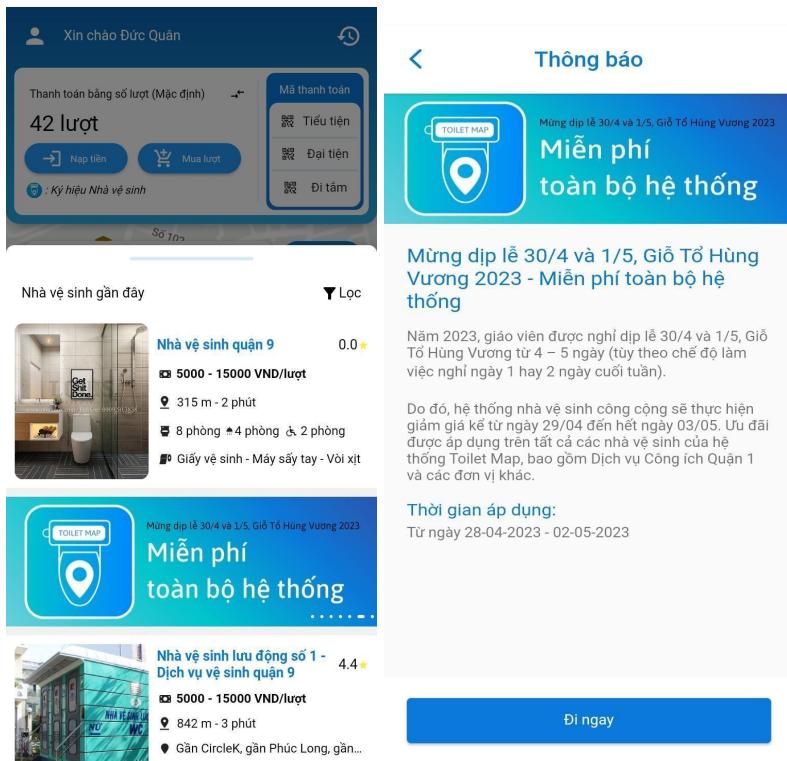
- Function trigger:
 - User clicks on the “history” symbol on the home screen, chooses “Mua gói lượt” tag.
 - User clicks on the “lịch sử” tag on the user information screen, chooses “Mua gói lượt” tag.
- Function description: User can get the purchase combo history.
- Screen layout:



- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - User can scroll to the end to load more purchase combos information.
 - The list is sorted by date from the newest to the oldest.

3.3.10 <User> Get announcements

- Function trigger: Drag up the nearby toilets list on the home screen.
- Function description: User can get the current announcements list that has in the system.
- Screen layout:



- Function details:

- This function requires the user to log in to the system with the role “User”.
- User can click on an announcement to view the announcement detail.

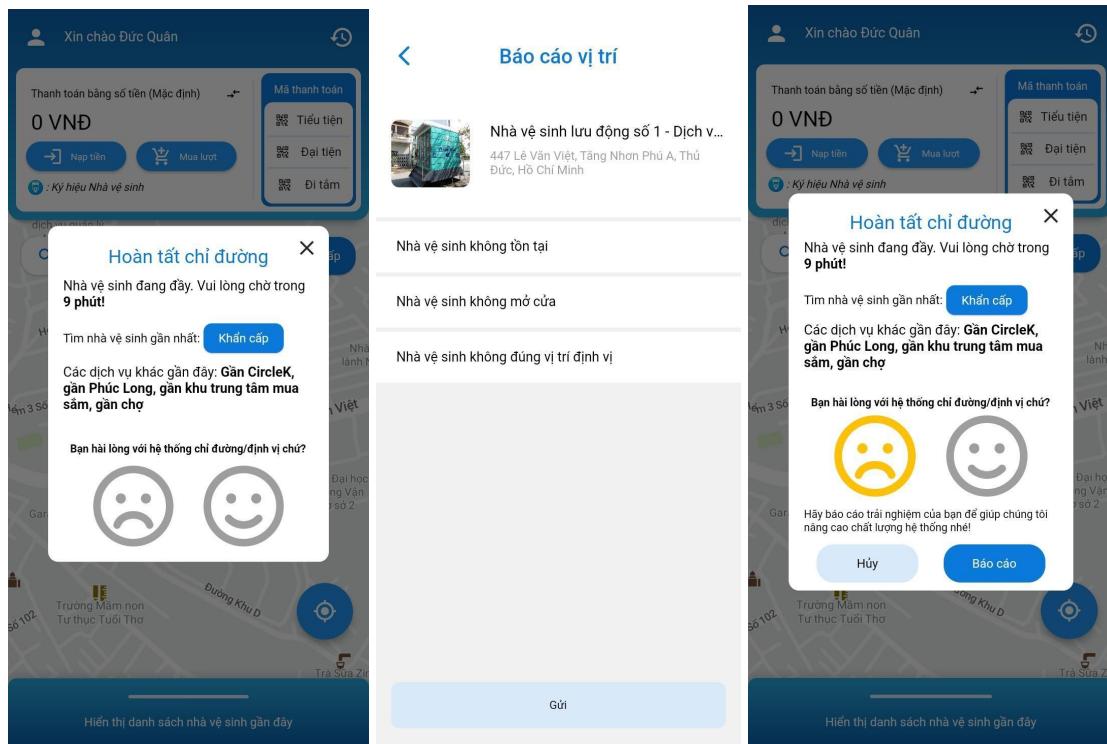
3.3.11 <User> Report toilet's location

- Function trigger:

- After the system navigate User from the direction screen to the home screen after User gets to the toilet location.

- Function description: User can report the toilet's location if the direction system has issues.

- Screen layout:

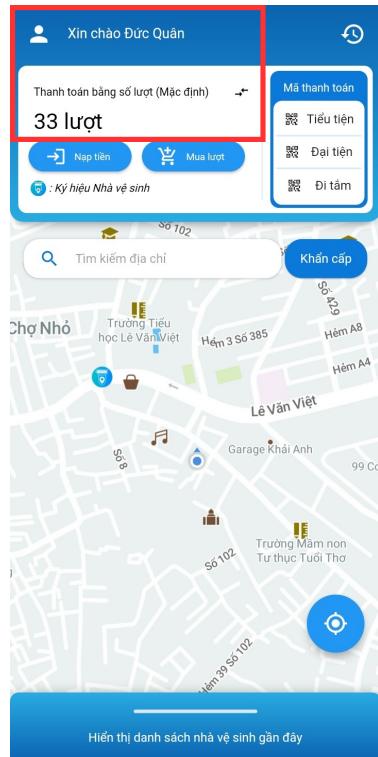


- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - If User clicks on the “happy face” symbol, the report form will disappear.
 - If User clicks on the “sad face” symbol, the system will navigate to the report location screen. User must choose the report reason and click on “Báo cáo” to report the toilet’s location.

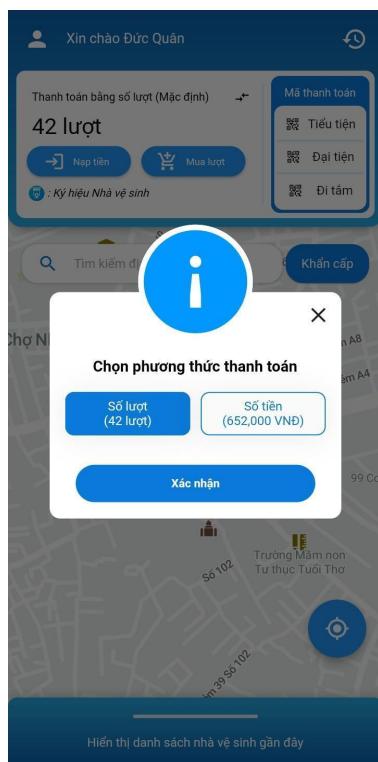
3.3.12 <User> Manage account information

3.3.12.1 Get user information

- Function trigger: After navigating to the home screen, the User will receive the account information on the app bar.
- Function description: User can view the account information.
- Screen layout:



- Function details:
 - This function requires the user to log in to the system with the role “User”.
- Function trigger: Click on the “change” button on the home screen.
- Function description: User can change the default payment method in the application.
- Screen layout:

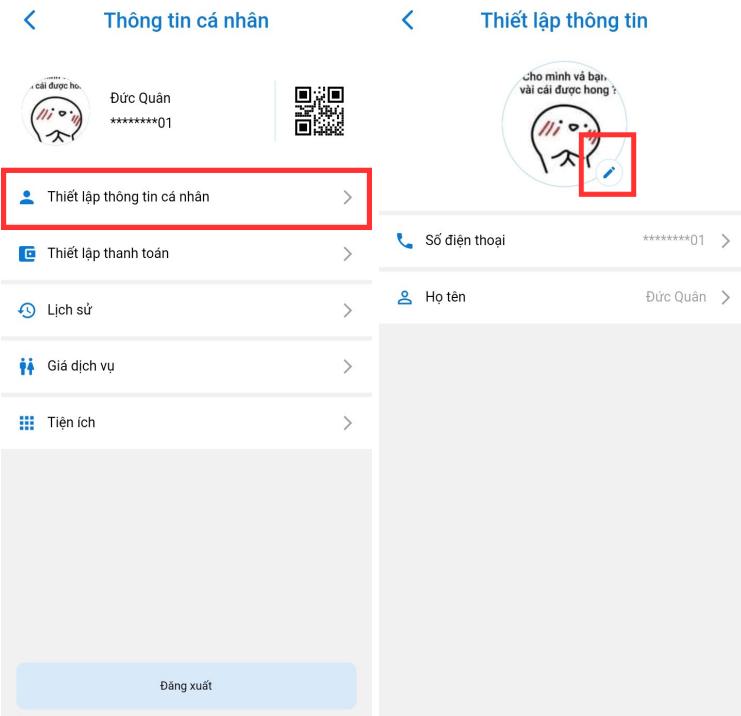


- Function details:

- This function requires the user to log in to the system with the role “User”.
- User can choose between using turn or money in the account.
- After choosing, User can click on “Xác nhận” button to change the default payment method.

3.3.12.3 Change avatar

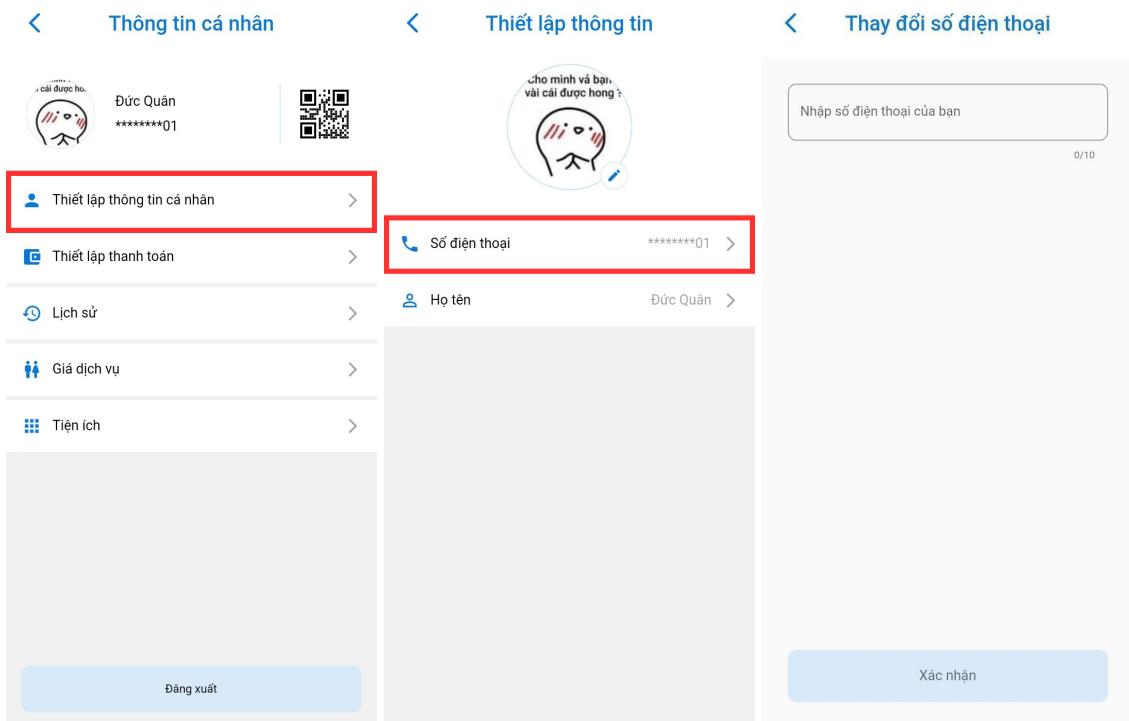
- Function trigger: Click on “edit” button on the avatar on the account information config screen.
- Function description: User can change the current avatar.
- Screen layout:



- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - After choosing an image on the phone, User can click on “Xác nhận” button to change the avatar.

3.3.12.4 Change phone number

- Function trigger: Click on “Số điện thoại” tag on the account information config screen.
- Function description: User can change the current phone number.
- Screen layout:

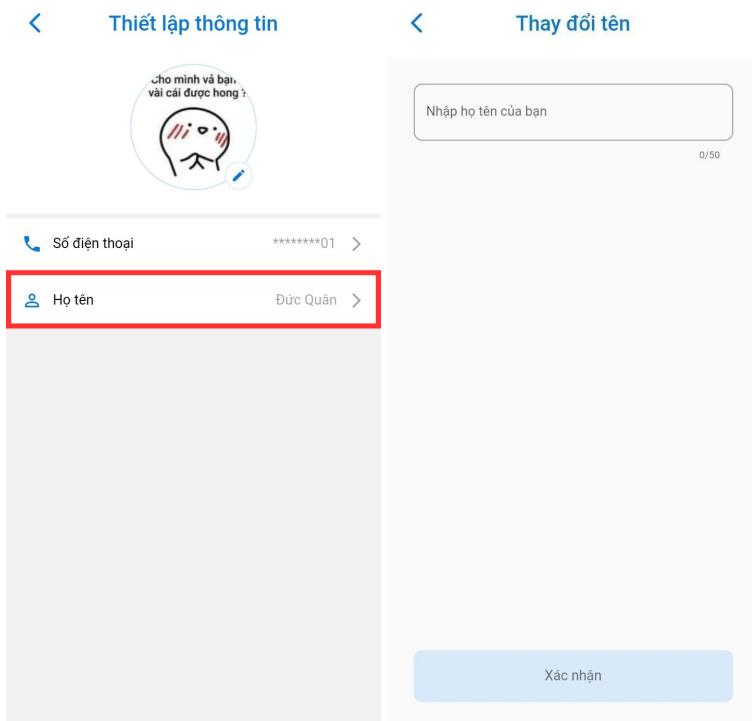


- Function details:

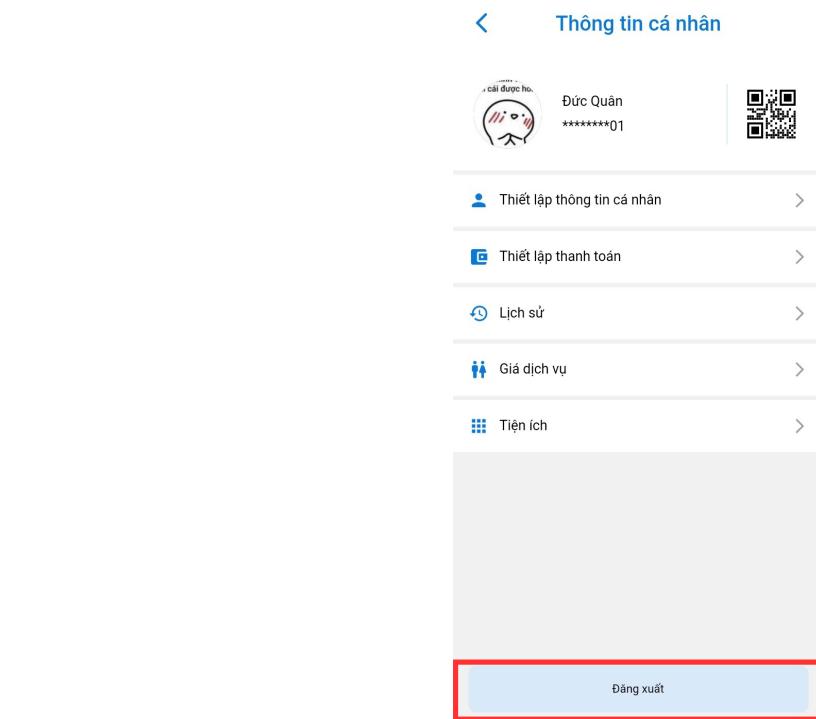
- This function requires the user to log in to the system with the role “User”.
- User must enter the new name in the “Nhập số điện thoại của bạn” textbox.
- After entering the new phone number, User can click on “Xác nhận” button to change the phone number.
- After that, the system will send an SMS message to the new phone number with a code. User must enter the true code to change the phone number.
- After entering the code, User can click on “Xác nhận” button to change the phone number.

3.3.12.5 Change name

- Function trigger: Click on “Họ tên” tag on the account information config screen.
- Function description: User can change the current name.
- Screen layout:



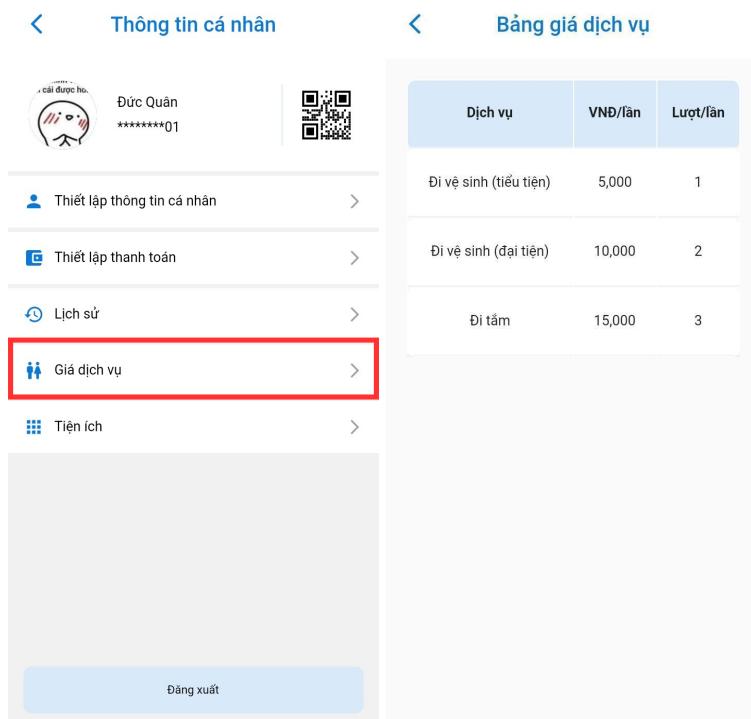
- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - User must enter the new name in the “Nhập họ tên của bạn” textbox.
 - After entering the new name, User can click on “Xác nhận” button to change the name.
- 3.3.12.6 Logout
- Function trigger: Click on “Đăng xuất” button on the user information screen.
- Function description: User can log out of the application.
- Screen layout:



- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - After logout successfully, the system will navigate to the login screen.

3.3.13 <User> Get services information

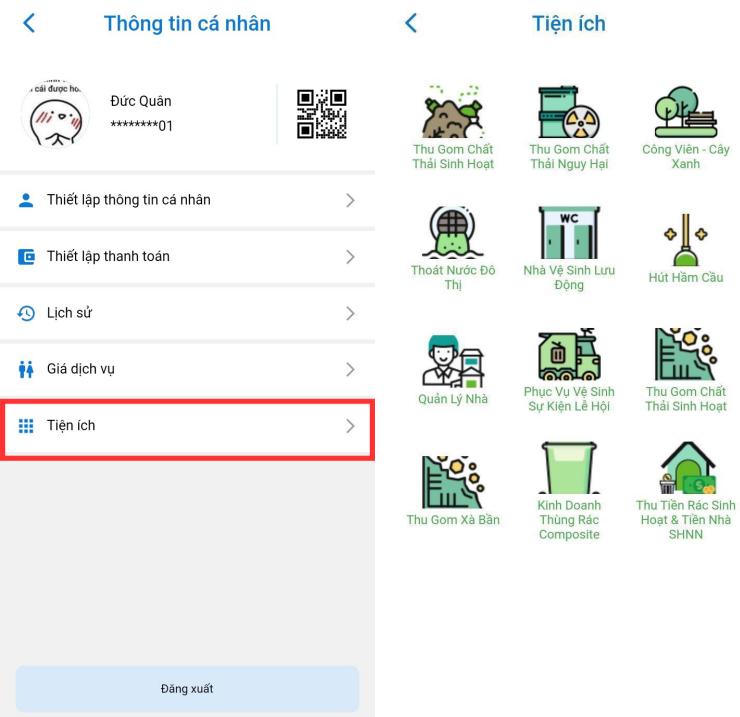
- Function trigger: Click on ‘Giá dịch vụ’ On the user information screen.
- Function description: User can get the services’s price.
- Screen layout:



- Function details:
 - This function requires the user to log in to the system with the role “User”.

3.3.14 <User> Get linked application/website information

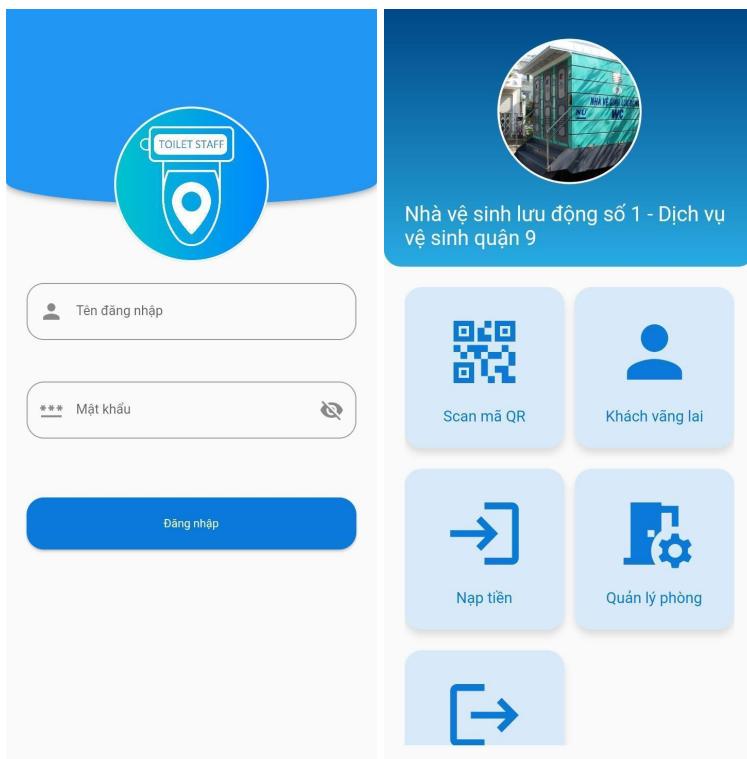
- Function trigger: Click on ‘Tiện ích’ On the user information screen.
- Function description: User can get the linked application/website information.
- Screen layout:



- Function details:
 - This function requires the user to log in to the system with the role “User”.
 - User can click on a linked application/website icon to navigate to the website.

3.3.15 <Guest> Authentication/authorization to staff application

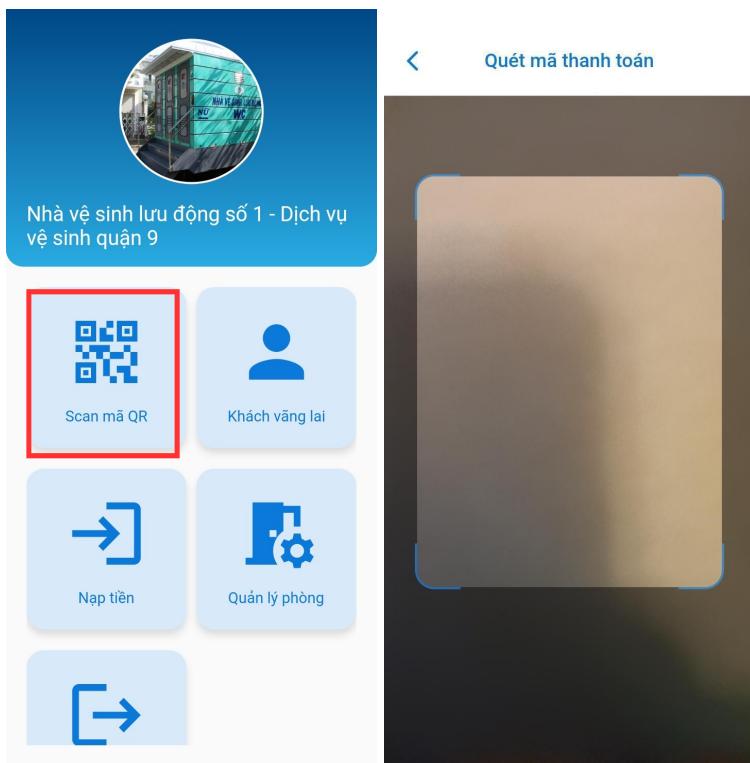
- Function trigger: Guest requests to log into the system by clicking “Đăng nhập” button.
- Function description: Guest login to the system to verify the Staff role and give them access to more features in the system.
- Screen layout:



- Function details:
 - Guest enters username, password and clicks on the “Đăng nhập” button.
 - The system queries the username and password in the database to verify the account exists.
 - The system validates the resolving content:
 - Success: The system generates a JWT and returns the JWT back, navigates the application to the home screen.
 - Fail: The system returns and shows an error message.

3.3.16 <Staff> Scan QR code to check-in

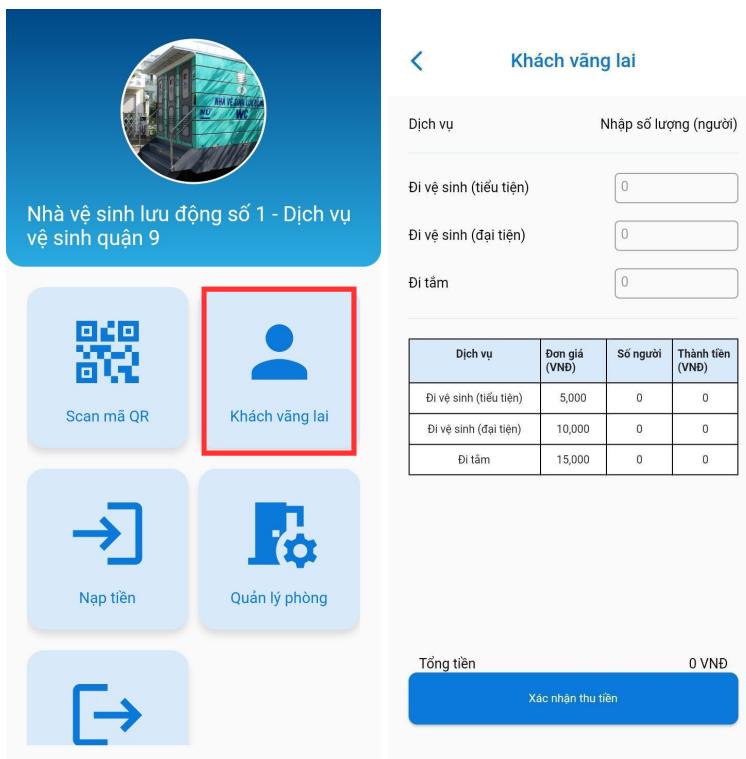
- Function trigger: Click on “Scan mã QR” button on the home screen.
- Function description: Staff can scan the QR code to check-in for user.
- Screen layout:



- Function details:
 - This function requires the user to log in to the system with the role “Staff”.
 - If the user check-in successfully, the system will show a message about user information on staff application.

3.3.17 <Staff> Check-in for guests using cash

- Function trigger: Click on “Khách vãng lai” button on the home screen.
- Function description: Staff can record check-ins for guests using cash.
- Screen layout:



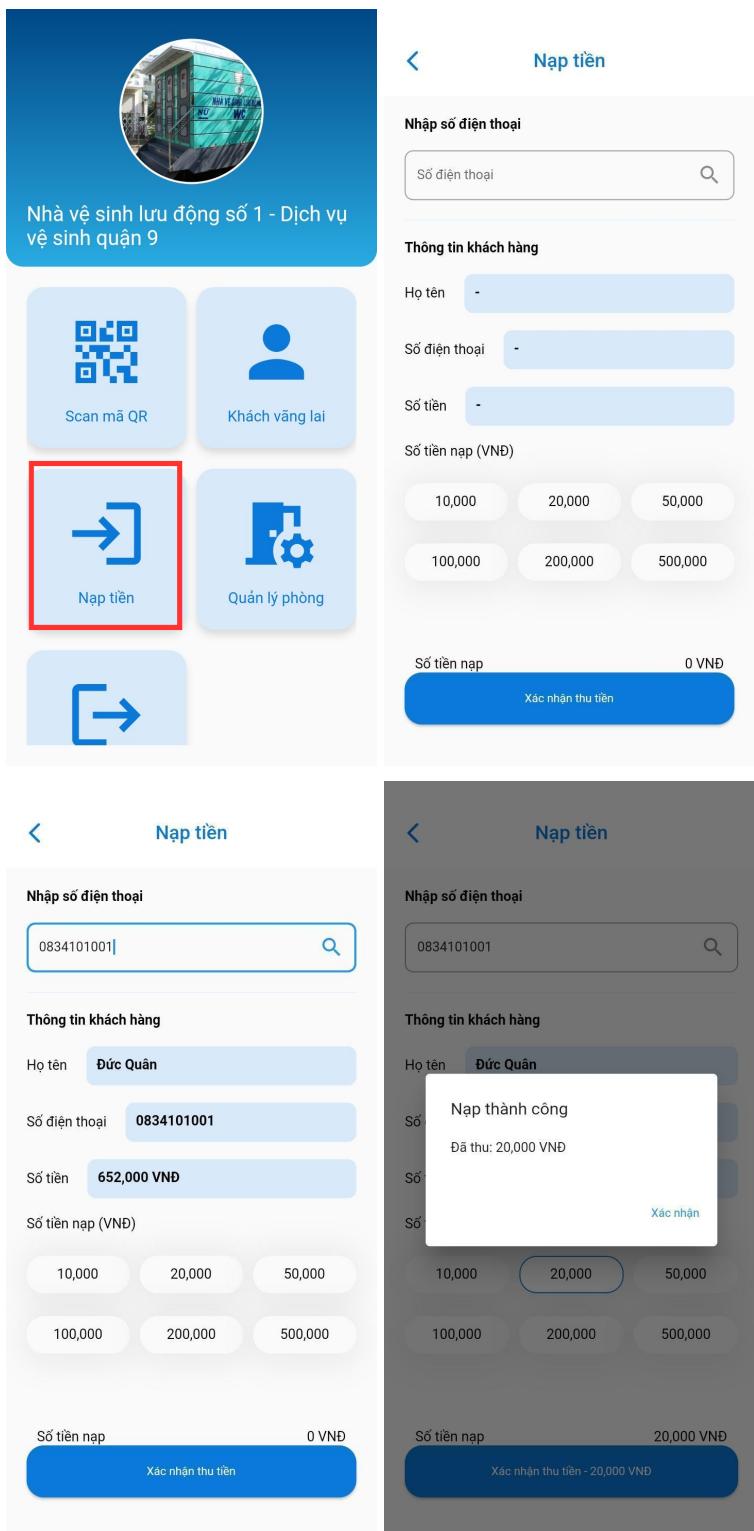
- Function details:

- This function requires the user to log in to the system with the role "Staff".
- Staff can enter the number of guests using cash in the text boxes.
- After that, Staff can click on "Xác nhận thu tiền" button to record the check-ins. A message will show to ensure that staff has received the cash from guests. Staff can click on "Xác nhận" to navigate to the home screen.

3.3.18 <Staff> Top-up money to the account for User

- Function trigger: Click on "Nạp tiền" button on the home screen.
- Function description: Staff can top-up money for users.
- Screen layout:

Capstone Project Document - Social Toilet Map



- Function details:

- This function requires the user to log in to the system with the role “Staff”.
- Staff can enter the user’s phone number and click on the “search” button to search for the user:
 - If the system finds the user account, the user’s information will appear in the fields below.

- If the system doesn't find the user account, the filed "Họ tên" will appear "Không tìm thấy" text.
- After searching successfully, Staff can choose the cash received from the user and click on "Xác nhận thu tiền" to top-up money for the user. A message will show to ensure that staff has received the cash from guests. Staff can click on "Xác nhận" to navigate to the home screen.

3.3.19 <Staff> Manage room in the toilet

- Function trigger: Click on "Quản lý phòng" button on the home screen.
- Function description: Update the number of available rooms.
- Screen layout:

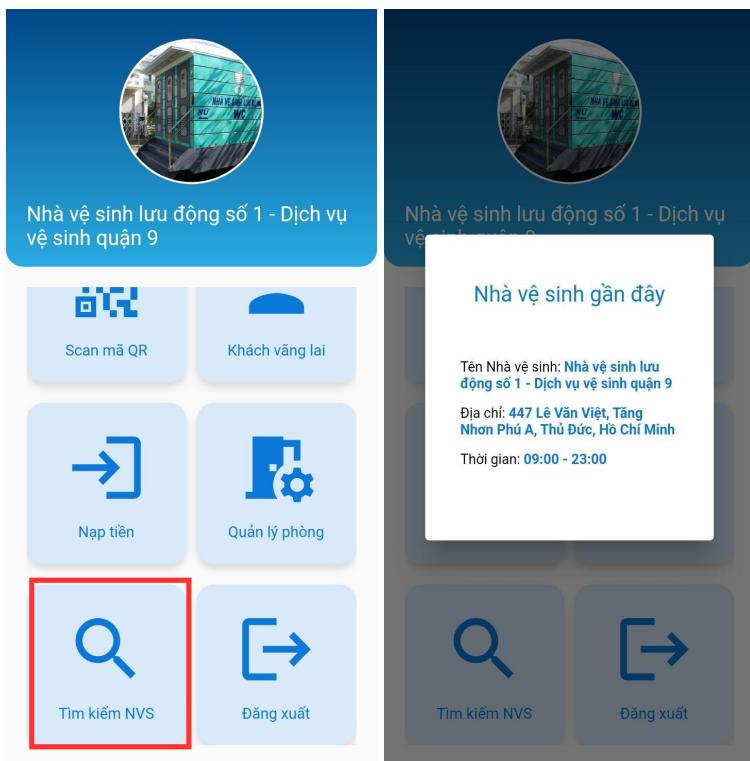
Loại phòng	Số phòng trống	Số phòng hoạt động
Phòng vệ sinh	6	6
Phòng tắm	0	0

Loại phòng	Số phòng hoạt động	Tổng số phòng
Phòng vệ sinh	6	8
Phòng tắm	0	0
Phòng cho người khuyết tật	0	1

- Function details:
 - This function requires the user to log in to the system with the role "Staff".
 - Staff can use this feature to manage room in the toilet. There is 2 tabs:
 - "Cập nhật tình trạng phòng" tab: Use to update the number of available rooms in case the system does not update yet.
 - "Khóa phòng" tab: Use to lock the room in case there is issues in the room.
 - After enter the number, Staff can click on "Xác nhận" button to confirm change.

3.3.20 <Staff>Search for the nearest toilet

- Function trigger: Click on "Tìm kiếm NVS" button on the home screen.
- Function description: Update the number of available rooms.
- Screen layout:

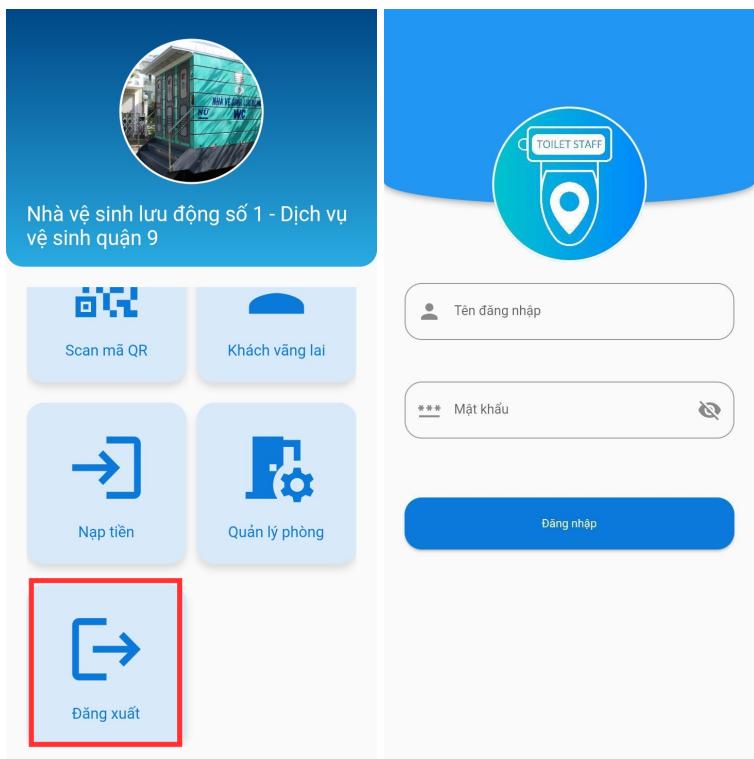


- Function details:

- This function requires the user to log in to the system with the role “Staff”.
- Staff can help User to search for the nearest available toilet in case the toilet is full and User does not have application.

3.3.21 <Staff> Logout

- Function trigger: Click on “Đăng xuất” button on the home screen.
- Function description: Staff can log out of the application.
- Screen layout:



- Function details:
 - This function requires the user to log in to the system with the role “Staff”.
 - After logout successfully, the system will navigate to the login screen.

4. Non-Functional Requirements

4.1 External Interfaces

4.1.1 User Interfaces

- UI-1: The language used in the application is Vietnamese.
- UI-2: UI can be responsive on multiple screens, allowing the main content to display without scrolling horizontal appearance.

4.1.2 Communications Interfaces.

- CI-1: HTTP ver1.1 Protocol is used for communication between mobile devices, web browsers, and servers.

4.2 Quality Attributes

4.2.1 Usability

- The interfaces and features of Admin, Staff only need to train for employees at least 2 hours, then they can use it easily.
- This entire design will comply with the customer and be modified by the customer.

4.2.2 Security

- Password must be encrypted with Bcrypt - a password-hashing algorithm that automatically generates random, non-permanent encrypted strings.
- Authorization by role.

4.2.3 Maintainability

- Divide components based on the frameworks used for easy maintenance, upgrading, and debugging.

5. Requirement Appendix

5.1 Business Rules

ID	Rule Definition
BR-01	The two closest public toilets are may not more than 50 meters apart.
BR-02	There are three types of services in the system: Urination, defecation, bathing.
BR-03	The toilet service companies/units participating in the system must accept the system's prescribed price for each type of service.
BR-04	Companies can choose to create toilets for free or for a fee.
BR-05	The payment entity in the system represents for an event when a User tops up money for an account in the system by cash or VNPay.
BR-06	The order entity in the system represents for an event when a User purchase a combo for an account in the system.
BR-07	Users can update their own profile, including avatar, name, phone number (must confirm by SMS code).
BR-08	Users can only report a toilet's location if they're near the toilet location on the map. (within about 10 meters)
BR-09	The QR code generated from the User application will disappear after 30 seconds and expire after 3 minutes.
BR-10	Users can only rate a toilet after check-in in that toilet, within 1 hour of using the service.
BR-11	There is a device available to perform QR code check-in at the toilet. Staff can support check-in if the user uses cash or the device is overloaded.
BR-12	Staff is an employee of a cleaning company, responsible for checking-in for users, cleaning and managing rooms in the toilet.
BR-13	Staff cannot update the toilet's information, including the username and password of the toilet's account.
BR-14	If in a quarter the actual number of check-ins exceeds 150% of the estimated capacity, that quarter will be recorded as overcrowded.

ID	Rule Definition
BR-15	All toilet companies have been approved. The system only supports to import company into the system.

Table 24 - Business Rules

5.2 Common Requirements

*The Common Requirements below are the original copies copied from the content of the business side.

STT	QUY TRÌNH	MÔ TẢ
1	Quản lý tài khoản người dùng	Người dùng chỉ cần sử dụng số điện thoại để xác thực tài khoản thông qua SMS.
2	Hỗ trợ người dân sử dụng nhà vệ sinh	<ol style="list-style-type: none"> Người dùng sử dụng hệ thống thông qua thiết bị di động để tìm kiếm các nhà vệ sinh. Hỗ trợ người dùng các thông tin liên quan đến địa điểm, các tiện ích, tiện lợi xung quanh. Hỗ trợ việc thanh toán thuận lợi thông qua vé, phiếu, tiền mặt.
3	Thu thập, quản lý việc sử dụng nhà vệ sinh	<ol style="list-style-type: none"> Người dùng sẽ được ghi nhận khi sử dụng dịch vụ (tương lai sẽ tính điểm hoặc tích lũy khi sử dụng). Nhân viên thực hiện ghi nhận việc sử dụng nhà vệ sinh dành cho người dùng sử dụng tiền mặt. *. Các số liệu về ghi nhận sẽ được gửi cho đơn vị quản lý, từ đó đưa ra đề xuất liên quan tới việc nhà vệ sinh được sử dụng vượt ngưỡng hay dưới ngưỡng.
4	Quản lý tài khoản quản lý công ty/đơn vị vệ sinh	<ol style="list-style-type: none"> Admin của hệ thống Nhà vệ sinh Cộng đồng có thể thêm mới các công ty/đơn vị vệ sinh. Tài khoản quản lý công ty/đơn vị vệ sinh có thể xem được thống kê liên quan tới các nhà vệ sinh thuộc công ty, chỉnh sửa, thêm mới các nhà vệ sinh.
5	Quản lý các nhà vệ sinh	<ol style="list-style-type: none"> Mỗi quản lý của một công ty/đơn vị vệ sinh có thể thực hiện thêm mới các nhà vệ sinh, đảm bảo mỗi nhà vệ sinh cần phải có một tài khoản tài cho người nhân viên trực tại nhà vệ sinh đó. Nhân viên là người thực hiện ghi nhận, hỗ trợ người dùng trong việc sử dụng nhà vệ sinh, dọn dẹp vệ sinh đồng thời ghi nhận tình trạng hiện tại của các phòng trong nhà vệ sinh.
6	Hỗ trợ người dùng tốt nhất trong việc sử dụng	** Hệ thống hỗ trợ cung cấp cho người dùng các thông tin cơ bản, cần thiết của nhà vệ sinh, thời gian sử dụng, các cơ chế đồng nhất liên quan tới việc tính toán giá cả khi sử dụng dịch vụ vệ sinh.

Table 25 - Common Requirements

5.3 Application Messages List

#	Message code	Message Type	Context	Content
1	MS-01	Information Message	Do not find available toilet	<i>Không tìm thấy Nhà vệ sinh</i>
2	MS-02	Information Message	Do not enter enough mandatory fields	<i>Vui lòng nhập đủ thông tin!</i>
3	MS-03	Information Message	The system is loading	<i>Đang xử lý</i>
5	MS-04	Information Message	Record user using cash successfully	<i>Khách vãng lai - Đã thu</i>
7	MS-06	Information Message	Update information successfully	<i>Thay đổi thông tin thành công!</i>
8	MS-07	Information Message	Update information failed	<i>Thay đổi thông tin thất bại!</i>
9	MS-08	Information Message	Scan QR code check-in for user successfully	<i>Thông tin khách hàng: Số điện thoại - số dư - số lượt</i>
10	MS-09	Information Message	Scan the wrong QR code	<i>Mã QR không đúng!</i>
12	MS-11	Information Message	Top-up money for user successfully	<i>Nạp thành công</i>
13	MS-12	Information Message	Generate QR code failed cause user is not have enough money	<i>Tài khoản của quý khách đã hết tiền! Vui lòng nạp thêm hoặc thay đổi phương thức thanh toán</i>
13	MS-13	Information Message	User top-up money successfully	<i>Tài khoản của bạn đã được nạp thành công</i>
13	MS-15	Information Message	Confirm SMS code to login failed	<i>Mã xác nhận không khớp</i>
13	MS-16	Information Message	User enter the invalid phone number	<i>Số điện thoại không hợp lệ!</i>
13	MS-17	Information Message	Complete direction to a toilet	<i>Hoàn tất chỉ đường</i>

Table 26 - Application Messages List

IV. Software Design Document

1. System Design

1.1 System Architecture

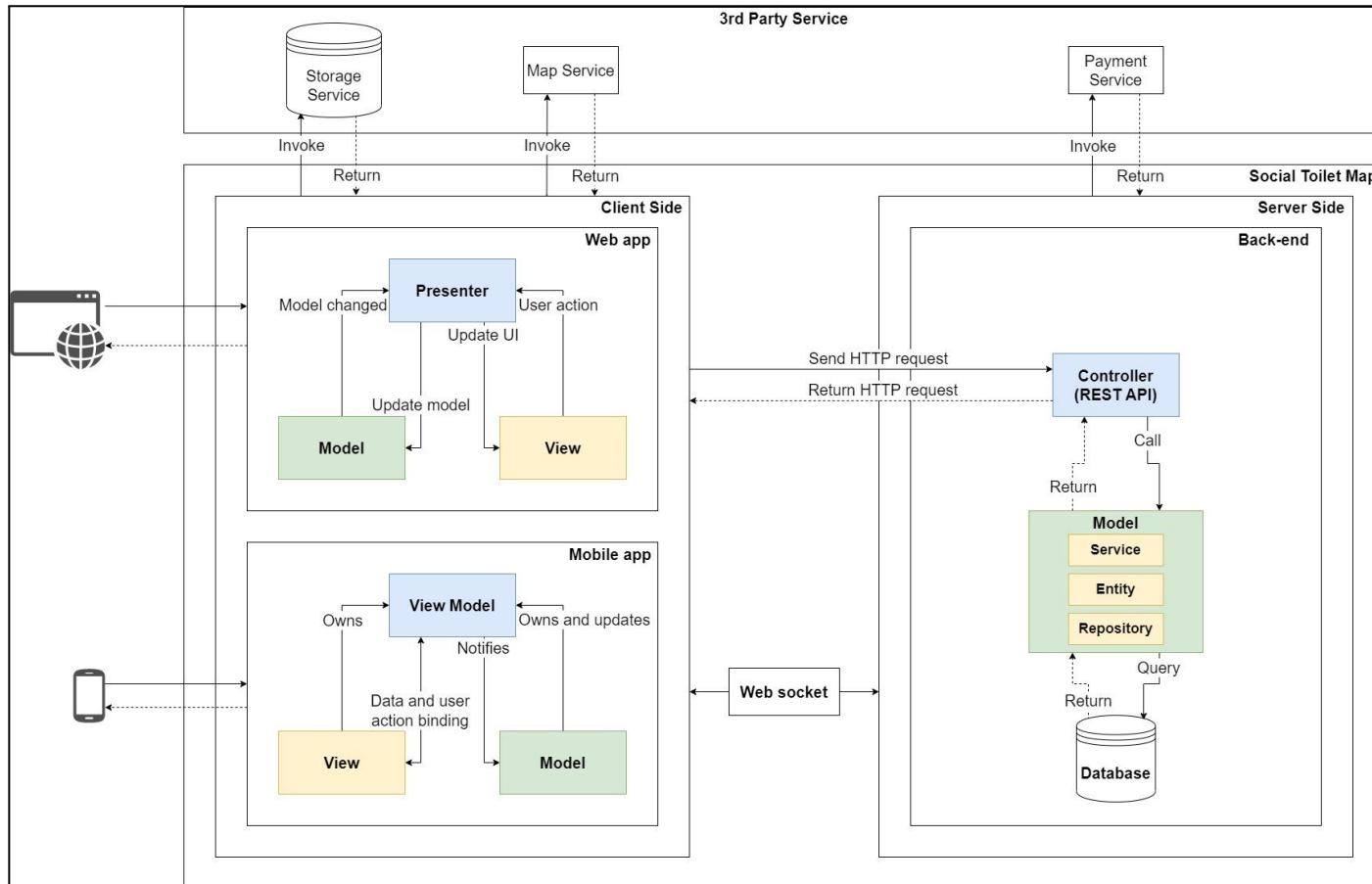


Figure 23 - System Architecture

1.2 Component Diagram

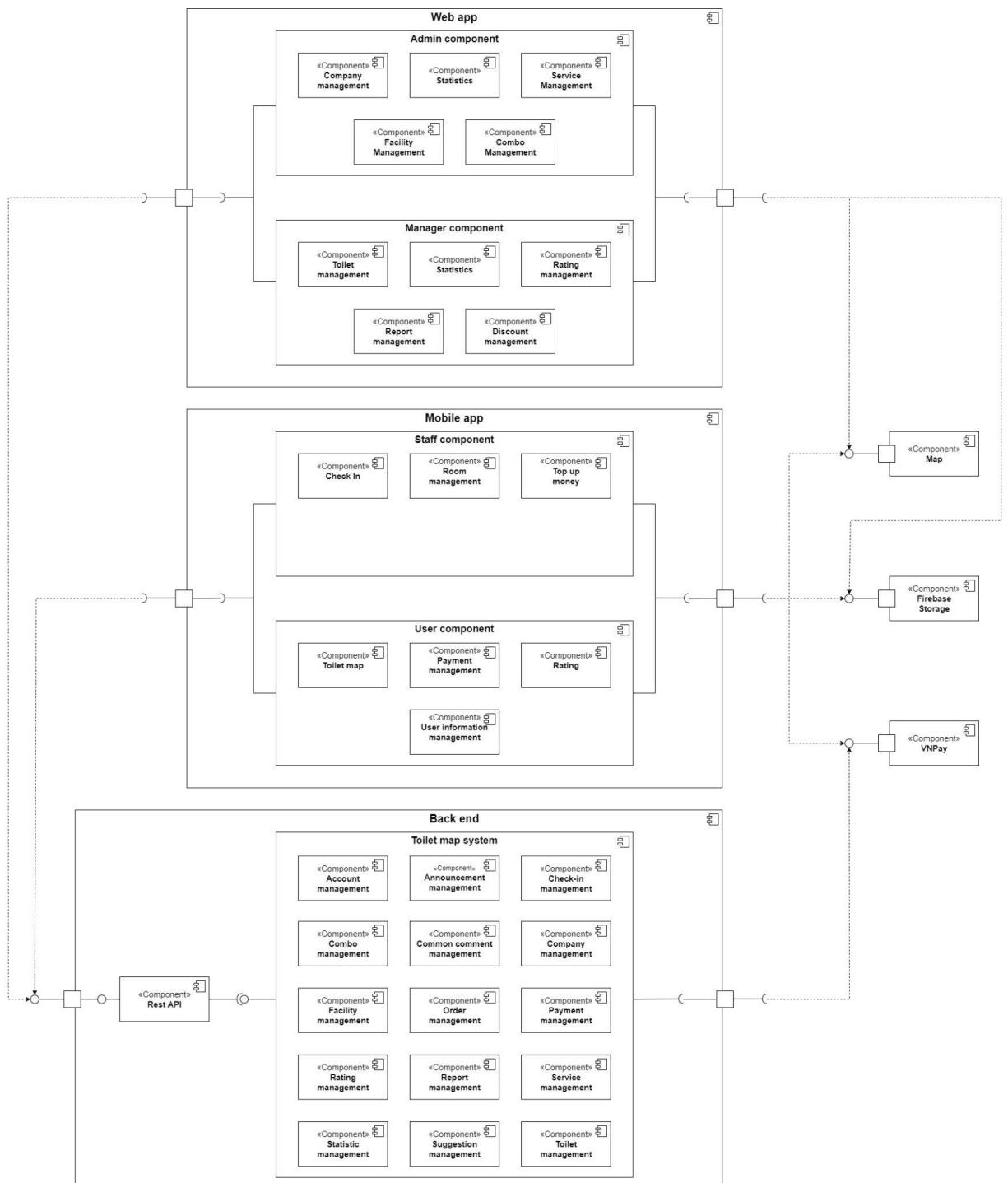


Figure 24 - Component Diagram

1.3 Package Diagram

1.3.1 Back-end

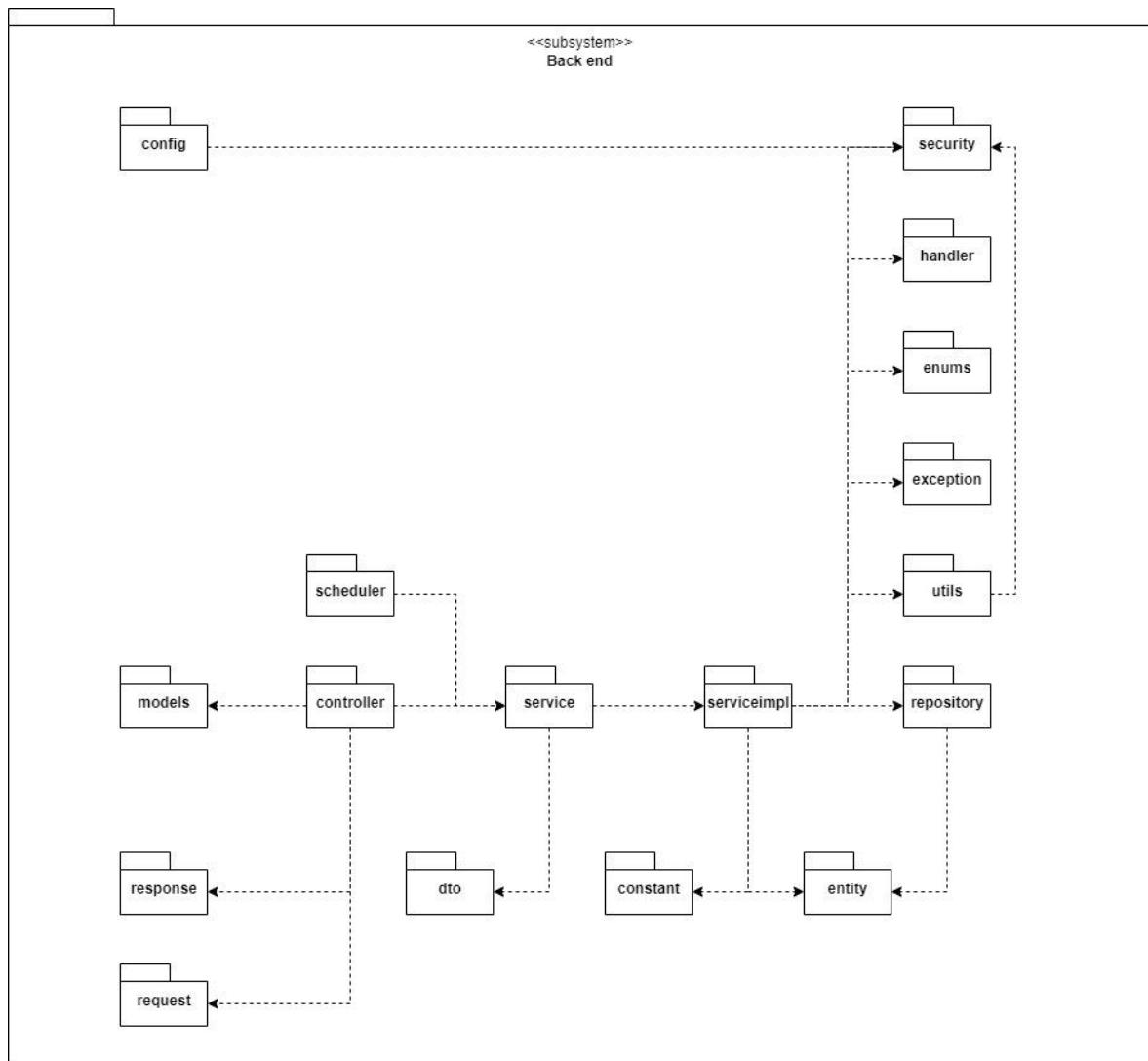


Figure 25 - Package Diagram - Back-end

No	Package	Description
1	models	The package contains base models used in the application.
2	config	Package contains configuration classes responsible for managing and connecting with the 3rd party and system setting.
3	constant	This package contains classes for common constants.
4	controller	Package contains all controller classes responsible for handling HTTP requests and returning responses with values.
5	dto	Package contains all dtos classes responsible for data binding, mapping response, user interacting with the Database, and using as the response from API.

No	Package	Description
6	entity	This package contains classes for common constants.
7	enums	This package contains classes for enum data.
8	exception	This package contains classes responsible for defined common exceptions.
9	handler	Package contains all classes responsible for handling common errors.
10	repository	Package contains all repository classes for handling the data access logic.
11	request	This package contains classes for defined requests of API.
12	response	This package contains classes for data binding, mapping response.
13	scheduler	Package contains all schedulers to do cyclical work.
14	security	Package contains all classes responsible for authentication and jwt.
15	service	Package contains all interfaces of service used in controllers and other services.
16	serviceimpl	Package contains all services classes responsible for handling business logic, and communicating with repositories.
17	utils	Package contains utilization classes, for enhancing code efficiency.

Table 27 - Package Diagram Descriptions - Back-end

1.3.2 Mobile

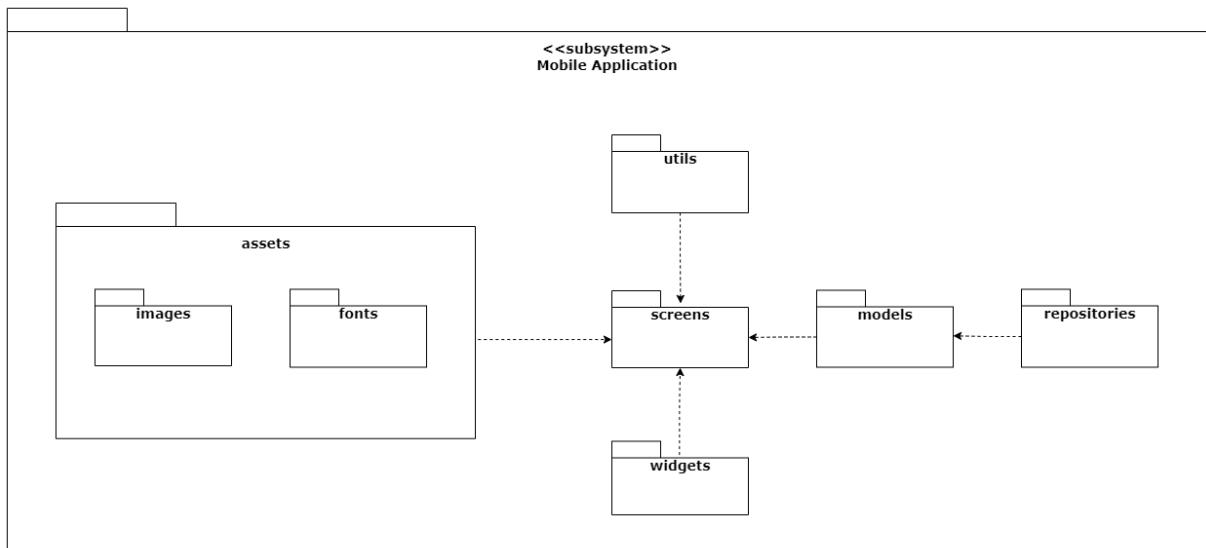


Figure 26 - Package Diagram - Mobile

No	Package	Description
1	images	The package contains images used in the application.
2	fonts	The package contains images used in the application.
3	utils	The package contains classes responsible for the structure of mobile application routing, the frequently used constants inside the application.
4	screens	The package contains classes responsible for combines widgets into a complete interface.
5	widgets	The package contains components that used to form the complete interface.
6	models	The package contains models that call API services to get data.
7	repositories	The package provides classes that are in charge of sending HTTP requests and receiving server responses.

Table 28 - Package Diagram Descriptions - Mobile

1.3.3 Front-end

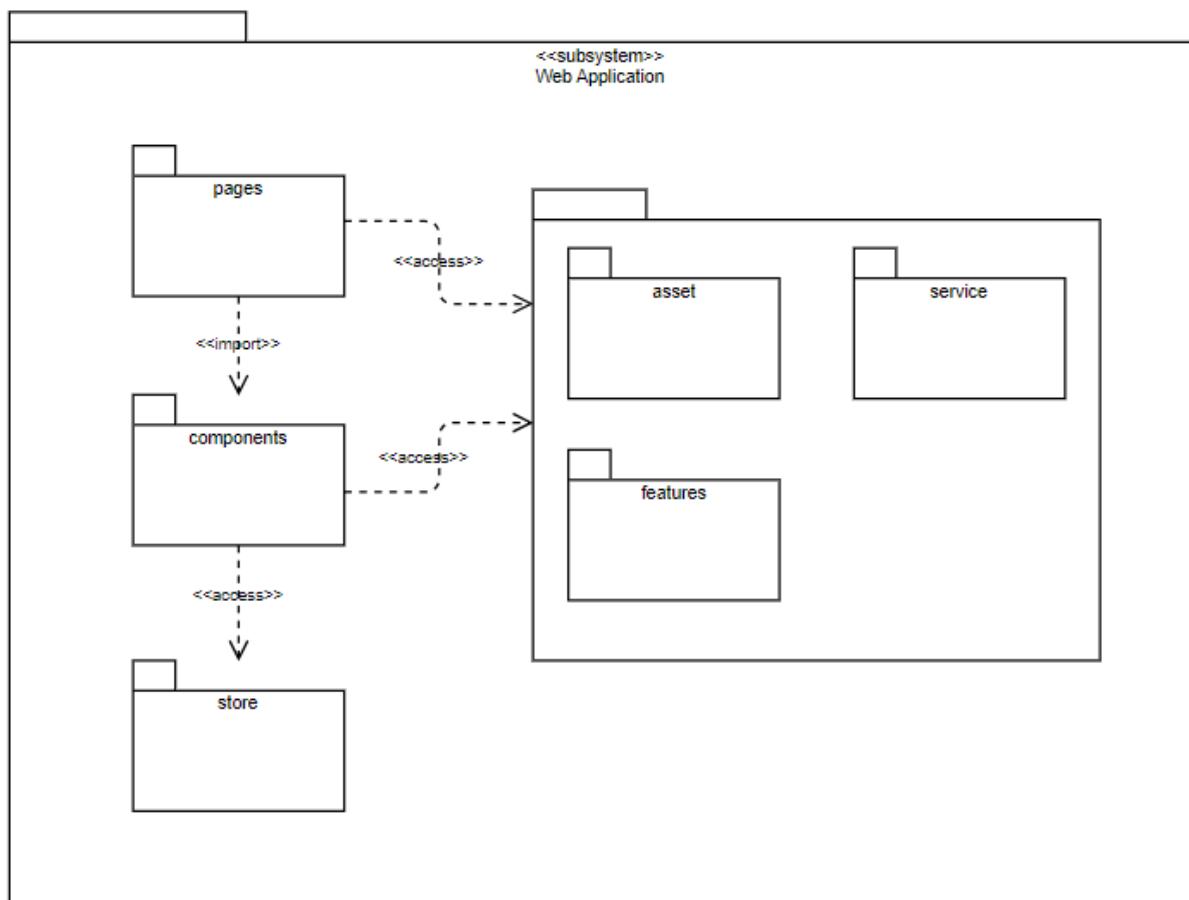


Figure 27 - Package Diagram - Front-end

No	Package	Description
1	pages	The package contains classes responsible for the structure of web application routing and combines components into a complete interface.
2	component	The package contains classes that are in charge of common interface components.
3	store	The package contains classes responsible for sharing states used in the application.
4	features	The package contains classes for common methods connected with the state of the component.
5	services	The package provides classes that are in charge of sending HTTP requests and receiving server responses.
6	asset	The package contains pictures, icons, fonts and other media files.

Table 29 - Package Diagram Descriptions - Front-end

2. Database Design

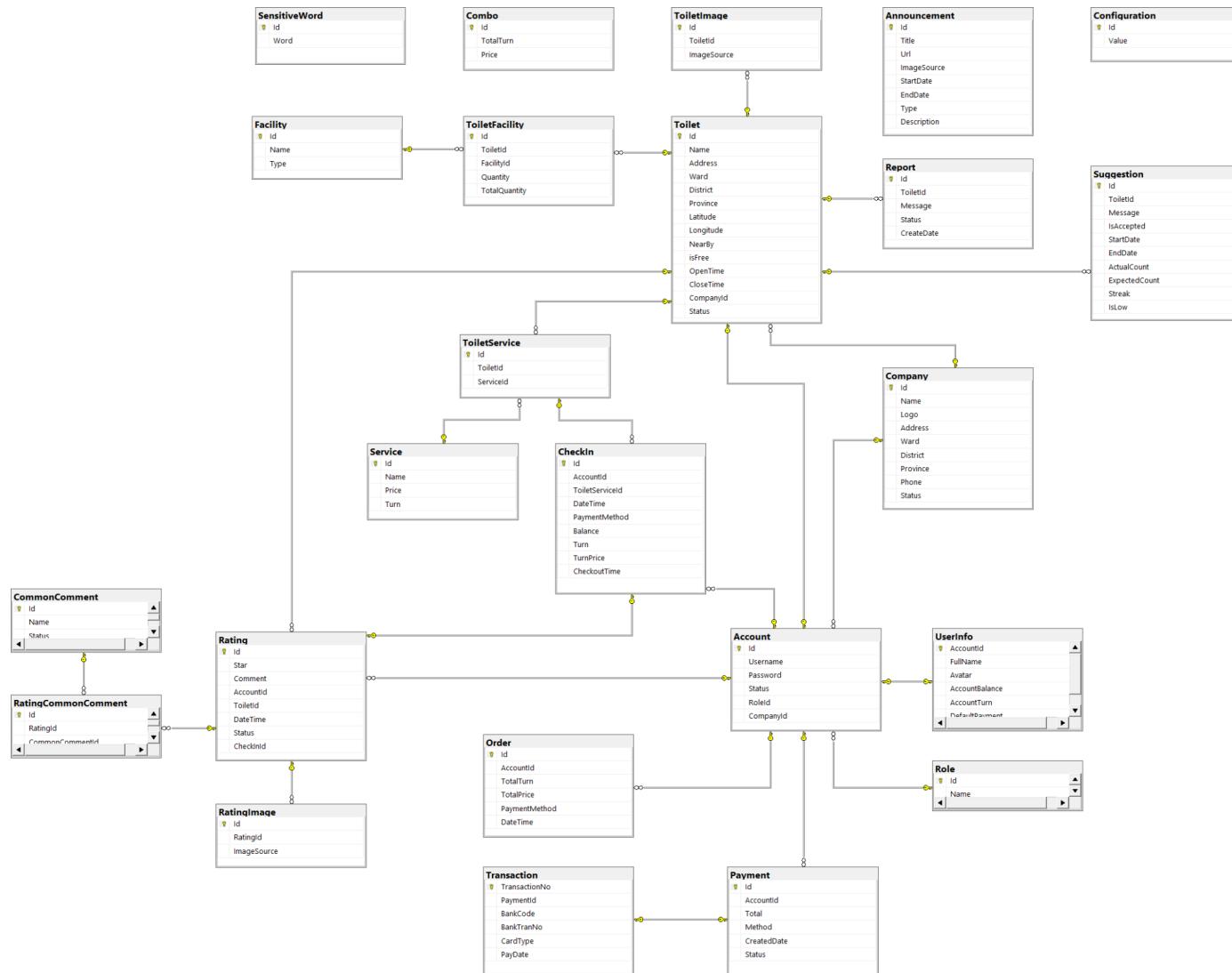


Figure 28 - Database Design

2.1 Data Dictionary

2.1.1 Account

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
Username	varchar(20)	X		X
Password	char(60)			
Status	nvarchar(20)	X		
RoleId	int	X	FK	
CompanyId	int		FK	

Table 30 - Database Design - Data Dictionary - Account Table

2.1.2 Announcement

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
Title	nvarchar(255)			
Url	text			
ImageSource	text			
StartDate	date			
EndDate	date			
Type	nvarchar(20)			
Description	ntext			

Table 31 - Database Design - Data Dictionary - Announcement Table

2.1.3 CheckIn

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
AccountId	int	X	FK	
ToiletServiceId	int	X	FK	
DateTime	datetime	X		
PaymentMethod	nvarchar(20)	X		
Balance	int			

Field name	Type	Not null	PK/FK	Unique
Turn	int			
TurnPrice	int			
CheckoutTime	datetime			

Table 32 - Database Design - Data Dictionary - CheckIn Table

2.1.4 Combo

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
TotalTurn	int	X		X
Price	int	X		

Table 33 - Database Design - Data Dictionary - Combo Table

2.1.5 CommonComment

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
Name	nvarchar(100)	X		
Status	nvarchar(20)	X		

Table 34 - Database Design - Data Dictionary - CommonComment Table

2.1.6 Company

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
Name	nvarchar(50)	X		
Logo	text			
Address	nvarchar(100)	X		
Ward	nvarchar(50)	X		
District	nvarchar(50)	X		
Province	nvarchar(50)	X		
Phone	varchar(20)			
Status	nvarchar(20)			

Table 35 - Database Design - Data Dictionary - Company Table

2.1.7 Configuration

Field name	Type	Not null	PK/FK	Unique
Id	varchar(50)	X	PK	X
Value	int	X		

Table 36 - Database Design - Data Dictionary - Configuration Table

2.1.8 Facility

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
Name	nvarchar(200)	X		
Type	nvarchar(20)	X		

Table 37 - Database Design - Data Dictionary - Facility Table

2.1.9 Order

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
AccountId	int	X	FK	
TotalTurn	int	X		
TotalPrice	int	X		
PaymentMethod	nvarchar(20)	X		
DateTime	datetime	X		

Table 38 - Database Design - Data Dictionary - Order Table

2.1.10 Payment

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
AccountId	int	X	FK	
Total	int	X		
Method	nvarchar(100)	X		
CreatedDate	datetime	X		
Status	nvarchar(20)			

Table 39 - Database Design - Data Dictionary - Payment Table

2.1.11 Rating

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
Star	int	X		
Comment	ntext	X		
AccountId	int	X	FK	
ToiletId	int	X	FK	
DateTime	datetime	X		
Status	nvarchar(20)			
CheckInId	int		FK	

Table 40 - Database Design - Data Dictionary - Rating Table

2.1.12 RatingCommonComment

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
RatingId	int	X	FK	
CommonCommentId	int	X	FK	

Table 41 - Database Design - Data Dictionary - RatingCommonComment Table

2.1.13 RatingImage

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
RatingId	int	X	FK	
ImageSource	text	X		

Table 42 - Database Design - Data Dictionary - RatingImage Table

2.1.14 Report

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
ToiletId	int	X	FK	
Message	nvarchar(100)	X		
Status	nvarchar(20)			

Field name	Type	Not null	PK/FK	Unique
CreateDate	datetime			

Table 43 - Database Design - Data Dictionary - Report Table

2.1.15 Role

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
Name	varchar(10)	X		

Table 44 - Database Design - Data Dictionary - Role Table

2.1.16 SensitiveWord

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
Word	nvarchar(50)	X		

Table 45 - Database Design - Data Dictionary - SensitiveWord Table

2.1.17 Service

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
Name	nvarchar(50)	X		
Price	int	X		
Turn	int	X		

Table 46 - Database Design - Data Dictionary - Service Table

2.1.18 Suggestion

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
ToiletId	int		FK	
Message	ntext			
IsAccepted	bit			
StartDate	date			
EndDate	date			
ActualCount	int			
ExpectedCount	float			

Field name	Type	Not null	PK/FK	Unique
Streak	int			
IsLow	bit			

Table 47 - Database Design - Data Dictionary - Suggestion Table

2.1.19 Toilet

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
Name	nvarchar(50)	X		
Address	nvarchar(100)	X		
Ward	nvarchar(50)	X		
District	nvarchar(50)	X		
Province	nvarchar(50)	X		
Latitude	float	X		
Longitude	float	X		
NearBy	nvarchar(200)			
isFree	bit	X		
OpenTime	time	X		
CloseTime	time	X		
Status	nvarchar(20)	X		
CompanyId	int	X	FK	

Table 48 - Database Design - Data Dictionary - Toilet Table

2.1.20 ToiletFacility

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
ToiletId	int	X	FK	
FacilityId	int	X	FK	
Quantity	int	X		
TotalQuantity	int			

Table 49 - Database Design - Data Dictionary - ToiletFacility Table

2.1.21 ToiletImage

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
ToiletId	int	X	FK	
ImageSource	text	X		

Table 50 - Database Design - Data Dictionary - ToiletImage Table

2.1.22 ToiletService

Field name	Type	Not null	PK/FK	Unique
Id	int	X	PK	X
ToiletId	int	X	FK	
Serviceld	int	X	FK	

Table 51 - Database Design - Data Dictionary - ToiletService Table

2.1.23 Transaction

Field name	Type	Not null	PK/FK	Unique
TransactionNo	int	X	PK	X
PaymentId	int	X	FK	X
BankCode	varchar(20)	X		
BankTranNo	varchar(20)	X		
CardType	varchar(20)			
PayDate	datetime	X		

Table 52 - Database Design - Data Dictionary - Transaction Table

2.1.24 UserInfo

Field name	Type	Not null	PK/FK	Unique
AccountId	int	X	PK	X
FullName	nvarchar(100)	X		
Avatar	varchar(max)			
AccountBalance	int	X		
AccountTurn	int	X		
DefaultPayment	nvarchar(20)	X		

Table 53 - Database Design - Data Dictionary - UserInfo Table

3. Detailed Design

3.1 Check-in Feature

3.1.1 Class Diagram

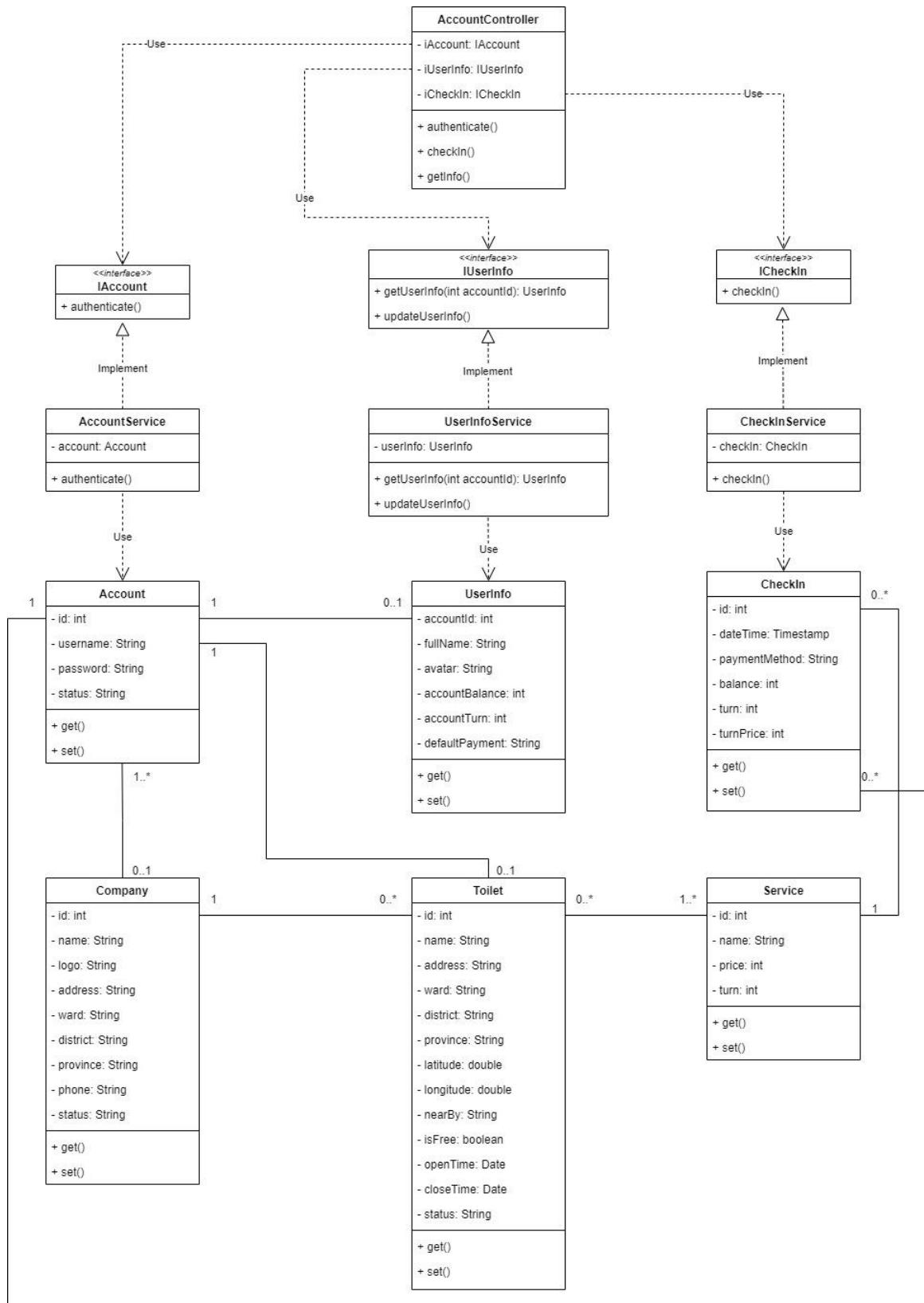


Figure 29 - Check-in Feature - Class Diagram

3.1.2 Sequence Diagram

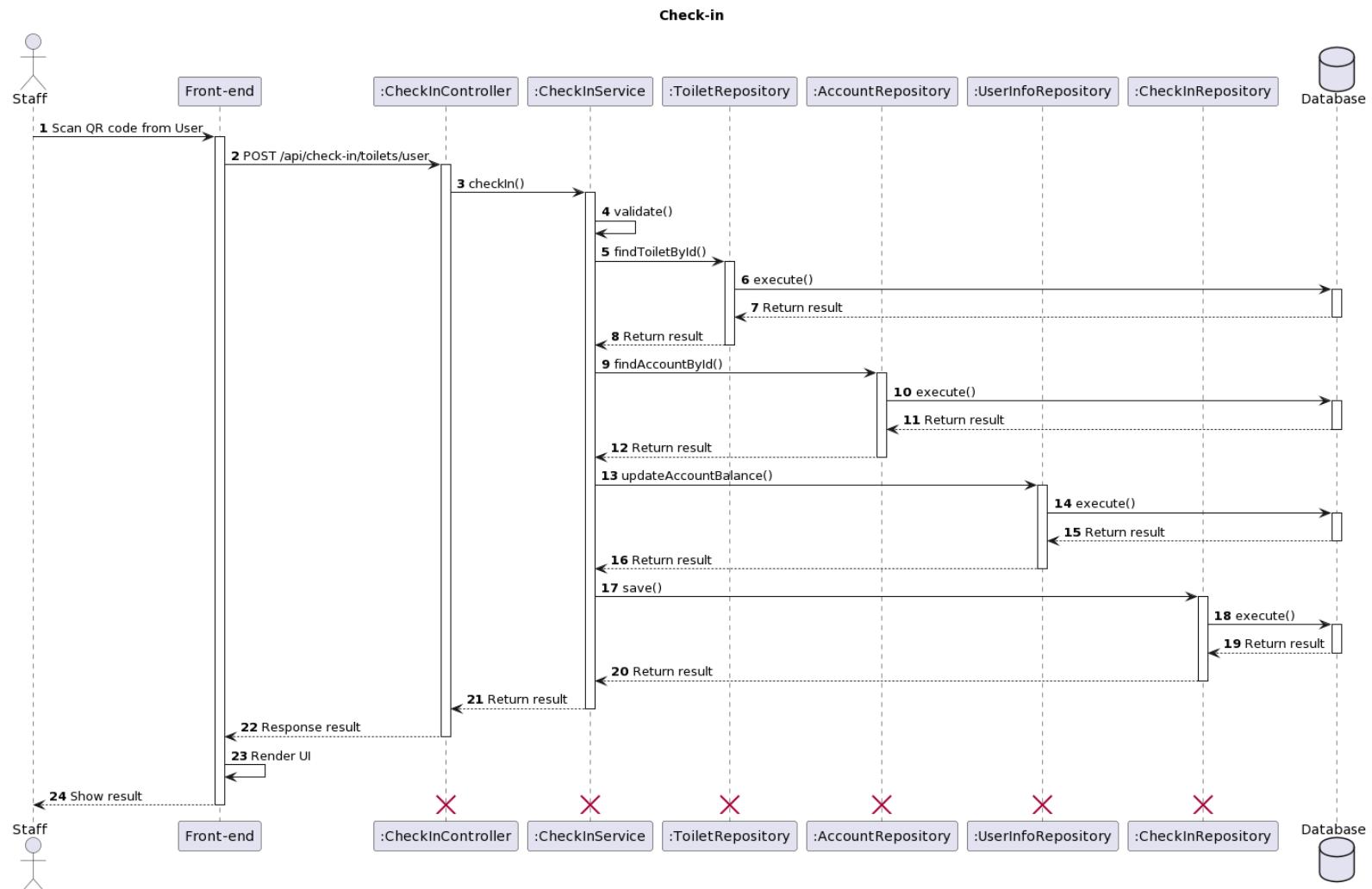


Figure 30 - Check-in Feature - Sequence Diagram

3.2 Search nearest & available toilet Feature

3.2.1 Class Diagram

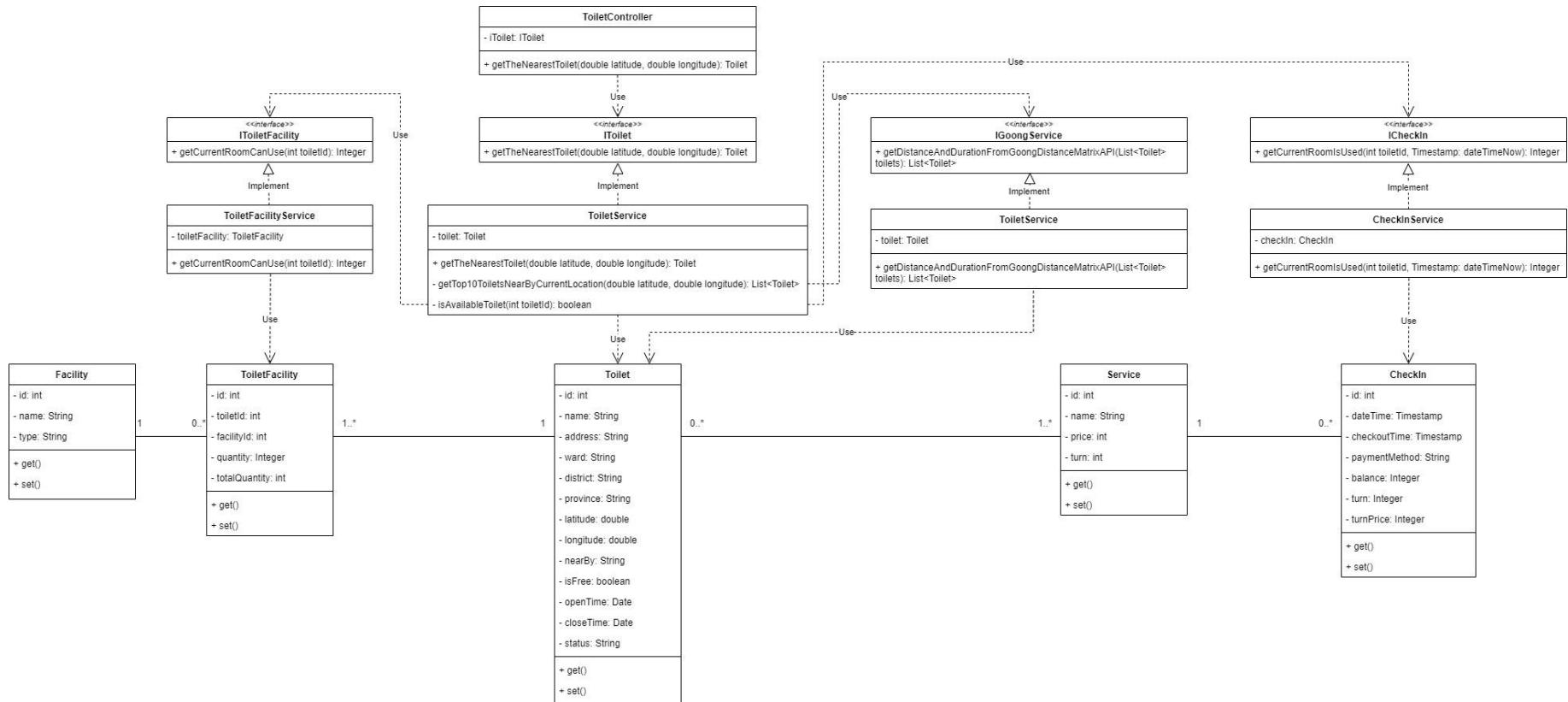


Figure 31 - Search nearest & available toilet Feature - Class Diagram

3.2.2 Sequence Diagram

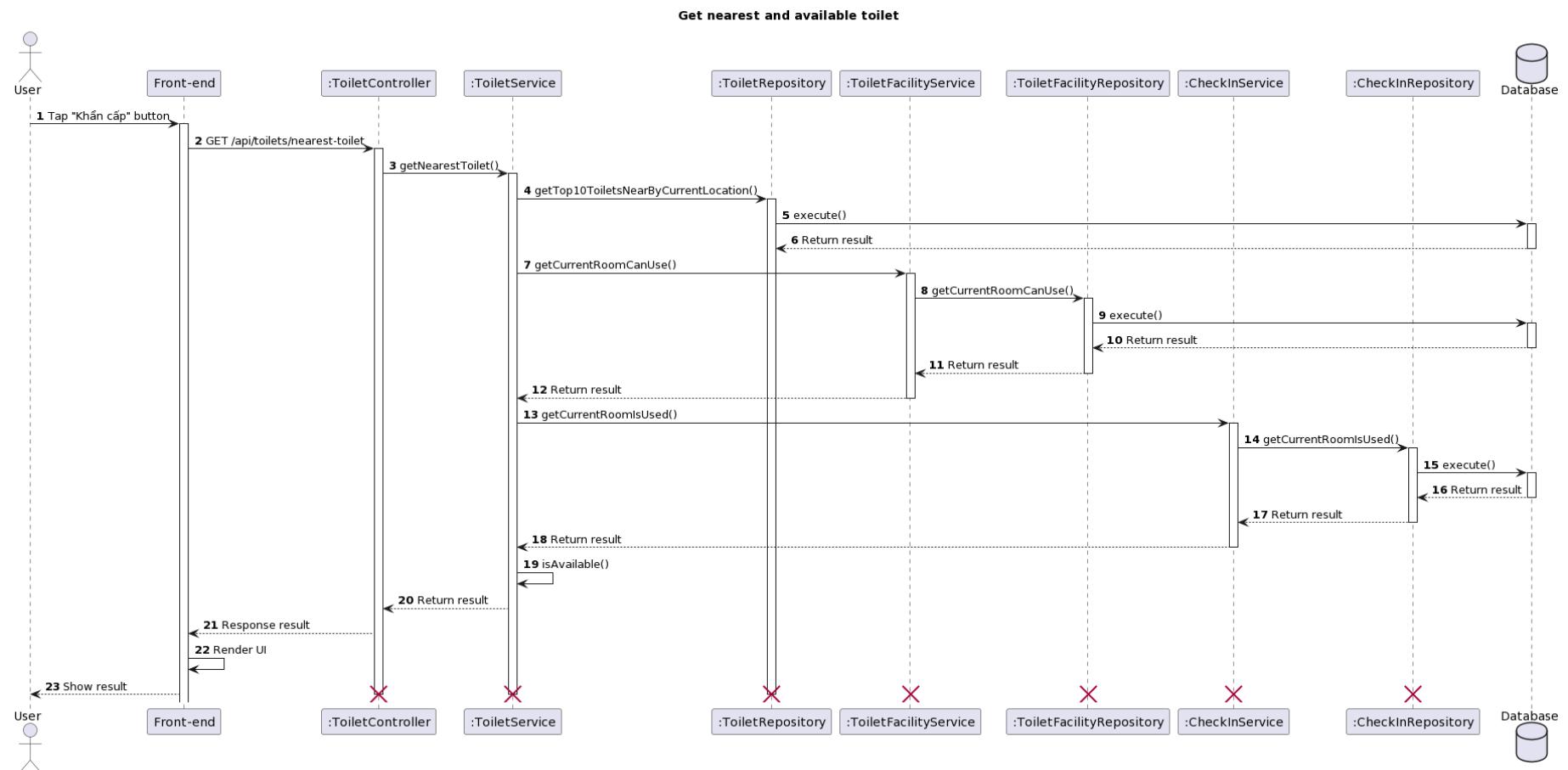


Figure 32 - Search nearest & available toilet Feature - Sequence Diagram

3.3 Create toilet Feature

3.3.1 Class Diagram

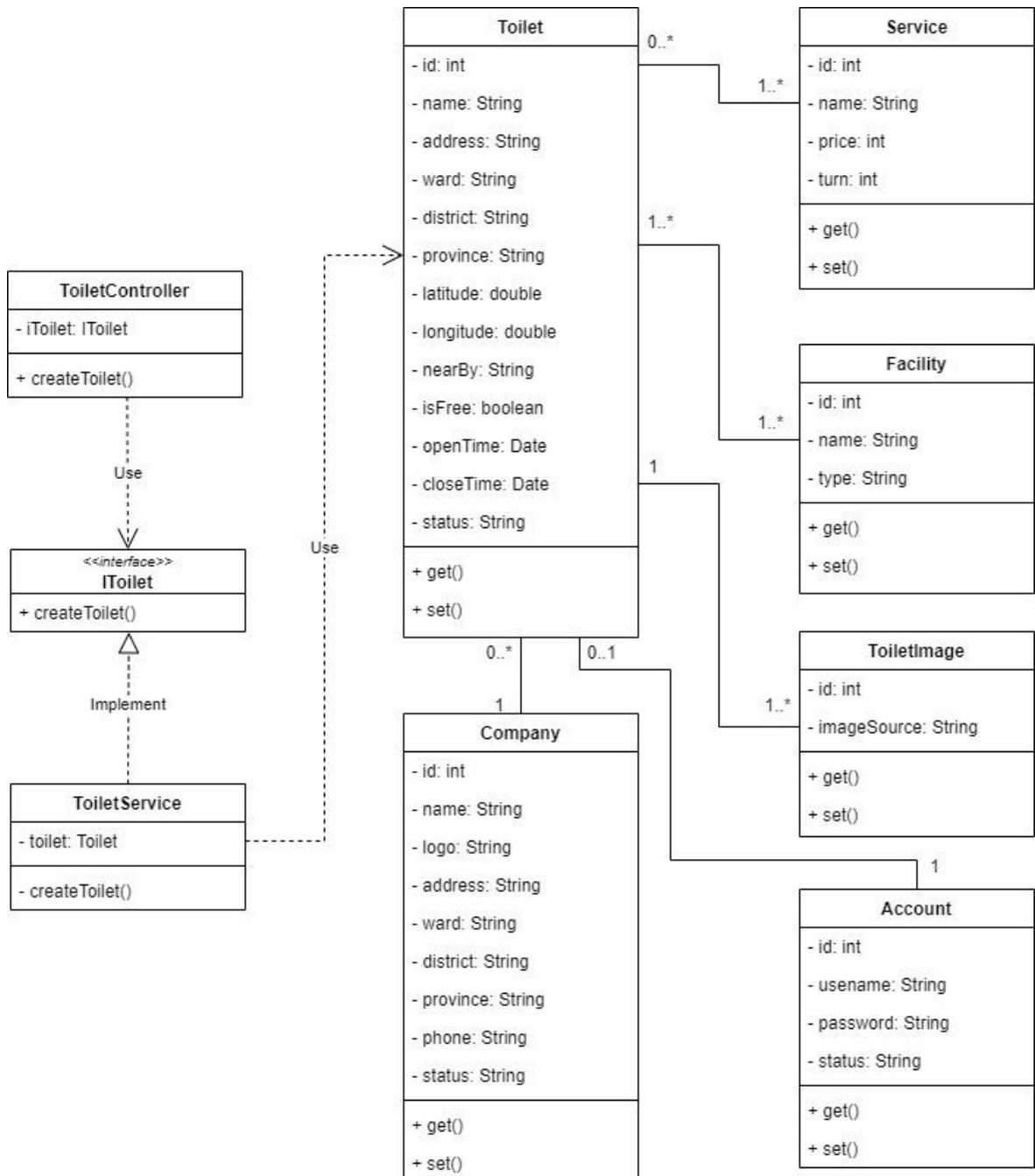


Figure 33 - Create toilet Feature - Class Diagram

3.3.2 Sequence Diagram

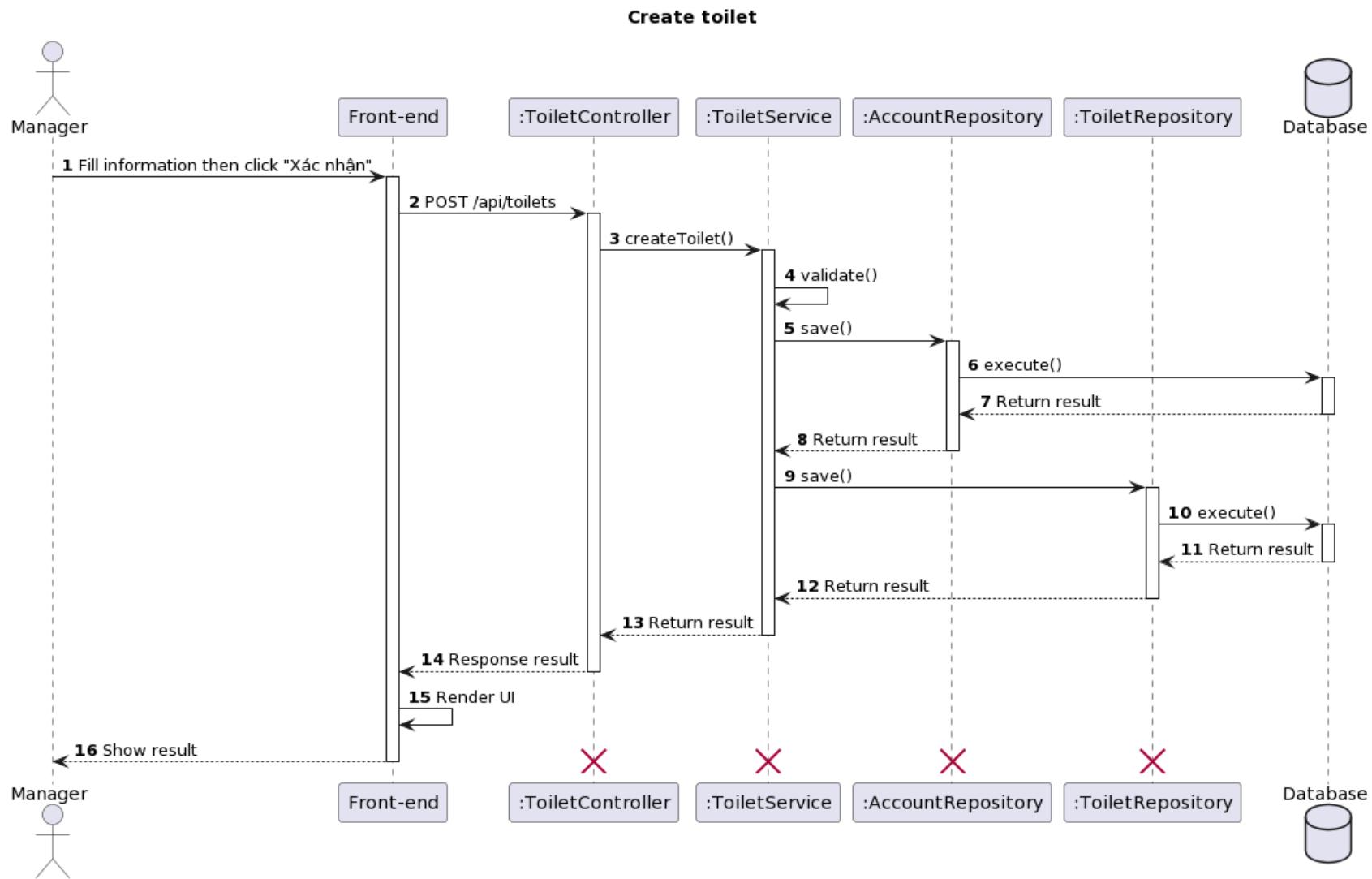


Figure 34 - Create toilet Feature - Sequence Diagram

3.4 Generate suggestion Feature

3.4.1 Class Diagram



Figure 35 - Generate suggestion Feature - Class Diagram

3.4.2 Sequence Diagram

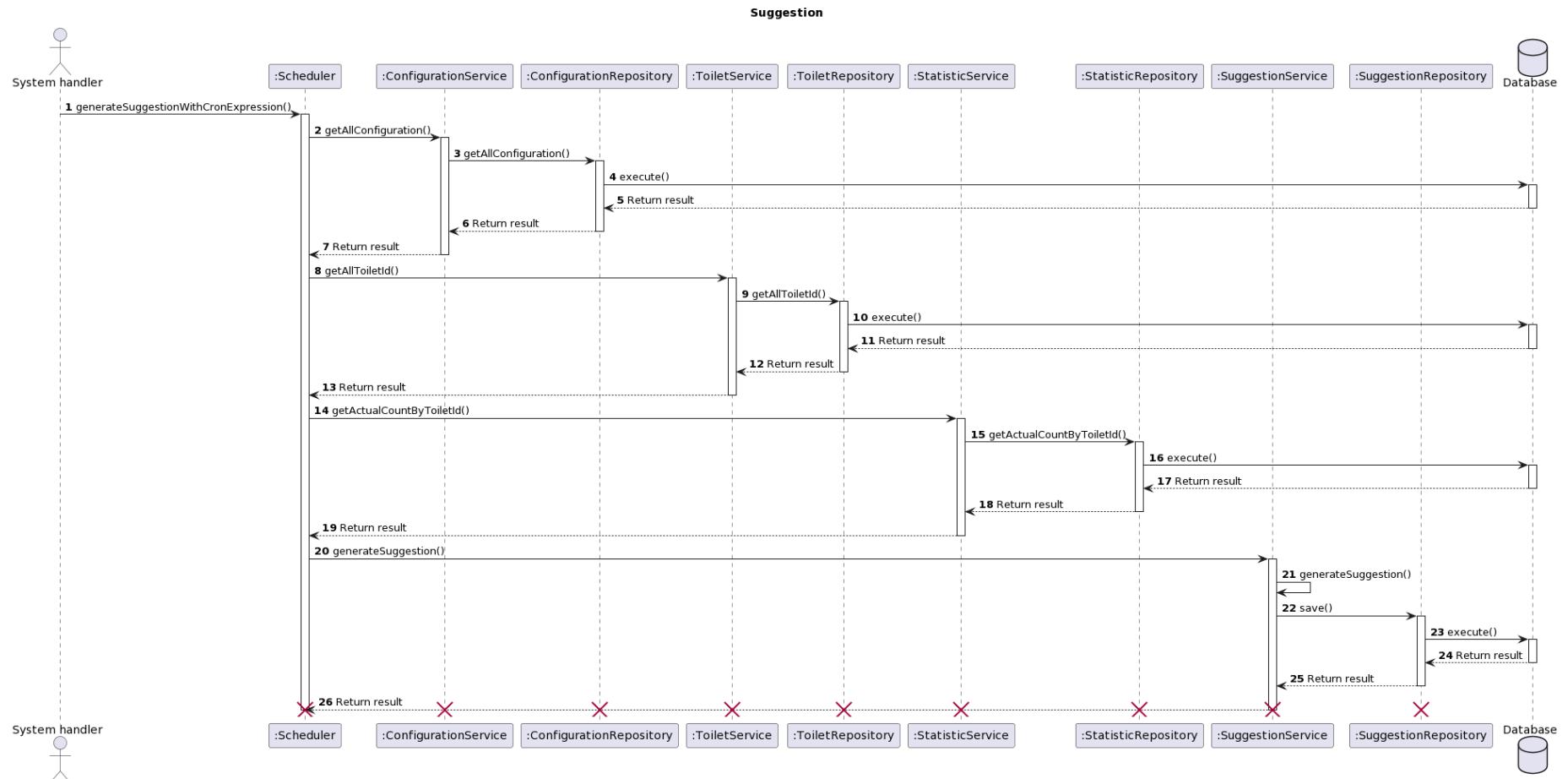


Figure 36 - Generate suggestion Feature - Sequence Diagram

3.5 Payment Feature

3.5.1 Class Diagram

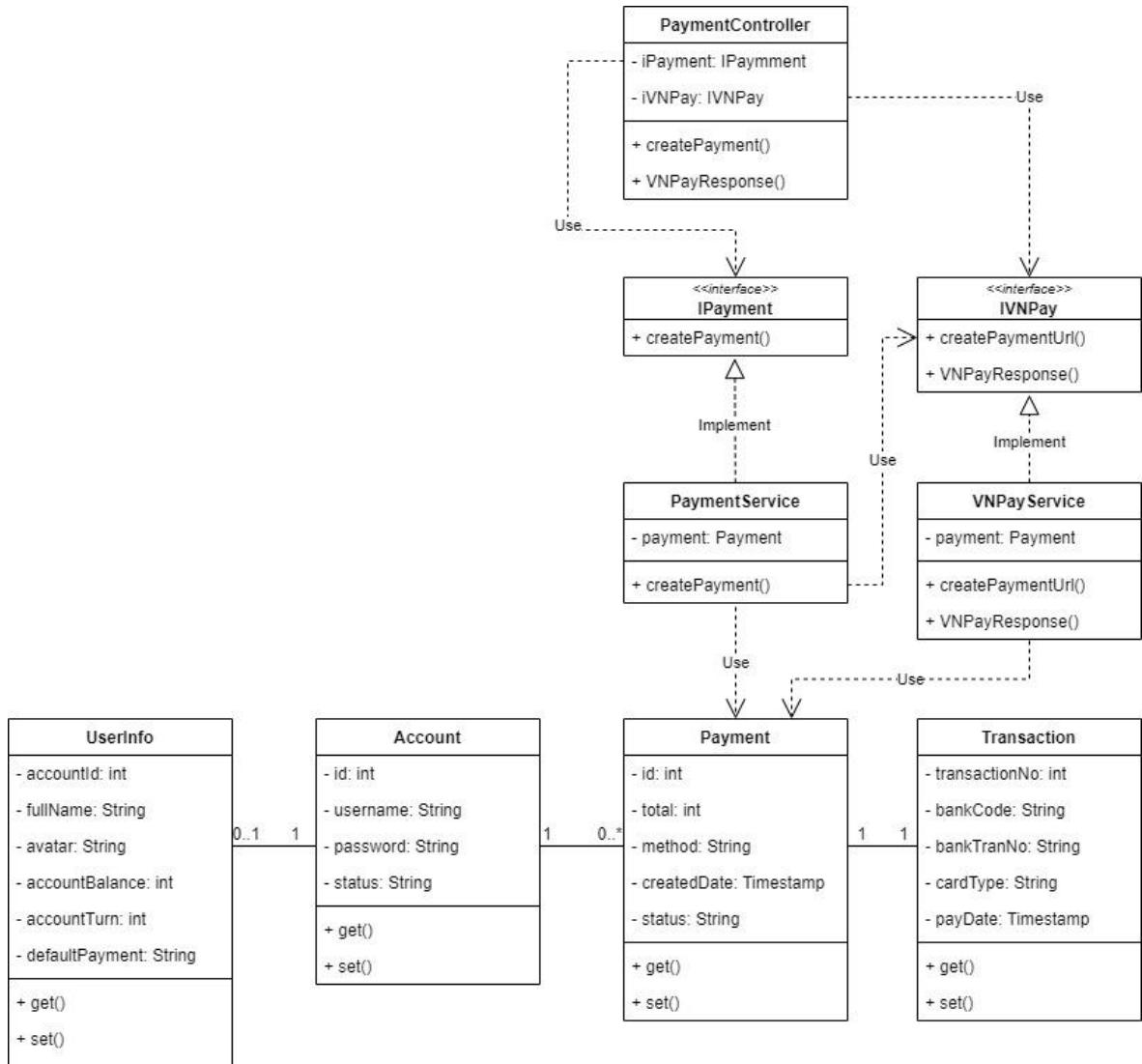


Figure 37 - Payment Feature - Class Diagram

3.5.2 Sequence Diagram

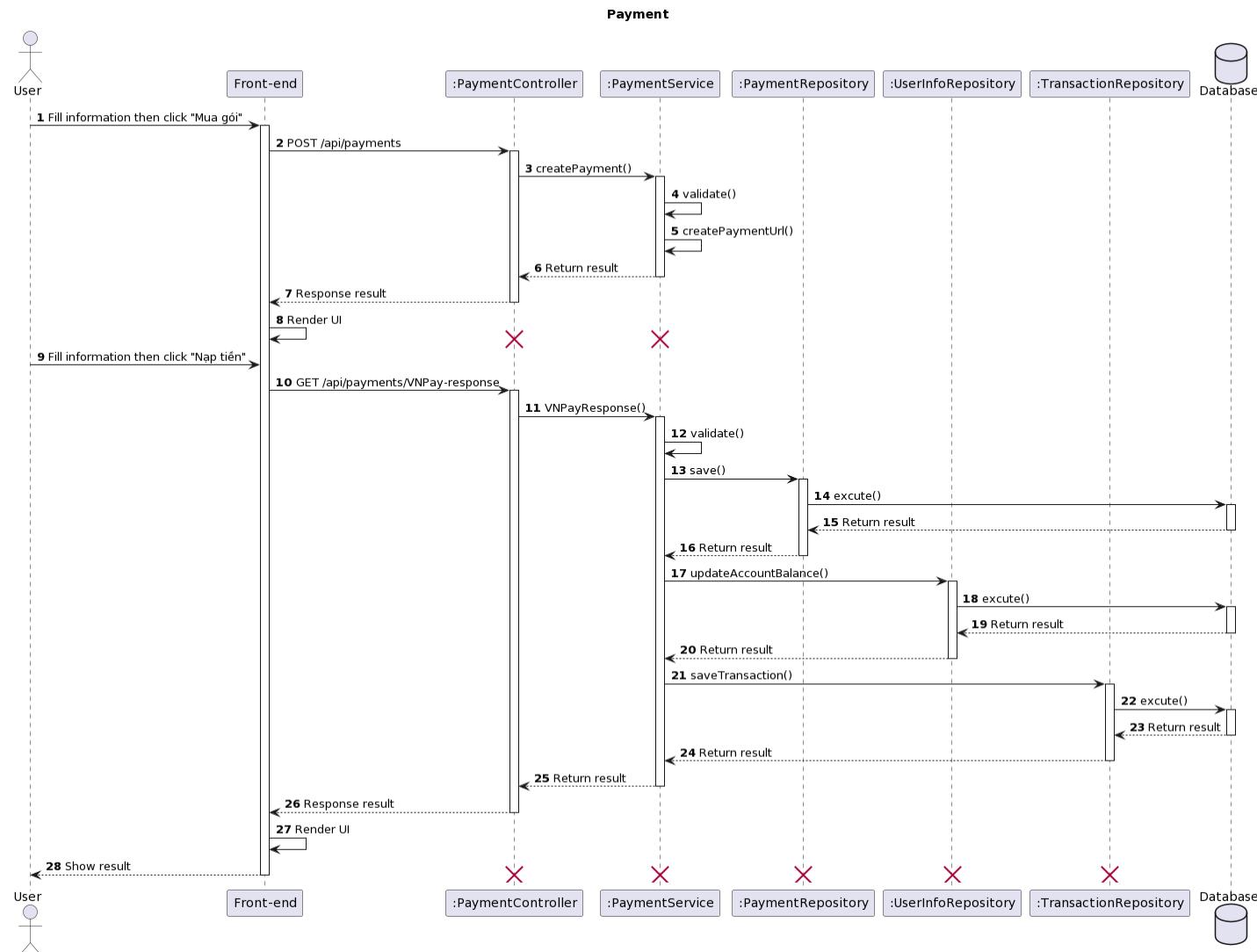


Figure 38 - Payment Feature - Sequence Diagram

V. Testing Documentation

1. Scope of Testing

1.1 In scope

- Below are the functional and non-functional requirements described in the Software Requirement Specifications that will be tested:

Module name	Applicable Role	Description
Sign Up For Users	Unauthorised user	Unauthorized user: when an unauthorized user that does not have an account and wants to join in the system with the default role "User".
Login Web app for Admin, Manager, Staff	Unauthorised user	Unauthorized user: when an unauthorized user that has an account in the system and wants to join in with the given role.
Login Mobile app for User, Staff	Unauthorised user	Unauthorized user: when an unauthorized user that has an account in the system and wants to join in with the given role.
Update user's information	User	User: A user can update his/her information like avatar, phone number, name
Update company information	Admin	Admin: Just only Admin can update company information.
Create a toilet	Manager	Manager: Manager can create toilet with information, config, account.
View the list of toilets	Admin, Manager	Manager: Manager see the list of toilets in main page. Admin: Admin can see the list of toilets by clicking in each company.
View toilet detail	Manager, User	Manager: Manager can view all toilet details in web page. User: User can view all toilet details in mobile screen.
Update toilet	Manager	Manager: Just only Manager can update toilet with information, config, account.

Module name	Applicable Role	Description
View toilets nearby user	User	User: User can view top 10 toilet nearest.
View ratings of toilet	Manager, User	Manager: Manager can view ratings of toilet in web page. User: User can view ratings of toilet in mobile screen.
Rating for 1 toilet after using service	User	User: User can rate for 1 toilet after using or in 1 hours.
Manage Room	Staff	Staff: Staff can block or make available for rooms in toilet.
View statistic for all companies	Admin	Admin: Admin can view statistic of all companies.
View statistic for each company	Manager	Manager: Manager can view statistic for each company.
View statistic for toilet	Manager	Manager: Manager can view statistic for toilet.
Export statistic excel	Admin, Manager	Manager: Manager can export excel of statistic of all toilet or 1 toilet in company. Admin: Admin can export excel of statistic of all companies.
Check-in	Staff	Staff: Staff can check in for User, guest.
View user's checkin history	User	User: User can view top 10 toilet nearest.
View all checkin history of all companies	Admin	Admin: Admin can view checkin history of all toilets in all companies.
View checkin history of for particular company	Manager	Manager: Manager can view checkin history of all toilets in Manager's company.
Add an announcement	Toilet Staff	Toilet Staff: Toilet Staff can add an announcement in system.
Update an announcement	Toilet Staff	Toilet Staff: Toilet Staff can update an announcement in system.

Module name	Applicable Role	Description
Delete an announcement	Toilet Staff	Toilet Staff: Toilet Staff can delete an announcement in system.
View announcements	Manager, Toilet Staff	Toilet Staff, Manager: Toilet Staff can view announcements.
View company information	Admin, Manager	Manager: Manager can view company information. Admin: Admin can view all companies information.
Create a company	Admin	Admin: Just only Admin can create a company if company join in Toilet system.
View the list of companies	Admin	Admin: Just only Admin can view list companies.
View the company detail	Admin, Manager	Manager: Manager can view company details. Admin: Admin can view all companies details.
View user's transactions	User	User: User can view their transactions.
Top-up for users	Toilet Staff, User, Staff	Toilet Staff, User, Staff: Toilet Staff, User, Staff can top up for users.
Purchase combo for users	Toilet Staff, User	Toilet Staff, User: Toilet Staff, User, Staff can purchase combo for users.
Add a combo	Admin	Admin: Just only Admin can add a combo.
Update a combo	Admin	Admin: Just only Admin can update a combo.
Delete a combo	Admin	Admin: Just only Admin can delete a combo.
Add a sensitive word	Admin	Admin: Just only Admin can add a sensitive word.
Update a sensitive word	Admin	Admin: Just only Admin can update a sensitive word.

Module name	Applicable Role	Description
Delete a sensitive word	Admin	Admin: Just only Admin can delete a sensitive word.
Add a toilet facility	Admin	Admin: Just only Admin can add a toilet facility.
Update a toilet facility	Admin	Admin: Just only Admin can update a toilet facility.
Delete a toilet facility	Admin	Admin: Just only Admin can delete a toilet facility.
Add a common comment	Admin	Admin: Just only Admin can add a common comment.
Update a common comment	Admin	Admin: Just only Admin can update a common comment.
Delete a common comment	Admin	Admin: Just only Admin can delete a common comment.
Update a toilet service	Admin	Admin: Just only Admin can update a toilet service price.
Update a toilet type	Admin	Admin: Just only Admin can update a toilet type.
Update estimated time for suggestion	Admin	Admin: Just only Admin can update estimated time for suggestion.
Update estimated average for suggestion	Admin	Admin: Just only Admin can update a estimated average for suggestion.

Table 54 - Scope of Testing - In scope

1.2 Out of scope

- All of these feature will not be tested because they are NOT included in the Software Requirement Specification:
 - User Interfaces.
 - Hardware Interfaces.
 - Software Interfaces.
 - Database logical.
 - Communications Interfaces.
 - Website Security and Performance.

2. Test Strategy

- About testing strategy, in the Social Toilet Map System, we use System Testing. The purpose of using this testing is to ensure the reliability of customers and their satisfaction about the application that we create.

2.1 Testing Types

- With the testing type, our choice is Functional testing to ensure that all functions in the Social Toilet Map System run in accordance with the process.

2.2 Test Levels

Type of Tests	Test Level			
	Unit	Integration	System	Acceptance
Function test			X	X

Table 55 - Test Strategy - Test Levels

2.3 Supporting Tools

Purpose	Tool	Vendor/In-house	Version
API testing	Postman	Postman	9.22.2
Web page testing	Visual Studio Code	Microsoft	1.81.1
Mobile testing	Android Studio	Google	3.3

Table 56 - Test Strategy - Supporting Tools

3. Test Plan

3.1 Human Resources

Worker/Doer	Role	Specific Responsibilities/Comments
Nguyễn Lâm Thúy Phượng	Member	Do function/user interface testing as planned
Nguyễn Đào Đức Quân	Member	Do function/user interface testing as planned

Table 57 - Test Plan - Human Resources

3.2 Test Environment

Purpose	Tool	Provider	Version
For running the testing tools.	Window	Microsoft	8 or above
For running web testing	Google Chrome	Google	107.0.5304.63
For running mobile testing tools	Samsung Galaxy ZFlip 5	Samsung	Android 13

Table 58 - Test Plan - Test Environment

3.3 Test Milestones

Milestone Task	Start Date	End Date
Sign Up For Users	01 - 08 - 2023	01 - 08 - 2023
Login Web app for Admin, Manager, Staff	01 - 08 - 2023	01 - 08 - 2023
Sign Up For Users	01 - 08 - 2023	01 - 08 - 2023
Login Web app for Admin, Manager, Staff	01 - 08 - 2023	01 - 08 - 2023
Login Mobile app for User, Staff	01 - 08 - 2023	01 - 08 - 2023
Update user's information	02 - 08 - 2023	02 - 08 - 2023
Update company information	02 - 08 - 2023	02 - 08 - 2023
Create a toilet	02 - 08 - 2023	02 - 08 - 2023
View the list of toilets	02 - 08 - 2023	02 - 08 - 2023
View toilet detail	02 - 08 - 2023	02 - 08 - 2023
Update toilet	02 - 08 - 2023	02 - 08 - 2023
View toilets nearby user	02 - 08 - 2023	02 - 08 - 2023
View ratings of toilet	02 - 08 - 2023	02 - 08 - 2023
Rating for 1 toilet after using service	02 - 08 - 2023	02 - 08 - 2023
Manage Room	03 - 08 - 2023	03 - 08 - 2023
View statistic for all companies	03 - 08 - 2023	03 - 08 - 2023
View statistic for each company	03 - 08 - 2023	03 - 08 - 2023
View statistic for toilet	03 - 08 - 2023	03 - 08 - 2023
Export statistic excel	03 - 08 - 2023	03 - 08 - 2023
Check-in	03 - 08 - 2023	03 - 08 - 2023
View user's checkin history	03 - 08 - 2023	03 - 08 - 2023
View all checkin history of all companies	03 - 08 - 2023	03 - 08 - 2023
View checkin history of for particular company	04 - 08 - 2023	04 - 08 - 2023
Add an announcement	04 - 08 - 2023	04 - 08 - 2023

Milestone Task	Start Date	End Date
Update an announcement	04 - 08 - 2023	04 - 08 - 2023
Delete an announcement	04 - 08 - 2023	04 - 08 - 2023
View announcements	05 - 08 - 2023	05 - 08 - 2023
View company information	05 - 08 - 2023	05 - 08 - 2023
Create a company	05 - 08 - 2023	05 - 08 - 2023
View the list of companies	05 - 08 - 2023	05 - 08 - 2023
View the company detail	05 - 08 - 2023	05 - 08 - 2023
View user's transactions	05 - 08 - 2023	05 - 08 - 2023
Top-up for users	05 - 08 - 2023	05 - 08 - 2023
Purchase combo for users	06 - 08 - 2023	06 - 08 - 2023
Add a combo	06 - 08 - 2023	06 - 08 - 2023
Update a combo	06 - 08 - 2023	06 - 08 - 2023
Delete a combo	06 - 08 - 2023	06 - 08 - 2023
Add a sensitive word	06 - 08 - 2023	06 - 08 - 2023
Update a sensitive word	06 - 08 - 2023	06 - 08 - 2023
Delete a sensitive word	06 - 08 - 2023	06 - 08 - 2023
Add a toilet facility	06 - 08 - 2023	06 - 08 - 2023
Update a toilet facility	06 - 08 - 2023	06 - 08 - 2023
Delete a toilet facility	06 - 08 - 2023	06 - 08 - 2023
Add a common comment	06 - 08 - 2023	06 - 08 - 2023
Update a common comment	06 - 08 - 2023	06 - 08 - 2023

Table 59 - Test Plan - Test Milestones

4. Test Cases & Test Reports

Testing Level	File Name
System Test	 SU23SE05_Test_Report

Table 60 - Test Cases & Test Reports

VI. Release Package & User Guides

1. Deliverable Package

No.	Deliverable Item	Description
1	Project Schedule/Tracking	With the project schedule we use Excel in order to track the process of tasks in the project. Link: Task Tracking
3	Source Codes	With the source code, we store our code (back-end API, web application and mobile) on github with private access. Link: https://github.com/HAPPY-3-FRIENDS
4	Database Script(s)	ToiletMap_Script
5	Final Report Document	Report7_Final Project Report.docx
6	Test Cases Document	Test Report & Test Case
9	Slide	Capstone Presentation

Table 61 - Deliverable Package

2. Installation Guides

2.1 System Requirements

2.1.1 Hardware requirements

2.1.1.1 Web Application

Laptop	Minimum Requirements	Recommended
Internet Connection	Wi-Fi (4 Mbps)	Cable, Wi-Fi (8 Mbps)
Operating System	Windows 7	Windows 10
Computer Processor	Intel® Core i3 1.4GHz	Intel® Core i5 2.50GHz
Computer Memory	1GB RAM 2GB RAM or more	1GB RAM 2GB RAM or more
Web Browser	Chrome (v69 or higher)	Chrome latest stable version

Table 62 - System Requirements - Hardware requirements - Web Application

2.1.1.2 Mobile Application

Operating system	Android 8.1 or higher
Processor	Intel Atom® Processor Z2520 1.2 GHz, or faster processor
Storage	Minimum 256 MB
RAM	Minimum of 1 GB, 2 GB is recommended

Table 63 - System Requirements - Hardware requirements - Mobile Application

2.1.2 Software requirements

Software	Name / Version	Description
Operation System	Windows 7 / Windows 10	Operating system and platform for development
Web browser	Chrome v69 or above	For web app
Android System	Android v8.1 or higher	For mobile app

Table 64 - System Requirements - Software requirements

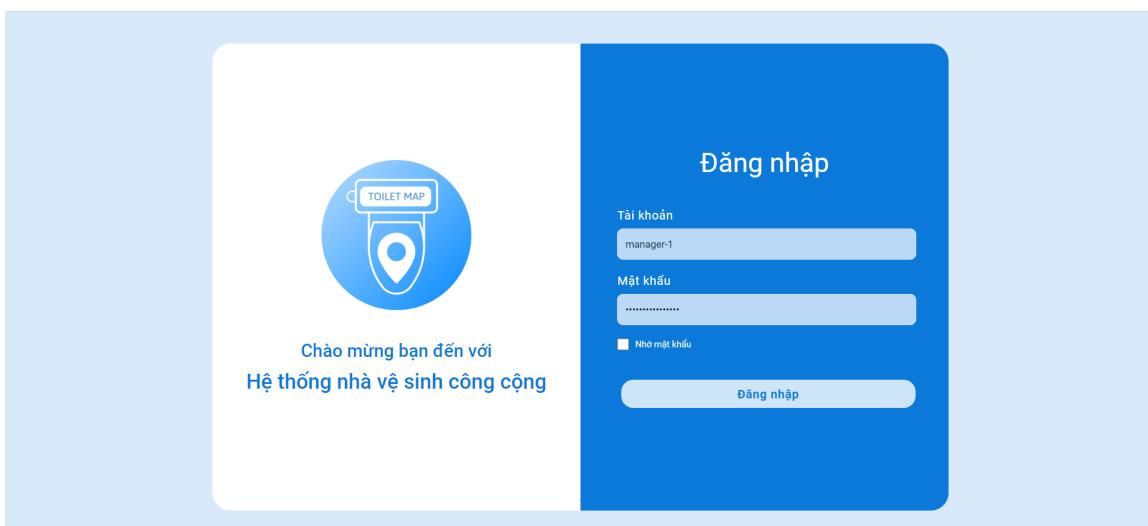
2.2 Installation Instruction

2.2.1 Back-end

1. Install IntelliJ IDEA by following guidelines link:
<https://www.jetbrains.com/idea/download>
2. Install Java SE 11 by following guidelines link:
<https://www.oracle.com/java/technologies/javase/jdk11-archive-downloads.html>
3. Clone source code from GitHub by link:
<https://github.com/HAPPY-3-FRIENDS/toilet-map-back-end>
4. Open folder with IntelliJ IDEA.
5. Resolve dependencies.
6. In terminal, run:
`mvn spring-boot:run -D"spring-boot.run.profiles"=default`

2.2.2 Web app

1. Install Visual Studio Code by following guidelines link:
<https://code.visualstudio.com/download>
7. Install npm through Visual Studio Code or you can install npm via NodeJS
<https://nodejs.org/en/>
8. Extract [ToiletMapFrontEnd.zip](#) and open folder with Visual Studio Code
9. Open terminal and enter **npm install**
10. In terminal, enter **npm start**
11. Project start with <http://localhost:3000/>



2.2.3 Mobile app

1. Download and install apk file from link: [Toilet Map Mobile Application](#)

3. User Manual

3.1 Overview

The project has 4 main workflows below:

- User search for toilet:

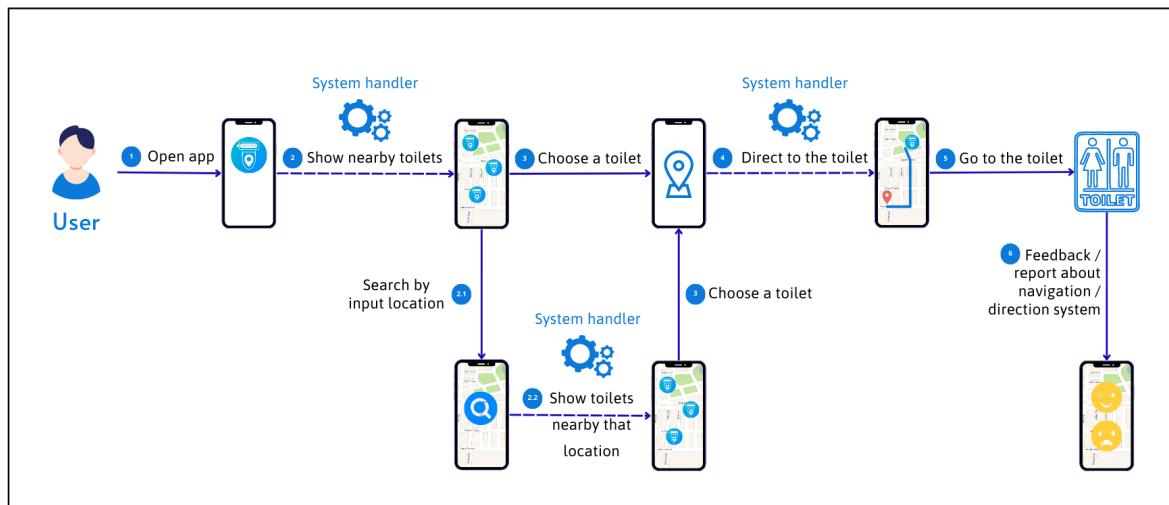


Figure 39 - Main Workflows - User search for toilet

- Staff manage room & check-in for user:

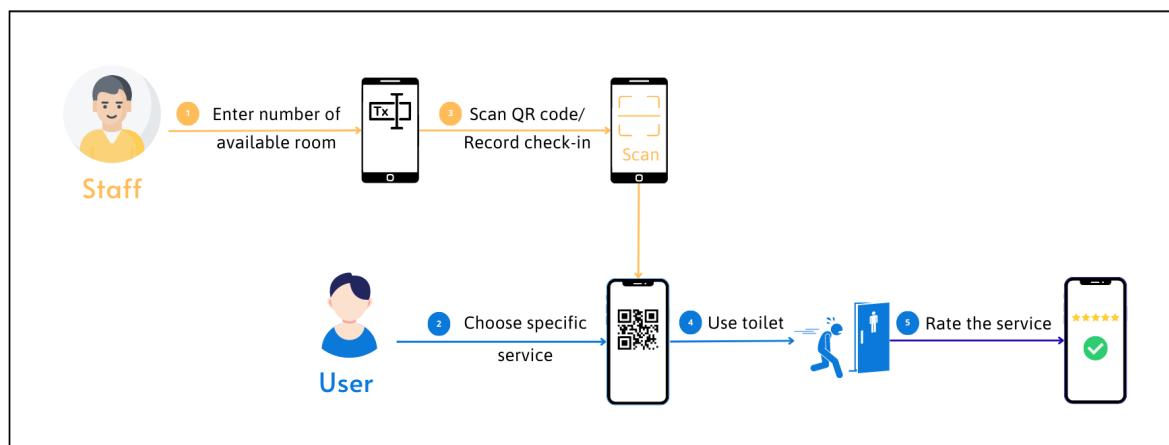


Figure 40 - Main Workflows - Staff manage room & check-in for user

- Top-up money & purchase combos:

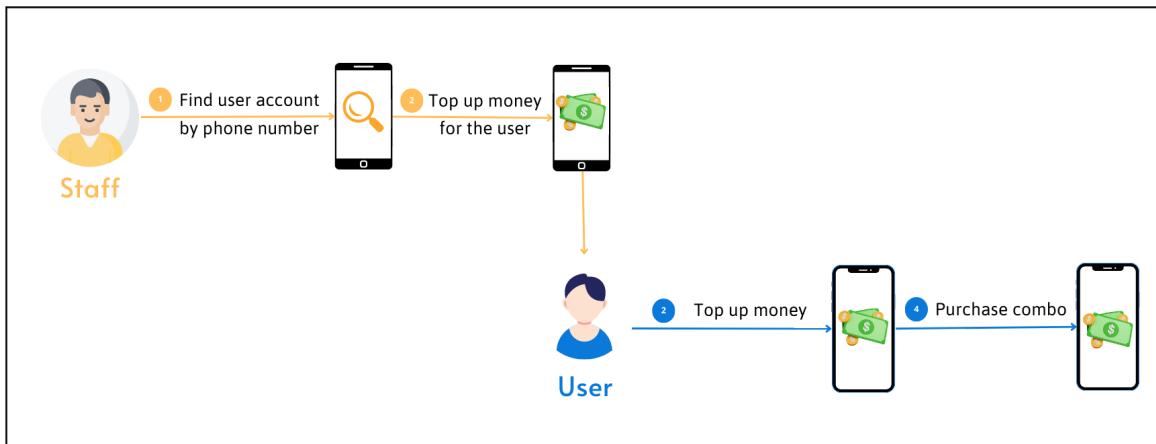


Figure 41 - Main Workflows - Top-up money & purchase combos

- Manager view statistics, suggestions about toilets:

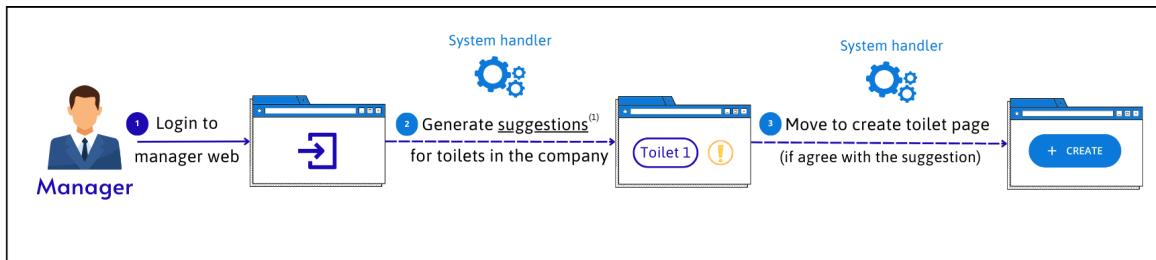


Figure 42 - Main Workflows - Manager view statistics, suggestions about toilets

- Other:

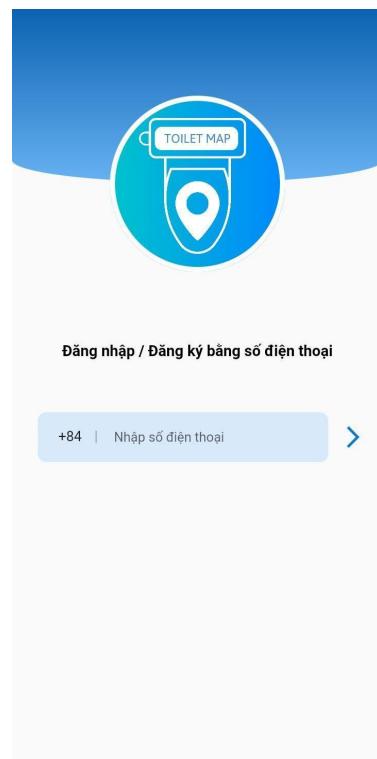
- Users manage account information
- Manager manage toilets in the company
- Admins perform system configuration

3.2 Workflow 1 - User search for toilet

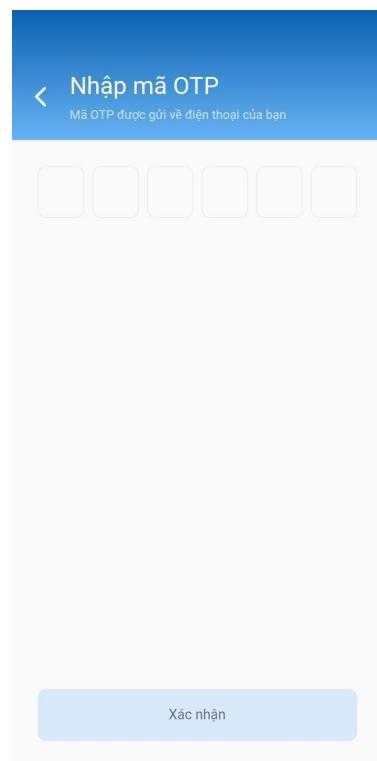
3.2.1 <User> Login

To login into the system, users enter their phone number and click on “arrow” icon.

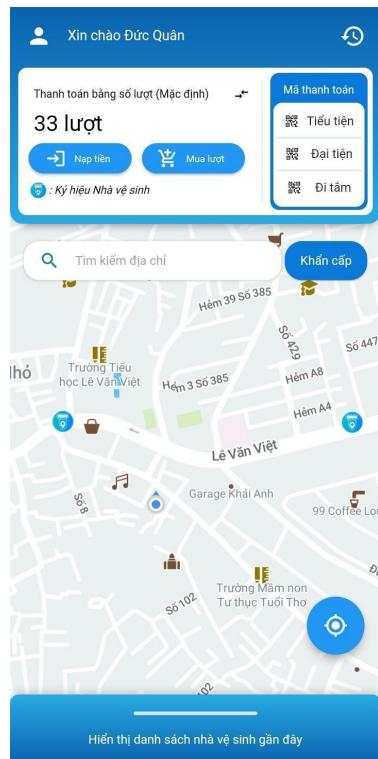
Capstone Project Document - Social Toilet Map



The system will send an OTP by SMS message. Users need to confirm the code to login.

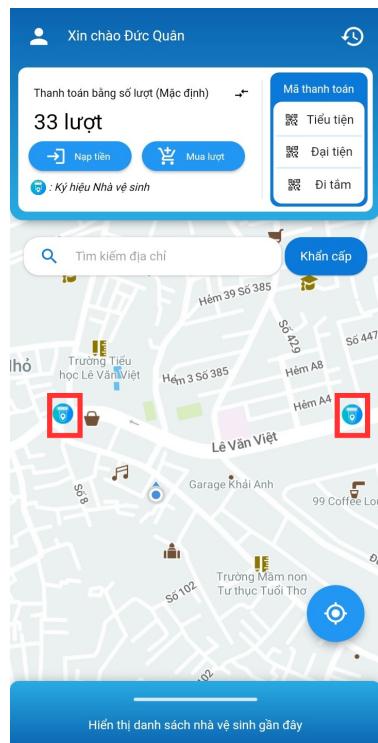


After login successfully, users can see the Home Screen of the user mobile application.

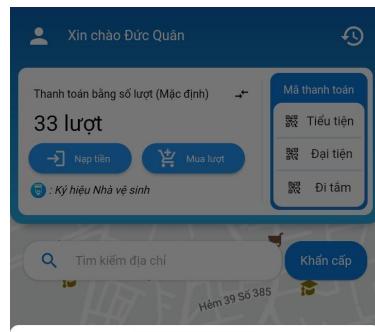


3.2.2 <User> Search toilets nearby

On the User Home Screen, users can view the map with toilets nearby them.



Click on a toilet symbol to view information about toilets.



Nhà vệ sinh quận 9 0.0 ★

Highlands Coffe Quận 9, Hiệp Phú, Thủ Đức, Hồ Chí Minh

08:00 - 20:00

5000 - 15000 VND/lượt

Đến nhà vệ sinh

User can drag up the bottom panel “Hiển thị danh sách nhà vệ sinh gần đây” to view the list of top 10 toilets nearby them sort by distance from the nearest to the farthest.

 A screenshot of the app showing a list of nearby toilets. At the top, it says "Xin chào Đức Quân". Below that is a section for "Thanh toán bằng số lượt (Mặc định)" with a balance of "33 lượt". There are buttons for "Nạp tiền" (top up) and "Mua lượt" (buy). To the right is a "Mã thanh toán" section with icons for "Tiểu tiện" (urinal), "Đại tiện" (toilet), and "Đi tâng" (washroom). At the bottom, there's a search bar "Tim kiếm địa chỉ" and a button "Khẩn cấp". The background shows a blurred map with a location pin.

Nhà vệ sinh gần đây

Nhà vệ sinh lưu động số 1 - 4.4 ★
Dịch vụ vệ sinh quận 9
5000 - 15000 VND/lượt
837 m - 3 phút
Gần CircleK, gần Phúc Long, gần...
8 phòng
Vòi xịt

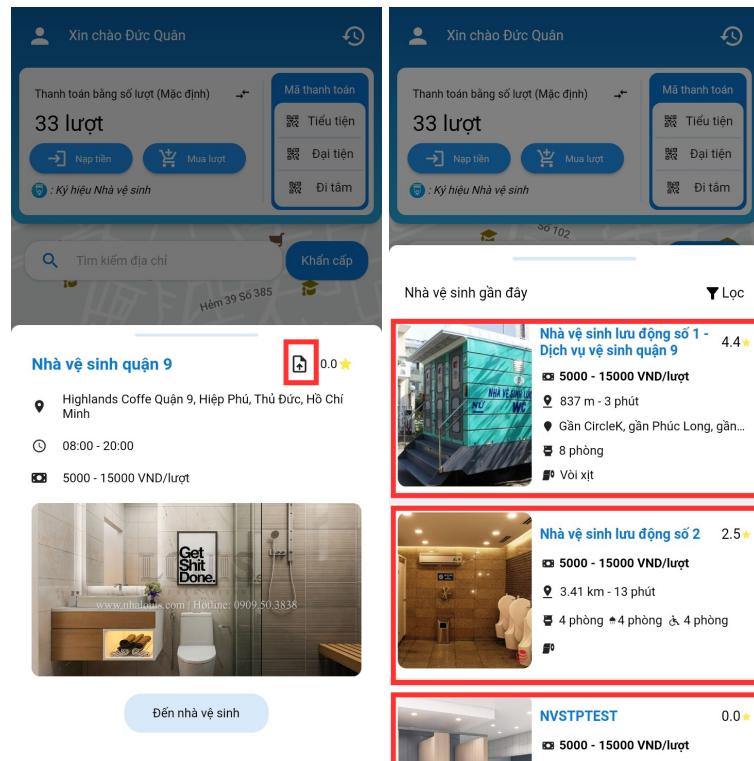
Nhà vệ sinh lưu động số 2 - 2.5 ★
5000 - 15000 VND/lượt
3.41 km - 13 phút
4 phòng ▪ 4 phòng ♂, 4 phòng ♀

NVSTPTEST 0.0 ★
5000 - 15000 VND/lượt

3.2.3 <User> Choose a toilet

In the list of top 10 toilets nearby, users can click on a toilet to view detail information of the toilet, rating,... or click on the “file” icon on the toilet information bottom panel.

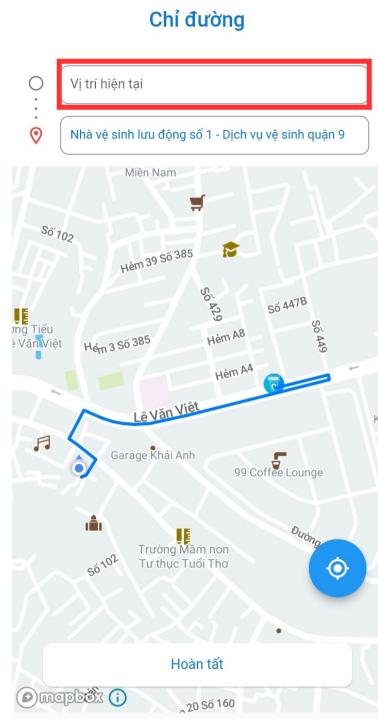
Capstone Project Document - Social Toilet Map



Users can click on “Đến nhà vệ sinh” button to be directed to the toilet.



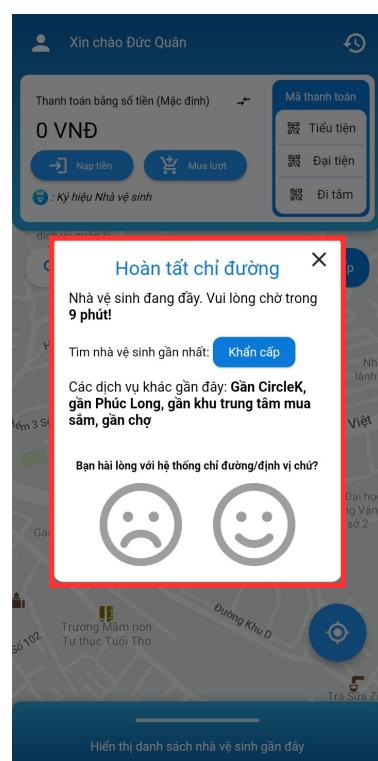
Users can click on the “Vị trí hiện tại” textbox and enter another address to find the way from that location to the toilet.



After getting to the toilet, the direction screen will disappear.

3.2.4 <User> Report toilet location

After getting to the toilet, the direction screen will disappear and pop-up will be showed. If there toilet is full, users will receive the information about the time they need to wait and other informations.



3.3 Workflow 2 - Staff manage room & check-in for user

3.3.1 <Staff> Update available room

On the Staff Home Screen, staff click on “Quản lý phòng” button.



In “Cập nhật tình trạng phòng” tag, staff can update the current available room in the toilet.

The screenshot shows the 'Quản lý phòng' (Room Management) screen. At the top, there are two tabs: 'Cập nhật tình trạng phòng' (selected) and 'Khóa phòng'. Below the tabs is a table showing room counts:

Loại phòng	Số phòng trống	Số phòng hoạt động
Phòng vệ sinh	6	6
Phòng tắm	0	0

Below the table, there are input fields for entering room quantities:

Loại phòng	Nhập số lượng phòng trống
Phòng vệ sinh	- <input type="text" value="6"/> +
Phòng tắm	- <input type="text" value="0"/> +

A large blue button at the bottom right is labeled "Xác nhận" (Confirm).

In “Khóa phòng” tag, staff can lock a room if there is some trouble in the room.

Quản lý phòng

Cập nhật tình trạng phòng Khóa phòng

Loại phòng	Số phòng hoạt động	Tổng số phòng
Phòng vệ sinh	6	8
Phòng tắm	0	0
Phòng cho người khuyết tật	0	1

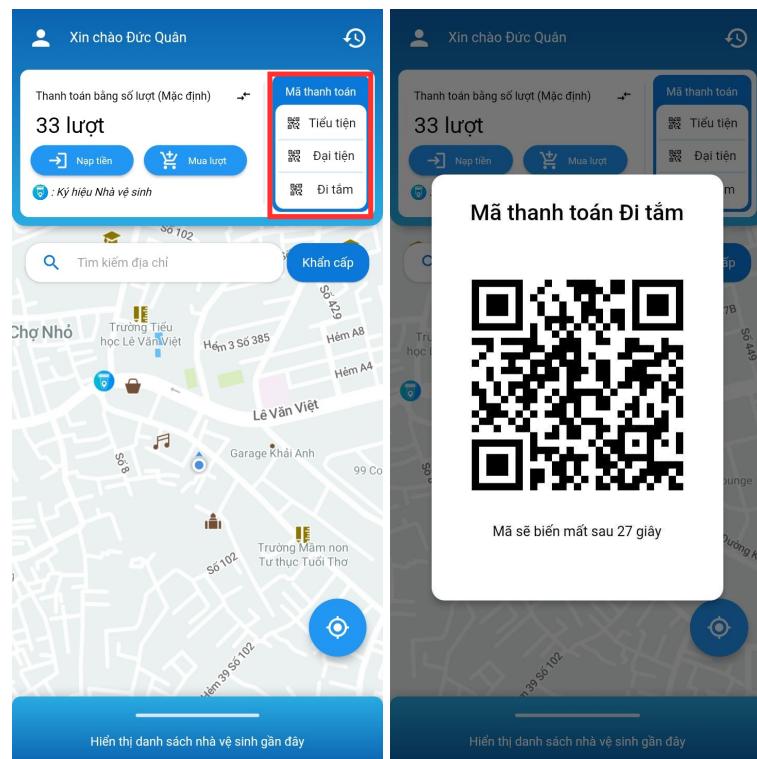
Loại phòng	Nhập số lượng phòng hoạt động
Phòng vệ sinh	- [6] +
Phòng tắm	- [0] +
Phòng cho người khuyết tật	- [0] +

Xác nhận

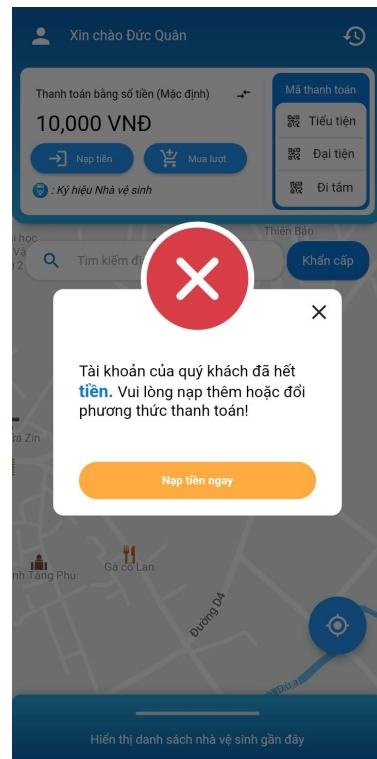
After update the number, staff click on “Xác nhận” to confirm the change.

3.3.2 <User> Choose service

On the User Home Screen, users click on one of the three service to generate the QR code.

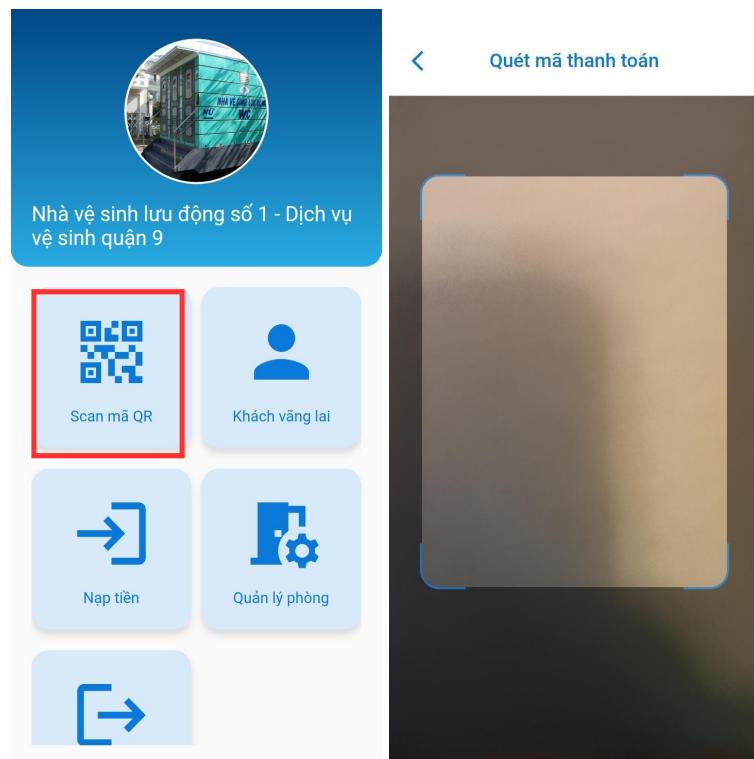


In case the user account is out of money, they cannot generate the QR code and get this message.

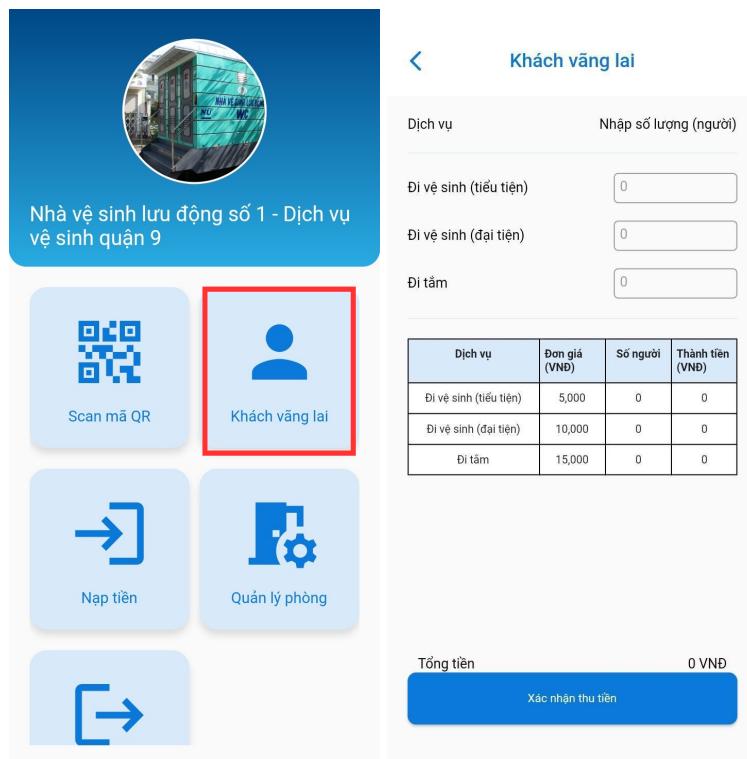


3.3.3 <Staff> Check in for user

With the users use QR code, they can interact with the device at the toilet to check in, or staff can help them to scan the QR code. Staff click on “Scan mã QR” button to open Scan QR Code Screen and scan for users.

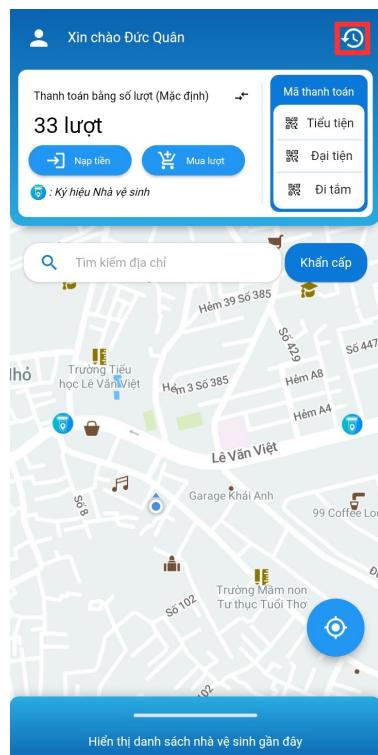


With the users use cash (does not have mobile application), staff click on “Khách vãng lai” button and enter the number of people check in. Staff click on “Xác nhận thu tiền” to confirm.



3.3.4 <User> View check-ins history

After check in successfully, users can view their check-ins history by click on “history” icon on the User Home Screen.



With the check-in in within 1 hour before and does not been rated, users can click on “Đánh giá” to rate the toilet’s service.

Lịch sử		
	Đi vệ sinh	Nạp tiền
04/08/2023 - 01:56:32	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi vệ sinh (tiểu tiện)	Đánh giá - 1 lượt
02/08/2023 - 13:58:10	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi vệ sinh (tiểu tiện)	Đã hoàn tất - 1 lượt
01/08/2023 - 10:03:59	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi vệ sinh (tiểu tiện)	Đã đánh giá - 1 lượt
01/08/2023 - 09:38:47	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi tắm	Đã đánh giá - 3 lượt
01/08/2023 - 09:38:47	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi tắm	Đã đánh giá - 3 lượt
31/07/2023 - 22:04:15	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi tắm	Đã hoàn tất - 3 lượt
31/07/2023 - 22:04:15	Nhà vệ sinh lưu động số 1 - Dịch vụ ... Đi tắm	Đã hoàn tất - 3 lượt

3.3.5 <User> Rate the toilet's service

In the Rating Screen, users can rate the toilet's service by fill the fields below:

- “Đánh giá”: rate by star. (required)
- “Báo cáo nhà vệ sinh”: This is the common comment to report the service of the toilet.
- “Thêm hình ảnh” button to upload images from the users’ phone.
- “Viết đánh giá” textbox for users to write the comment about the toilet’s service. (required)

Đánh giá

	Nhà vệ sinh lưu động số 1 - Dịch v... 447 Lê Văn Việt, Tăng Nhơn Phú A, Thủ Đức, Hồ Chí Minh
Đánh giá	★★★★★
Báo cáo nhà vệ sinh	
Thái độ nhân viên kém	Nhà vệ sinh bẩn, hôi
Trang thiết bị hư hỏng	Thiếu nước - giấy vệ sinh
*Tối đa 5 ảnh	
Thêm hình ảnh	
Viết đánh giá	
0/500	
Đánh giá	

After filling the necessary fields, users click on “Đánh giá” button to rate the toilet.

3.3.6 <User> View the rating

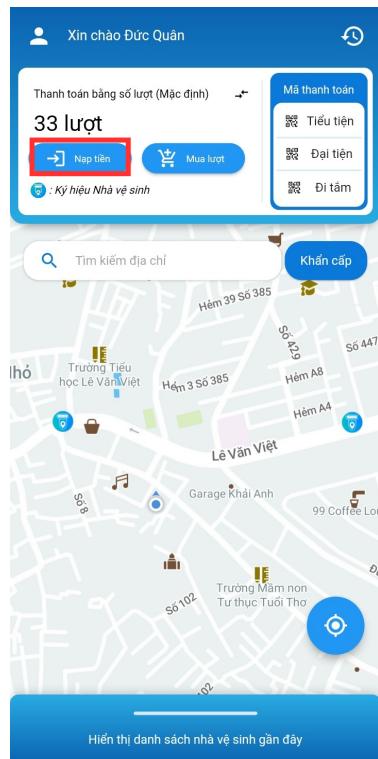
On the Toilet Detail Information Screen, users can view the rating list, sort in order from newest to oldest.



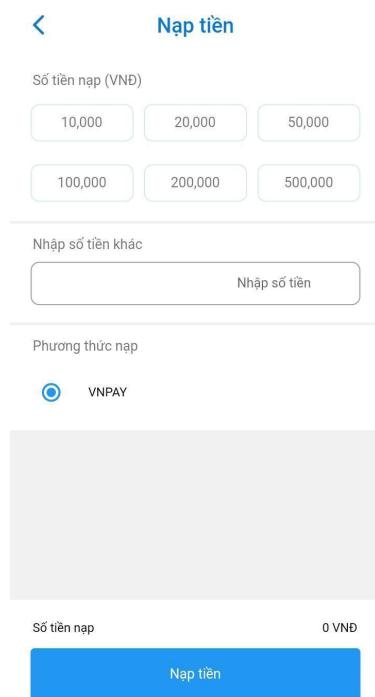
3.4 Workflow 3 - Top-up money & Purchase combos

3.4.1 <User> Top-up money

On the User Home Screen, users can click on “Nạp tiền” button to navigate to Top-up Money Screen.

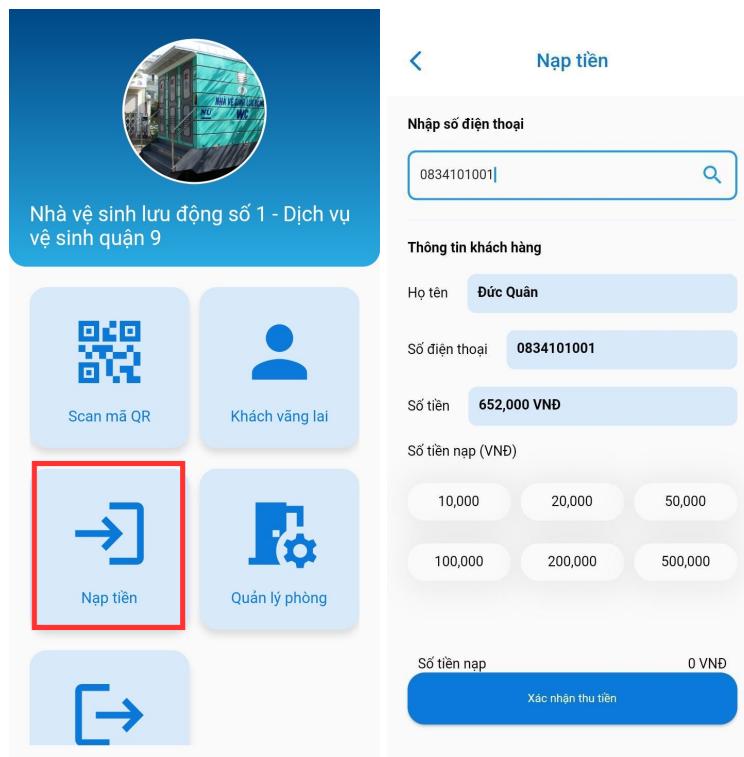


On the Top-up Money Screen, User must choose the money to top up or enter another value. After choosing, User can click on “Nạp tiền” button to top up money.

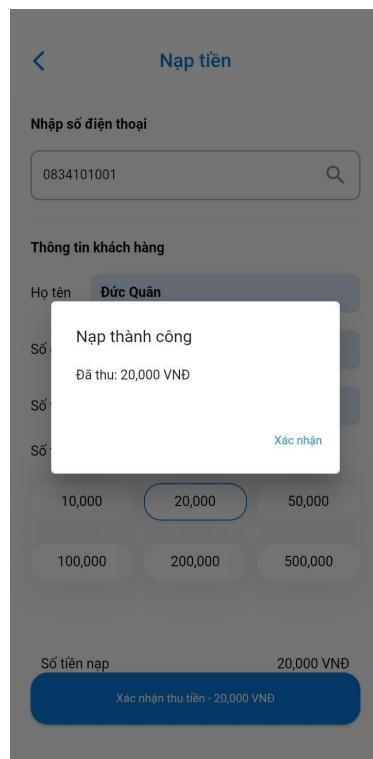


3.4.2 <Staff> Top-up money for user

Staff can enter the user's phone number and click on the “search” button to search for the user on the topup money screen.

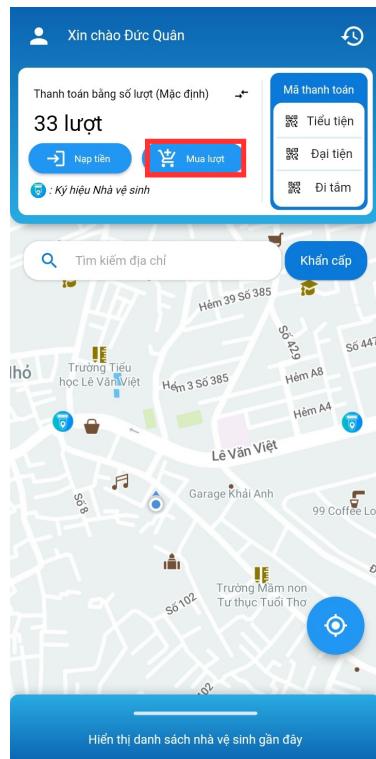


After searching successfully, Staff can choose the cash received from the user and click on “Xác nhận thu tiền” to top-up money for the user.

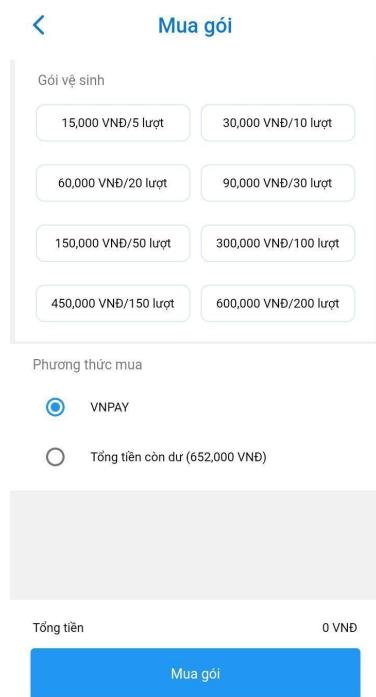


3.4.3 <User> Purchase combo

On the User Home Screen, users can click on “Mua gói” button to navigate to Purchase Combo Screen.



On the Purchase Combo Screen, User must choose the combo to purchase. After choosing, User can click on “Mua gói” button to purchase the combo.



3.5 Workflow 4 - Manager view statistics, suggestions about toilets

3.5.1 <Manager> View statistic of the company

Manager click on tab “Báo cáo thống kê” to view statistic of all toilets in company.

Capstone Project Document - Social Toilet Map

Tổng lượt khách trong tháng: 1,636
Tổng số tiền tạm thu trong tháng: 10,103,000

STT	Tên nhà vệ sinh	Tổng số tiền tạm thu	Khách vãng lai	Thành viên sử dụng gói
1	Nhà vệ sinh quận 9	3,480,000	N/A	3,480,000
2	Nhà vệ sinh lưu động số 1 - Dịch vụ vệ sinh...	3,190,000	235,000	2,955,000
3	Nhà vệ sinh số 2 - dịch vụ vệ sinh quận 9	1,920,000	N/A	1,920,000
4	Nhà vệ sinh lưu động số 2	934,000	10,000	924,000
5	Nhà vệ sinh số 7	324,000	15,000	309,000
6	Nhà vệ sinh quận 1	255,000	N/A	255,000
7	Nhà vệ sinh số 7			Chưa có dữ liệu
8	Nhà vệ sinh số 10			Chưa có dữ liệu

1-8 trong 84 | Xuất file excel số tiền tạm thu

3.5.2 <Manager> View suggestion for each toilet

Manager click on tab “Quản lý nhà vệ sinh” to view all toilets in company with the suggestion information.

Quản lý nhà vệ sinh

STT	Tên nhà vệ sinh	Tên đăng nhập	Địa chỉ	Trạng thái	Gợi ý
1	Nhà vệ sinh lưu động số 1 - Dịch vụ...	toilet-1	447 Lê Văn Việt, Tăng Nhơn Phú A, Thủ Đức, H...	Đang hoạt động	Vượt ngưỡng 2 quý liên tục
2	Nhà vệ sinh lưu động số 2	toilet-2	FPT Software Hồ Chí Minh, Tăng Nhơn Phú A		Gợi ý cho Quý 3 - 2023
3	Toilet 3	toilet-3	Trịnh Phong Đăng, Long Thành Bắc, Hòa Thà	Số lượt đi thực tế vượt 150% so với sức	t liều
4	Toilet 3	toilet-4	Trịnh Phong Đăng, Long Thành Bắc, Hòa Thà	chứa, gợi ý mở thêm nhà vệ sinh gần	t liều
5	Nhà vệ sinh số 7	nvs-q1-s8	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ Chí Mi	dây hoặc mở thêm phòng vệ sinh.	t liều
6	Nhà vệ sinh số 7	nvs-q1-s9	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ Chí Mi	Trung bình 2 quý gần đây	t liều
7	Nhà vệ sinh số 7	nvs-q1-s10	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ Chí Mi	Từ 01-01-2023 đến 30-06-2023	t liều
8	Nhà vệ sinh số 7	nvs-q1-s11	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ Chí Mi	Ước tính ~34K lượt	t liều
9	Nhà vệ sinh số 7	nvs-q1-ss10	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ Chí Mi	Thực tế ~100K lượt	t liều
10	Nhà vệ sinh số 7	nvs-q1-sss10	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ Chí Mi	Từ 01-01-2023 đến 31-03-2023	t liều

1-10 trong 142 | Không đồng ý | Đồng ý

3.5.3 <Manager> Agree with the suggestion & create toilet

In the suggestion, Manager click on “Đồng ý” button to create toilet.

Capstone Project Document - Social Toilet Map

Quản lý nhà vệ sinh

STT	Tên nhà vệ sinh	Tên đăng nhập	Địa chỉ	Trạng thái	Ghi ý
1	Nhà vệ sinh Thế Giới Gen	nvstgg	Công ty TNHH Thế Giới Gen, Tầng Nhơn Phú A, ...	Đang hoạt động	Vượt ngưỡng 2 quý liên tục
2	Nhà vệ sinh lưu động số 1	nvslds1	447 Lê Văn Việt, Tăng Nhơn Phú A, Thủ Đức, ...		
3	Nhà vệ sinh lưu động số 2	nvslds2	FPT Software Hồ Chí Minh, Tăng Nhơn Phú A, ...		
4	Nhà vệ sinh LC Coffee	nvsldcf	65 Làng Tăng Phú, Tăng Nhơn Phú A, Thủ Đức, ...		
5	Nhà vệ sinh GS25 quận 9	nvsgs25	449 D. Lê Văn Việt, Tăng Nhơn Phú A, Thủ Đức, ...		
6	Nhà vệ sinh The Bamos Coffee	nvsbcf	Bamos Coffee, Tăng Nhơn Phú A, Thủ Đức, H... Số lượt đi thực tế vượt 150% so với sức chứa, gợi ý mở thêm nhà vệ sinh gần đây hoặc mở thêm phòng vệ sinh.		
7	Nhà vệ sinh TRUNG NGUYỄN LEGE...	nvstlgcf	441 Lê Văn Việt, Tăng Nhơn Phú A, Thủ Đức, ...		
8	Nhà vệ sinh Phúc Long Tea & Coffe...	nvspclcf	142 Lê Văn Việt, Hiệp Phú, Thủ Đức, Hồ Chí Minh Trung bình 2 quý gần đây		
9	Nhà vệ sinh lưu động số 3	nvslds3	4/19A Lã Xuân Oai, Trường Thạnh, Thủ Đức, H... Từ 01-01-2023 đến 30-06-2023		
10	Nhà vệ sinh lưu động số 4	nvslds4	207 Đường số 138, Tân Phú, Thủ Đức, Hồ Chí Minh Ước tính ~ 15K lượt Thực tế ~ 25K lượt		

1-10 trong 10

← 1 >

Không đồng ý **Đồng ý**

Đăng xuất

In all steps, Manager must fill in all required information to continue to the next step.

Quản lý

Công ty dịch vụ công ích quận 1

Quản lý nhà vệ sinh

Báo cáo thống kê

Quảng cáo

Cấp thẻ

Cài đặt thông tin

Đăng xuất

← Quản lý nhà vệ sinh > Tạo nhà vệ sinh mới

1 Tạo thông tin 2 Tạo nhà vệ sinh 3 Tạo tài khoản 4 Xác nhận

Tên nhà vệ sinh * Nhà vệ sinh số 4 - Quận Gò Vấp

Địa chỉ * 220 Phạm Ngũ Lão

Phường/Xã Phường 7

Quận/Huyện Gò Vấp

Tỉnh/Thành phố Hồ Chí Minh

Hình ảnh * Chọn tệp Không có tệp nào được chọn

Tiếp theo

Map showing the location of the new toilet at 220 Pham Ngũ Lão, Phuong 7, Gò Vấp District, Ho Chi Minh City.

Quản lý

Công ty dịch vụ công ích quận 1

Quản lý nhà vệ sinh

Báo cáo thống kê

Quảng cáo

Cấp thẻ

Cài đặt thông tin

Đăng xuất

← Quản lý nhà vệ sinh > Tạo nhà vệ sinh mới

1 Tạo thông tin 2 Tạo nhà vệ sinh 3 Tạo tài khoản 4 Xác nhận

Giờ mở cửa 08:00 → 20:00

Mở cửa cả ngày

Phòng vệ sinh 8

Phòng tắm 2

Phòng vệ sinh dành cho người khuyết tật 1

Tiện ích bổ sung Vòi xịt x Máy sấy tay x Giấy vệ sinh x

Thiết lập nhà vệ sinh

Tính phí Miễn phí

Trạng thái hoạt động Đang hoạt động

Trở về Tiếp theo

Capstone Project Document - Social Toilet Map



Quản lý
Công ty dịch vụ công ích
quận 1

- [Quản lý nhà vệ sinh](#)
- [Báo cáo thống kê](#)
- [Quảng cáo](#)
- [Cấp thẻ](#)
- [Cài đặt thông tin](#)

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Tài khoản *	nvss4_dvvs_gv
Mật khẩu *	...
Xác nhận mật khẩu *	...

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1 Tạo thông tin 2 Tạo nhà vệ sinh 3 Tạo tài khoản 4 Xác nhận

Tên nhà vệ sinh	Nhà vệ sinh số 4 - Quận Gò Vấp	Giờ mở cửa	08:00 - 20:00
Tài khoản	nvss4_dvvs_gv	Phòng vệ sinh	8
Địa chỉ	220 Phạm Ngũ Lão	Phòng tắm	2
Phường/Xã	Phường 7	Phòng vệ sinh dành cho ng...	1
Quận/Huyện	Gò Vấp	Tiện ích bô sung	Vòi xịt - Máy sấy tay - Giấy vệ...
Tỉnh/Thành phố	Hồ Chí Minh	Thiết lập nhà vệ sinh	Tính phí
Hình ảnh	 	Trạng thái hoạt động	Đang hoạt động

[Trở về](#) [Xác nhận](#)

[Đăng xuất](#)

After create toilet successfully, the suggestion turn into green and disappear the “Đồng ý” button.



Quản lý
Công ty dịch vụ công ích
quận 1

- [Quản lý nhà vệ sinh](#)
- [Báo cáo thống kê](#)
- [Quản lý lượt khách](#)
- [Quảng cáo](#)
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[Đăng xuất](#)

Quản lý nhà vệ sinh

STT	Tên nhà vệ sinh	Tên đăng nhập	Địa chỉ	Trạng thái	Ghi ý
1	Nhà vệ sinh lưu động số 1 - Dịch vụ...	toilet-1	447 Lê Văn Việt, Tăng Nhơn Phú A, Thủ Đức, H...	Đang hoạt động	Vượt ngưỡng 2 quý liên tục
2	Nhà vệ sinh lưu động số 2	toilet-2	FPT Software Hồ Chí Minh, Tăng Nhơn Phú A		
3	Toilet 3	toilet-3	Trịnh Phong Đáng, Long Thành Bắc, Hòa Thà...		
4	Toilet 3	toilet-4	Trịnh Phong Đáng, Long Thành Bắc, Hòa Thà...		
5	Nhà vệ sinh số 7	nvs-q1-s8	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ Chí Mi...		
6	Nhà vệ sinh số 7	nvs-q1-s9	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ Chí Mi...		
7	Nhà vệ sinh số 7	nvs-q1-s10	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ Chí Mi...		
8	Nhà vệ sinh số 7	nvs-q1-s11	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ Chí Mi...		
9	Nhà vệ sinh số 7	nvs-q1-ss10	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ Chí Mi...		
10	Nhà vệ sinh số 7	nvs-q1-sss10	25 Nguyễn Huệ, Bến Nghé, Quận 1, Hồ Chí Mi...		

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