

Use Case Model and Use Case Description

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Use Case Models and Use Case Description

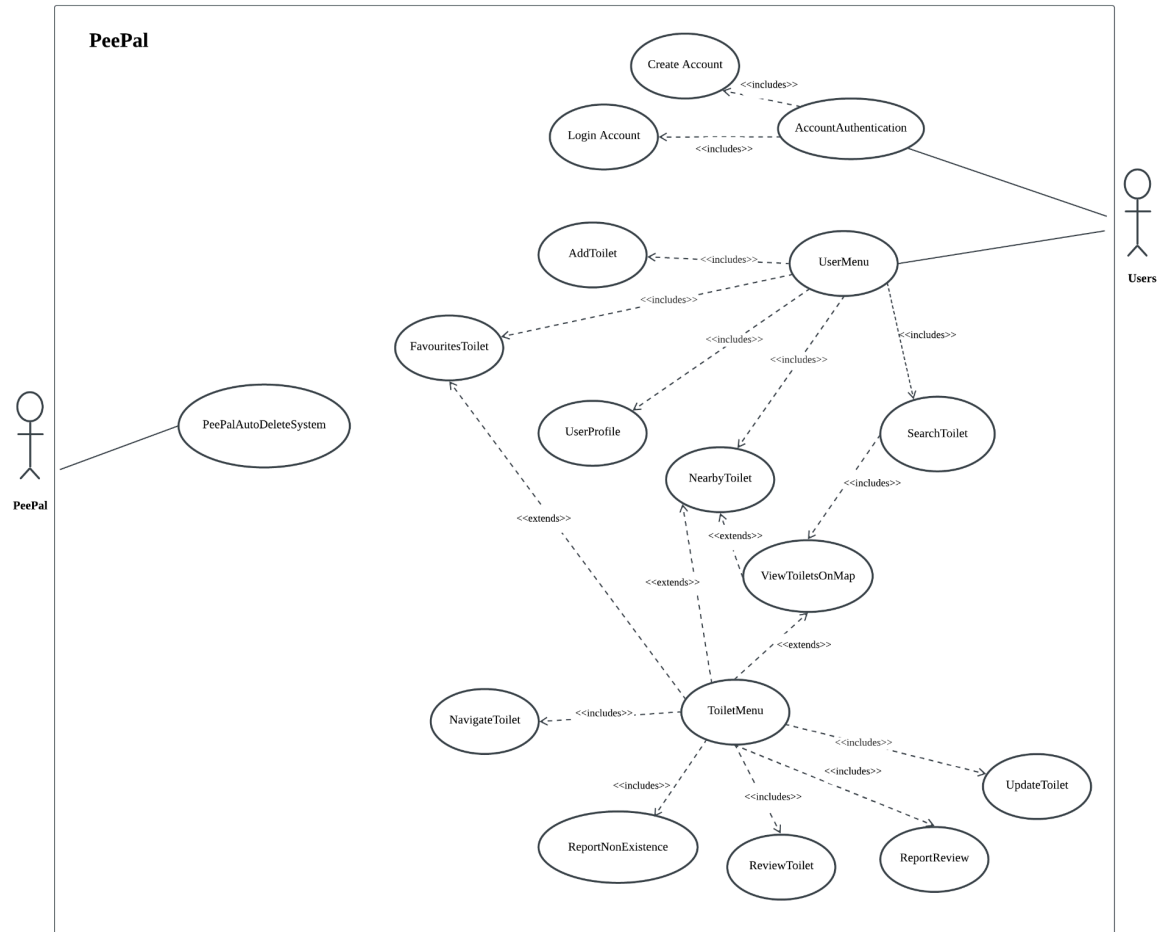
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A. Use Case Diagram

If the image is unclear, please refer to the raw png file that is uploaded together with this document.



B. Use Case Diagram

1. For Functional Requirement #1 (PeePal Features)

Use Case ID:	#1-1		
Use Case Name:	PeePalAutoDeleteSystem		
Created By:	Joyce Lee	Last Updated By:	Joyce Lee
Date Created:	09/02/2025	Date Last Updated:	13/04/2025

Actor:	PeePal
Descriptions:	The system automatically removes flagged reviews and non-existent toilets when the number of reports exceeds a predefined threshold.
Preconditions:	None.
Postconditions:	Flagged reviews and non-existent toilets are deleted.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none">1. If a review contains vulgar language, inappropriate content, or violates community guidelines, the system censors the review.2. If a review was reported by more than or equal to 3 times, the system deletes the review.3. If a toilet was reported (non-existent) by more than or equal to 3 times, the system deletes the toilet.
Alternative Flows:	None
Exceptions	<ol style="list-style-type: none">1. If the system is offline or experiencing technical issues, the auto-deletion process may not execute properly.
Includes:	None
Special Requirements:	None

Assumptions:	None
Notes and Issues:	None

2. For Functional Requirement #2 (Authentication Features)

Use Case ID:	#2-1		
Use Case Name:	AccountAuthentication		
Created By:	Joyce Lee	Last Updated By:	Adam Soh
Date Created:	11/02/2025	Date Last Updated:	25/02/2025

Actor:	Users
Descriptions:	Users must authenticate their accounts on PeePal by either logging in if they are existing users or creating a new account if they are first-time users.
Preconditions:	<ol style="list-style-type: none">1. If users choose to log out, users must be logged in to PeePal.
Postconditions:	<ol style="list-style-type: none">1. The user account is created.2. User is logged in.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none">1. Users enter PeePal.2. Users are prompted with an account authentication menu.3. If users choose LoginAccount, the system invokes the LoginAccount use case.
Alternative Flows:	AF-S3: <ol style="list-style-type: none">1. If users choose CreateAccount, the system invokes the CreateAccount use case.
Exceptions	<ol style="list-style-type: none">1. If the user is not found, the system will display an error message.
Includes:	<ol style="list-style-type: none">1. LoginAccount2. CreateAccount
Special Requirements:	None
Assumptions:	None
Notes and Issues:	None

Use Case ID:	#2-2		
Use Case Name:	CreateAccount		
Created By:	Tan Kai Hooi	Last Updated By:	Adam Soh
Date Created:	9/2/2025	Date Last Updated:	13/4/2025

Actor:	Users
Descriptions:	Allows a visitor to create a new account in the system.
Preconditions:	1. The user must click on the 'Sign Up' link.
Postconditions:	1. A new user account is created and stored in the database.
Priority:	High
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. User opens the application. 2. User clicks on the 'Sign Up' link. 3. User enters required details (e.g., username, email, password, gender). 4. System validates the input fields. 5. If all details are correct: <ol style="list-style-type: none"> a. System stores the user's information in the database. b. System sends an account verification email. c. System confirms account creation and redirects the user to the login page.
Alternative Flows:	AF-S5: <ol style="list-style-type: none"> 1. Invalid Input: <ul style="list-style-type: none"> - If required fields are missing, the system prompts the user to complete them. - If the password is shorter than 8 characters, the system prompts the user to enter again. 2. Username/Email Already Exists: <ul style="list-style-type: none"> - The system notifies the user and asks them to enter a different username/email.
Exceptions	<ul style="list-style-type: none"> - If the database is down, account creation fails, and an error message is displayed. - If the email service is down, the confirmation email

	may not be sent immediately.
Includes:	<ul style="list-style-type: none"> - InputValidation - PasswordEncryption
Special Requirements:	None
Assumptions:	<ul style="list-style-type: none"> - The visitor does not already have an account. - The system has sufficient storage capacity for new user data.
Notes and Issues:	None

Use Case ID:	#2-3		
Use Case Name:	LoginAccount		
Created By:	Tan Kai Hooi	Last Updated By:	Tan Kai Hooi
Date Created:	9/2/2025	Date Last Updated:	25/2/2025

Actor:	User
Descriptions:	Allows a user to log in to an existing account.
Preconditions:	-
Postconditions:	<ol style="list-style-type: none"> 1. User logs in and is brought to the home page. 2. User menu appears.
Priority:	High
Frequency of Use:	Low
Flow of Events:	<ol style="list-style-type: none"> 1. User opens the application. 2. User enters a username and password. 3. System validates credentials against the database. 4. If credentials are correct, the user is authenticated and redirected to Home Screen.
Alternative Flows:	AF-S3: <ol style="list-style-type: none"> 1. Forgot Password: <ul style="list-style-type: none"> - User clicks on "Forgot Password." - System prompts the user to reset password via email verification.

	AF-S4: 1. Invalid Credentials: <ul style="list-style-type: none"> - If the username or password is incorrect: - The system displays an error message. - Users are prompted to re-enter credentials.
Exceptions	<ul style="list-style-type: none"> - If the database is down, the login process fails, and an error message is displayed. - If there are multiple failed login attempts, the account may be locked for security reasons.
Includes:	None
Special Requirements:	None
Assumptions:	<ul style="list-style-type: none"> - Users have already registered and have valid credentials.
Notes and Issues:	None

3. For Functional Requirement #3 (User Features)

Use Case ID:	#3-1		
Use Case Name:	ToiletMenu		
Created By:	Adam Soh	Last Updated By:	Joyce Lee
Date Created:	09/02/2025	Date Last Updated:	13/04/2025

Actor:	User
Descriptions:	Allows users to choose options provided in the toilet menu.
Preconditions:	<ol style="list-style-type: none">1. The user must be logged in and authenticated.2. Users must select one toilet.
Postconditions:	<ol style="list-style-type: none">1. Users will be brought to the toilet menu interface, where they are able to choose from a variety of different features.
Priority:	Low
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none">1. Users will be able to view the information details of the selected toilet.2. Users can perform the actions provided in the menu.
Alternative Flows:	AF-S3: <ol style="list-style-type: none">1. If User selects NAVIGATE, the system will invoke the NavigateToilet use case.2. If User selects REVIEW, the system will invoke the ReviewToilet use case.3. If User selects REPORT REVIEW, the system will invoke the ReportReview use case.4. If User selects UPDATE, the system will invoke the UpdateToilet use case.5. If User selects REPORT TOILET, the system will invoke the ReportNonExistence use case.6. Users can add the toilet into the favourites list.
Exceptions:	None.
Includes:	<ol style="list-style-type: none">1. NavigateToilet2. ReviewToilet3. ReportReview4. UpdateToilet

	5. ReportNonExistence
Special Requirements:	None.
Assumptions:	None.
Notes and Issues:	None

Use Case ID:	#3-2		
Use Case Name:	NavigateToilet		
Created By:	Tan Kai Hooi	Last Updated By:	Adam Soh
Date Created:	9/2/2025	Date Last Updated:	13/4/2025

Actor:	User
Descriptions:	Allows users to navigate to the chosen toilet.
Preconditions:	<ol style="list-style-type: none"> 1. The User must be logged in and authenticated. 2. The User must have their location service turned on.
Postconditions:	Successfully return the optimal route to the chosen toilet.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The user clicks on the 'Navigate' button. 2. System gets the user's current location. 3. System calculates the optimal route from the user's location to the chosen toilet location. 4. System displays the navigation instructions on the navigation page.
Alternative Flows:	None.
Exceptions:	- Location service is not turned on.
Includes:	None
Special Requirements:	None
Assumptions:	<ul style="list-style-type: none"> - Toilet is in Singapore. - The user is able to travel there by foot.
Notes and Issues:	None

Use Case ID:	#3-3		
Use Case Name:	ReviewToilet		
Created By:	Tan Kai Hooi	Last Updated By:	Tan Kai Hooi
Date Created:	9/2/2025	Date Last Updated:	25/2/2025

Actor:	User
Descriptions:	Allows users to review the chosen toilet.
Preconditions:	1. The User must be logged in and authenticated.
Postconditions:	A review of the toilet is published by the user and will be able to be viewed on the toilet menu.
Priority:	Medium
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. Users click on the 'Review' button on the toilet menu, leading them to the review menu page. 2. User writes a review and gives a rating out of 5. 3. User posts the review. 4. Posting is successful and a confirmation dialog message will pop up.
Alternative Flows:	AF-S1: <ol style="list-style-type: none"> 1. If posting is unsuccessful, a review failed dialog message will pop up.
Exceptions:	None.
Includes:	None.
Special Requirements:	None.
Assumptions:	- Toilet exists in the database.
Notes and Issues:	None

Use Case ID:	#3-4		
Use Case Name:	ReportReview		
Created By:	Tan Kai Hooi	Last Updated By:	Joyce Lee
Date Created:	25/2/2025	Date Last Updated:	13/04/2025

Actor:	User
Descriptions:	Allows users to report a chosen review.
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in and authenticated. 2. The user is on the toilet menu page for that specific toilet.
Postconditions:	The chosen review is flagged by the system.
Priority:	High
Frequency of Use:	Low
Flow of Events:	<ol style="list-style-type: none"> 1. The User selects the "Report" button. 2. A pop up will appear, confirming if the user wants to report the review. 3. A successful dialog message will be displayed.
Alternative Flows:	AF-S1: <ol style="list-style-type: none"> 1. If the report failed, a report failed dialog message will be displayed.
Exceptions:	None.
Includes:	None.
Special Requirements:	None.
Assumptions:	- Review exists in the database.
Notes and Issues:	None

Use Case ID:	#3-5		
Use Case Name:	ReportNonExistence		
Created By:	Joyce Lee	Last Updated By:	Joyce Lee
Date Created:	25/2/2025	Date Last Updated:	25/2/2025

Actor:	User
Descriptions:	Allows users to report a non-existent toilet.
Preconditions:	1. The User must be logged in and authenticated.
Postconditions:	The chosen toilet is flagged by the system.
Priority:	High
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The User selects the "Report" feature button. 2. The system will flag the toilet.
Alternative Flows:	None.
Exceptions:	None.
Includes:	None.
Special Requirements:	None.
Assumptions:	1. Toilet exists in the database.
Notes and Issues:	None

Use Case ID:	#3-6		
Use Case Name:	UpdateToilet		
Created By:	Joyce Lee	Last Updated By:	Adam Soh
Date Created:	09/02/2025	Date Last Updated:	20/04/2025

Actor:	User
Descriptions:	The user can update the details of an existing toilet.
Preconditions:	<ol style="list-style-type: none"> 1. The user is logged in and authenticated. 2. Toilet data is available in the system. 3. The user is viewing the toilet details by invoking ToiletMenu.
Postconditions:	The toilet information is successfully updated.
Priority:	High
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The user selects the option to “Suggest Changes” on the toilet’s detail page. 2. The system displays the toilet’s information with editable fields: bidet availability, accessibility, sanitiser availability and shower availability with “Confirm Edits” buttons. 3. The user may input into the fields that need changes.
Alternative Flows:	AF-S3: <ol style="list-style-type: none"> 1. If the user selects the “Confirm Edits” button, the system saves the updated details and updates the toilet’s detail page.
Exceptions	<ol style="list-style-type: none"> 1. If the user selects the “Update” button with empty fields, the system prompts an “Invalid Input” error dialog. 2. If the app is not connected to the Internet, the system prompts the user with a “No Internet Connection” error dialog.

Includes:	None
Special Requirements:	None
Assumptions:	None
Notes and Issues:	None

Use Case ID:	#3-7		
Use Case Name:	UserMenu		
Created By:	Adam Soh	Last Updated By:	Joyce Lee
Date Created:	9/2/2025	Date Last Updated:	13/04/2025

Actor:	User
Descriptions:	Display User Menu.
Preconditions:	The User must be logged in and authenticated.
Postconditions:	Successfully display user menu with 5 main features: NearbyToilet, ViewToiletOnMap, AddToilet, FavouritesToilet, UserProfile.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. Upon successful login, the user is directed to the NearbyToilet use case, where the top 5 nearest toilets are displayed. 2. If the user selects the search icon from the menu bar, the SearchToilet use case is triggered. 3. If the user selects the add icon from the menu bar, the AddToilet use case is invoked. 4. If the user selects the favourites icon from the menu bar, the FavouritesToilet use case is activated. 5. If the user selects the user profile icon, the UserProfile use case is invoked.
Alternative Flows:	None
Exceptions:	None
Includes:	<ol style="list-style-type: none"> 1. NearbyToilet 2. SearchToilet 3. AddToilet 4. FavouritesToilet 5. UserProfile
Special Requirements:	None.
Assumptions:	None.

Notes and Issues:	None
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Use Case ID:	#3-8		
Use Case Name:	ViewToiletOnMap		
Created By:	Tan Kai Hooi	Last Updated By:	Adam Soh
Date Created:	9/2/2025	Date Last Updated:	13/4/2025

Actor:	User
Descriptions:	Display the nearby toilet on the map depending on the input location.
Preconditions:	1. The User must be logged in and authenticated.
Postconditions:	1. Successfully display the nearby toilet location on the map.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The system will retrieve the user location or toilet location. 2. The system will find nearby toilets. 3. The nearby toilets are displayed on the map. 4. The user can select any toilet on the map, and the system will invoke the ToiletMenu use case.
Alternative Flows:	None
Exceptions:	None
Includes:	1. ToiletMenu
Special Requirements:	None
Assumptions:	None
Notes and Issues:	None

Use Case ID:	#3-9		
Use Case Name:	AddToilet		
Created By:	Joyce Lee	Last Updated By:	Joyce Lee
Date Created:	11/02/2025	Date Last Updated:	25/02/2025

Actor:	User
Descriptions:	Allows users to add a new toilet.
Preconditions:	1. User is logged in and authenticated.
Postconditions:	A new toilet is added.
Priority:	High
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The user selects the option to “Add Toilet” on UserMenu. 2. The system allows the user to select the location of the toilet using Apple Maps and drop a marker. 3. The system prompts the user to enter the toilet details, including name, status, features, and optional reviews. 4. The user enters the required details. 5. The system saves the new toilet data. 6. The system confirms that the toilet has been added successfully.
Alternative Flows:	<ol style="list-style-type: none"> 1. If the user selects CANCEL at any time, the system returns to the UserMenu use case.
Exceptions	<ol style="list-style-type: none"> 1. If the system fails to add the toilet due to a technical error, it displays a message prompting the admin to retry.
Includes:	None
Special Requirements:	None
Assumptions:	None

Notes and Issues:	None
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Use Case ID:	#3-10		
Use Case Name:	FavouritesToilet		
Created By:	Tan Kai Hooi	Last Updated By:	Adam Soh
Date Created:	9/2/2025	Date Last Updated:	13/4/2025

Actor:	User
Descriptions:	Display a favourite list of toilets of the user.
Preconditions:	1. The User must be logged in and authenticated.
Postconditions:	1. Successfully display the favourite list of toilets.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The system will retrieve the user's favourite toilets from the database. 2. The system will display the user's favourite toilet list. 5. The user can select any toilet on the favourite list and the system will invoke ToiletMenu use case.
Alternative Flows:	None
Exceptions:	None
Includes:	2. ToiletMenu
Special Requirements:	None
Assumptions:	None
Notes and Issues:	None

Use Case ID:	#3-11		
Use Case Name:	UserProfile		
Created By:	Joyce Lee	Last Updated By:	Adam Soh
Date Created:	13/04/2025	Date Last Updated:	13/04/2025

Actor:	User
Descriptions:	Display user information and allow users to update their information.
Preconditions:	1. The User must be logged in and authenticated.
Postconditions:	1. Successfully display user's information.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The system displays the user's information, including the profile picture, name, email, and other relevant details. 2. If the user chooses to logout, the system will prompt the user for confirmation to logout. <ol style="list-style-type: none"> a. If the user proceeds to logout, the user will be logged out from the system. b. If the user chooses to cancel log out, the user will return to UserProfile.
Alternative Flows:	None
Exceptions:	None
Includes:	None
Special Requirements:	None
Assumptions:	None
Notes and Issues:	None

Use Case ID:	#3-12		
Use Case Name:	SearchToilet		
Created By:	Tan Kai Hooi	Last Updated By:	Joyce Lee
Date Created:	09/02/2025	Date Last Updated:	25/02/2025

Actor:	User
Descriptions:	Allows users to search for toilets in any location.
Preconditions:	1. The User must be logged in and authenticated.
Postconditions:	1. Successfully display the exact toilet location on the map.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. Users intend to search the toilet and input the toilet's name and location. 2. If the toilet exists, the system will invoke the ViewToiletsOnMap use case.
Alternative Flows:	None
Exceptions:	1. If the toilet is not found, the system will display an empty list.
Includes:	1. ViewToiletsOnMap
Special Requirements:	None
Assumptions:	1. The toilet is in Singapore.
Notes and Issues:	None

Use Case ID:	#3-13		
Use Case Name:	NearbyToilet		
Created By:	Jia Wei	Last Updated By:	Jia Wei
Date Created:	13/04/2025	Date Last Updated:	13/04/2025

Actor:	User
Descriptions:	Display the information of the nearest 5 toilets in the card format.
Preconditions:	1. The User must be logged in and authenticated.
Postconditions:	1. Successfully display the nearby list of toilets.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The system will detect the user's current location. 2. The system will find the user's nearest 5 toilets. 3. The system will display the information in the card format. 4. The user can select any toilet card and the system will invoke ToiletMenu use case. 5. If the user selects the "Navigate" button, the system will invoke ViewToiletOnMap use case.
Alternative Flows:	None
Exceptions:	None
Includes:	<ol style="list-style-type: none"> 1. ToiletMenu 2. ViewToiletsOnMap
Special Requirements:	None
Assumptions:	None
Notes and Issues:	None