

Final Report(Group9) ViaVan

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1 Introduction

In today's time, convenience is crucial for people, especially for transportation. One of the most common types of transportation in Thailand is public transportation. However, traveling through public transportation can cause many problems, such as safety, the proper schedule of the trip, and convenience.

This report provides an overview of our project, Via Van, its objectives, and its deployment in public transportation. Our project aims to improve the public van transportation experience and reliability. By introducing innovative solutions, we seek to improve safety, efficiency, and convenience for travelers that use public van transportation.

By creating the ViaVan application, we aim to improve users' time management and convenience, as well as the safety of the transportation system. The application will offer real-time tracking of van locations, estimated arrival times, and optimized routes for a smoother travel experience. Additionally, it will provide features such as contactless payment options and notifications for schedule changes or delays.

2 Pain Points

2.1 Van's delay

The van route often faces multiple issues along the trip, such as traffic, accidents, and stops along the route, which often cause delay and lateness for the next station stop, making it hard for the user to know when the van will arrive and manage their time.

2.2 Queueing

Public van transportation is one of the most popular options, whether in a nearby city or across the province. However, each van can take a small number of people, and the fact that each van also needs to be full before exiting the station makes the current queueing system inefficient. This problem affects users' time management and can lead to significant delays and frustration.

2.3 Payment

Payment is one of the important systems for both the user and the driver. However, the current system often creates confusion for both drivers and users. Some van stations collect money during the route and often the driver does not receive the correct amount of money or the user may not have cash. Some other stations collect before the van leaves the station. This can still be inefficient and may confuse, especially for tourists who are unfamiliar with the process.

2.4 Bad driving behavior

Some of the driver's driving behavior may differ from normal driving styles which users may not like. For example, Some drivers may speed up or swerve without warning, compromising road safety. Additionally, the lack of a standardized system for reporting driving behavior makes it difficult to monitor and address these issues. This can lead to accidents, passenger dissatisfaction, and discredited van transportation.

2.5 Van route

Van route is important for users since they need to find their drop point along the way and notify the driver. This can be challenging for users who are unfamiliar with the route, such as tourists or first-time passengers.

3 Objective

3.1 Facilitate Seat Availability Assistance

 Provide real-time updates on seat availability for users, enabling efficient journey planning and advance reservations.

3.2 Improve Refund and Cancellation Processes

 Streamline refund and cancellation requests with automated processes, offering clear policies and timely responses to enhance customer satisfaction.

3.3 Implement Real-Time Public Transport Tracking

 Offer real-time tracking of public vans for users, including current locations and estimated arrival times for effective trip planning.

3.4 Implement a User-Friendly Feedback Form

 Provide a user-friendly forum where passengers can voice their opinions and recommendations to support ongoing service enhancements.

4 Stakeholders and benefits

User(Customer)

- Plan: Users who travel by public van transportation will be able to manage their time and their plans better.
- **Convenience:** Users can pay and reserve a seat in advance through the application.
- Reduced waiting time: With reservations through application time, users don't have to wait in line at the station.
- Safety: Users will be able to report problems through the application.

User(Driver)

- Convenience: Drivers can easily manage their passengers and assign trips through applications.
- **Increased income:** With the new system's reliability and convenience, it is likely to attract customers, which will lead to the driver's income increasing.
- Payment: With payments integrated into the application, drivers don't need to handle cash, reducing the risk of errors and enhancing safety.
- Scheduling: In case of delays during a route, drivers can update their schedules using the application, helping to keep passengers informed and manage their expectations.

Owners

 Profit: Owners can benefit from higher ridership and more efficient operations, leading to increased revenue and profitability.

Government Agencies

- Promote technological innovation: Governments can improve their system and make it more convenient for the users.
- Reduce costs for managing problems: Improved reporting and management tools can lead to a decrease in operational issues, saving costs associated with handling these problems.
- Improving van management infrastructure: The new system can help enhance the overall infrastructure for managing public vans, making the system more efficient and user-friendly.

Local Communities

- Reduce passenger congestion in area: Improved scheduling and efficient management can reduce congestion at van stations and on local roads, benefiting the community.
- Stimulate the Economy: More efficient and reliable transportation options can encourage economic activity by making it easier for people to access businesses and services.
- Reduce Management Problems in Locality: Streamlined operations and enhanced communication can lead to fewer transportation-related issues for local authorities.

Financial Institutions

• **Sustain :** Financial institutions can provide support for the new system's growth, benefiting from sustained investment and potential expansion opportunities.

5 User Stories

Group No. / Section Group No. 9 / Section 1					
Project Name:	VIABUS reservation publi	c van seat applica	tion		
Recorded by:	Pattarit S. Pawarit K.				
User Story ID	As (role of user)	Name of User	l want	for	Priority 1:low - 5: high
USR001	Customer	John	to check available van	for more convenient by using phone checking for trips	5
USR002	Customer	Ann	to check the location of the van real-time tracking	for prepare to board the van and updating the trips in the application	4
USR003	Customer	Tom	to reserve the seat in advance	for more convenient reservation by using phone and make online payment	4
USR004	Customer	Jimmy	to have information while traveling	for information of the current location and estimated time arrival	5
USR005	Customer	Jack	to comment the driver	for sharing the feedback for improvement in the future	5
USR006	Driver	plub	to check the number of passenger	for confirmation of the total passenger	4
USR007	Driver	Squid	to report for delay arrival	for passenger to know the new arrival time	4
USR008	Driver	Sam	to schedule the time for the van's trip	for passenger to know about the new trip timetable	4
USR009	Driver	Man	to check for feedback	for track the driver feedback from passenger	3
USR010	HR	focus 45	the reservation van system to include features	for tracking and managing driver certifications, licenses, and compliance with safety regulations.	4
USR011	PR	bybuazazazx123	the reservation van system to have a communication module	sending out announcements, promotions, and updates to users.	3
USR012	Maintenance Supervisor	ohm 58	the reservation van system to include a maintenance scheduling feature	for expressing the need for a maintenance scheduling feature in the reservation van system	3
USR013	Marketing Specialist	na	reservation van system to provide customer data analytics to tailor marketing campaigns	for enhancing targeted marketing strategies and improving overall campaign effectiveness.	3
USR014	operator	Michael	to confirm driver new schedule	for updating the time and location of the trip on application	3
USR015	App developer	Alex	to update software application	for ensuring the latest features, bug fixes, and security patches are implemented in the reservation van system.	5
USR016	Training Coordinator	Vanessa	reservation van system to include comprehensive training materials and resources	for training driver, staff and employee	3
USR017	Local Communities	Lily	to have access to information on van schedules and routes	for better coordination and planning within the community	

6 Use case diagram and all Descriptions

VIAVAN	Real-Time Tracking
Use Case ID	UCC01
Objective	tracking the real-time location of the van in the map such as speed, ensure security, boost customer, and enhance fleet visibility
Primary Actor(s)	GPS System
Secondary Actor(s)	Passenger
Input Data	-
Output Data	Real-Time Location of the Van
Trigger	Passenger clicked to the map button
Pre - Condition	User should go to the map page in application
Post - Condition	The location of the van will pop up
Normal Flow Actor	In a van reservation app, the normal flow actor for real-time tracking involves users booking vans through the app, while the system continuously monitors van availability, updates reservations, and tracks van locations in real-time to ensure efficient scheduling and delivery.
Normal Flow System	In a van reservation app, the normal flow system for real-time tracking involves users requesting van reservations through the app, which triggers the system to allocate an available van, update the reservation status, and continuously track the van's location in real-time to provide accurate delivery estimates and ensure efficient scheduling.
Exception Flow Actor	In a van reservation app, the exception flow actor for real-time tracking could involve instances where the system encounters delays or disruptions in tracking van locations, prompting it to alert users and support staff, provide alternative solutions, or adjust reservations

	accordingly to mitigate any impact on delivery schedules.
Exception Flow System	In the exception flow system for real-time tracking in a van reservation app, if the tracking system encounters issues such as loss of GPS signal or communication failure, it triggers automated alerts to users and support staff, initiates fallback measures like manual confirmation of van locations, and adjusts reservation statuses accordingly to minimize disruption to delivery schedules.

VIAVAN	Receive Notification
Use Case ID	UCC02
Objective	To notify the notification to the passenger such as booking van, when van is arrived respectively
Primary Actor(s)	VIAVAN System
Secondary Actor(s)	Passenger
Input Data	Action in application
Output Data	Notification
Trigger	When a user requests to reserve a seat in the van.
Pre - Condition	Passenger do some action
Post - Condition	VIAVAN system will detect it and send notification to passenger
Normal Flow Actor	In the normal flow actor for receiving notifications in a van reservation app, users book vans through the app, triggering the system to send confirmation notifications, updates on reservation status, and real-time tracking information to users via their preferred communication channels.
Normal Flow System	In the normal flow system for receiving notifications in a van reservation app, when users book vans, the system sends confirmation notifications along with real-time tracking updates to users through their chosen communication channels, ensuring they stay informed about their reservation status and van location.
Exception Flow Actor	In the exception flow actor for receiving notifications in a van reservation app, if the system encounters issues such as delivery delays or van availability changes, it triggers automated alerts to users, notifying them of the situation and providing alternative options or resolutions to minimize inconvenience.

Exception Flow System	In the exception flow system for receiving notifications in a van reservation app, if the system detects delivery delays, changes in van availability, or communication failures, it automatically triggers alerts to users, informing them of the issue and providing alternative solutions or updates to mitigate any impact on their reservation or delivery schedules.
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VIAVAN	Favorite Route
Use Case ID	UCC03
Objective	To save or record the favorite location of the van, so I will easy to booking again
Primary Actor(s)	VIAVAN System
Secondary Actor(s)	Passenger
Input Data	The location or address
Output Data	The favorite location
Trigger	Passenger clicked favourite button
Pre - Condition	Passengers do some action
Post - Condition	VIAVAN system will detect it and send a notification to passenger
Normal Flow Actor	In the normal flow actor for "Favorite Route" in a van reservation app, users select preferred routes for their bookings, prompting the system to store and prioritize these routes for future reservations, ensuring efficient and personalized booking experiences.
Normal Flow System	In the normal flow system for "Favorite Route" in a van reservation app, users designate preferred routes for their bookings, which the system stores and prioritizes. When users make future reservations, the system suggests or automatically selects these favorite routes, streamlining the booking process and enhancing user convenience.
Exception Flow Actor	In the exception flow actor for "Favorite Route" in a van reservation app, if users encounter issues while selecting or accessing their favorite routes (such as technical glitches or data inconsistencies), the system generates alerts to notify users of the problem and provides guidance on alternative methods for route selection to ensure smooth booking experiences.
Exception Flow System	In the exception flow system for "Favorite Route" in a van reservation app, if the system encounters

errors or inconsistencies while accessing or storing users' favorite routes (such as data corruption or technical issues), it triggers automated alerts to notify support staff.

Additionally, the system initiates error handling procedures, such as temporarily disabling the favorite route feature, while technicians resolve the issue to ensure uninterrupted service for users.

VIAVAN	View Van Schedule
Use Case ID	UCC04
Objective	To tracking the real-time location of the van in the map
Primary Actor(s)	VIAVAN System
Secondary Actor(s)	Passenger
Input Data	The schedule van
Output Data	date and time of the van
Trigger	Input the date and time
Pre - Condition	Already know the date and time
Post - Condition	Put the data and time to the application
Normal Flow Actor	In the normal flow actor for "View Van Schedule" in a van reservation app, users access the app and navigate to the schedule section, where they can view the availability and booking status of vans for specific dates and times.
Normal Flow System	In the normal flow system for "View Van Schedule" in a van reservation app, users access the schedule feature within the app, where the system retrieves and displays the real-time availability and booking status of vans for specified dates and times. This information is presented to users in an organized format, allowing them to easily browse and select available vans for reservation.
Exception Flow Actor	In the exception flow actor for "View Van Schedule" in a van reservation app, if users encounter issues accessing the schedule (such as server downtime or connectivity issues), the system generates alerts to notify users of the problem and provides guidance on alternative methods for accessing schedule information, ensuring minimal disruption to their booking experience.

Sched experi down attem autom Additi procee versio mainte	e exception flow system for "View Van dule" in a van reservation app, if the system riences technical issues such as server atime or data retrieval errors while users app to access the van schedule, it triggers mated alerts to notify support staff. It ionally, the system initiates error handling edures, such as redirecting users to a cached on of the schedule or displaying a tenance message, until the issue is resolved sure a seamless user experience.
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VIAVAN	Booking - Van
Use Case ID	UCC05
Objective	To booking the van schedule
Primary Actor(s)	VIAVAN System
Secondary Actor(s)	View Van schedule
Input Data	the date, time, and location where are in the van schedule
Output Data	Booking the Van
Trigger	Booking Van
Pre - Condition	User already know the time and date
Post - Condition	Booking Van Complete
Normal Flow Actor	In the normal flow actor for "Booking - Van" in a van reservation app, users select their desired date, and time, input any additional requirements, and proceed to confirm the booking.
Normal Flow System	In the normal flow system for "Booking - Van" in a van reservation app, when users initiate a booking request, the system checks the availability of vans based on the specified date, time, and type. If a van is available, the system confirms the booking, reserves the van for the user, and sends a confirmation message. If no van is available, the system notifies the user and suggests alternative options or prompts them to choose a different time or date.
Exception Flow Actor	In the exception flow actor for "Booking - Van" in a van reservation app, if users encounter issues during the booking process (such as technical glitches or validation errors), the system generates alerts to notify users of the problem and provides guidance on resolving the issue.

	Additionally, it offers alternative booking methods or prompts users to contact support for assistance to ensure a smooth booking experience.
Exception Flow System	In the exception flow system for "Booking - Van" in a van reservation app, if the system encounters errors during the booking process (such as database connection issues or validation failures), it triggers automated alerts to notify support staff. Additionally, the system initiates error handling procedures, such as temporarily disabling the booking feature, while technicians resolve the issue. Meanwhile, users are informed of the problem and provided with alternative booking methods or prompted to try again later to ensure minimal disruption to their booking experience.

VIAVAN	Payment Process
Use Case ID	UCC06
Objective	To pay the booking van
Primary Actor(s)	Payment Service System
Secondary Actor(s)	Passenger
Input Data	Payment ID
Output Data	Payment Complete
Trigger	Pay the bill
Pre - Condition	Pay the bill with your mobile banking
Post - Condition	Booking Van Complete
Normal Flow Actor	In the normal flow actor for "Payment Process" in a van reservation app, users proceed to the payment section after confirming their booking details, where they enter their payment information and complete the transaction securely.
Normal Flow System	In the normal flow system for "Payment Process" in a van reservation app, after users confirm their booking details, the system securely processes their payment information, charges the appropriate amount, and generates a confirmation receipt. If the payment is successful, the booking is finalized, and users receive confirmation of their reservation. If the payment fails, the system prompts users to retry or provides alternative payment options.
Exception Flow Actor	In the exception flow actor for "Payment Process" in a van reservation app, if users encounter issues during the payment process (such as payment gateway errors or declined transactions), the system generates alerts to notify users of the problem and provides guidance on resolving the issue. Additionally, it offers alternative payment methods or prompts users to contact support for assistance to ensure a successful transaction.

Exception Flow System

In the exception flow system for "Payment Process" in a van reservation app, if the system encounters errors during the payment process (such as payment gateway failures or transaction timeouts), it triggers automated alerts to notify support staff. Additionally, the system initiates error handling procedures, such as logging the error details and refunding any partial payments if applicable. Meanwhile, users are informed of the problem and provided with alternative payment methods or prompted to contact support for assistance to ensure a smooth

payment experience.

VIAVAN	Send Feedback
Use Case ID	UCC07
Objective	A feedback is a tool for collecting and managing users opinions, suggestions, and evaluations efficiently
Primary Actor(s)	Driver and Passenger
Secondary Actor(s)	Customer Service
Input Data	The complain
Output Data	Feedback
Trigger	Send it to the customer service
Pre - Condition	Pay the bill with your mobile banking
Post - Condition	Customer Service respond the feedback
Normal Flow Actor	In the normal flow actor for "Send Feedback" in a van reservation app, users access the feedback feature within the app, where they provide comments, suggestions, or ratings regarding their booking experience, van quality, or overall satisfaction with the service.
Normal Flow System	In the normal flow system for "Send Feedback" in a van reservation app, users submit their feedback through the app's designated interface. The system processes the feedback, stores it in a database, and may trigger notifications to relevant staff members for review. Additionally, the system may send confirmation messages to users acknowledging receipt of their feedback.
Exception Flow Actor	In the exception flow actor for "Send Feedback" in a van reservation app, if users encounter issues while submitting feedback (such as network connectivity problems or app crashes), the system generates alerts to notify users of the problem and provides guidance on alternative methods for submitting feedback, such as retrying later or using an alternative communication channel.
Exception Flow System	In the exception flow system for "Send Feedback" in a van reservation app, if the system encounters

errors while processing feedback submissions (such as database connection issues or server timeouts), it triggers automated alerts to notify support staff. Additionally, the system initiates error handling procedures, such as logging the feedback details and attempting to resubmit the feedback when the issue is resolved. Meanwhile, users are informed of the problem and provided with alternative methods for submitting feedback, such as contacting support directly via email or phone.

VIAVAN	Update Van Capabilities
Use Case ID	UCC08
Objective	To increase the amount of seat in the van
Primary Actor(s)	Driver
Secondary Actor(s)	Authenticate User
Input Data	The number of seat
Output Data	-
Trigger	-
Pre - Condition	Increase the number of seat
Post - Condition	-
Normal Flow Actor	In the normal flow actor for "Update Van Capabilities" in a van reservation app, administrators or managers access the app's backend interface, where they can modify the capabilities and specifications of vans in the fleet, such as size, capacity, amenities, or special features.
Normal Flow System	In the normal flow system for "Update Van Capabilities" in a van reservation app, administrators or managers access the app's backend interface, where they can modify the capabilities and specifications of vans in the fleet. The system processes the updates, stores them in a database, and ensures that the changes are reflected accurately in the app for users to view when making reservations.
Exception Flow Actor	In the exception flow actor for "Update Van Capabilities" in a van reservation app, if administrators or managers encounter issues while modifying van capabilities (such as database errors or interface glitches), the system generates alerts to notify them of the problem. It may also provide guidance on alternative methods for updating van capabilities or prompt them to contact support for assistance in resolving the issue.

Exception Flow System

In the exception flow system for "Update Van Capabilities" in a van reservation app, if the system encounters errors while processing updates to van capabilities (such as database connection issues or software bugs), it triggers automated alerts to notify support staff.

Additionally, the system initiates error handling procedures, such as logging the details of the failed update attempt and attempting to resolve the issue. Meanwhile, administrators or managers are informed of the problem and provided with alternative methods for updating van capabilities,

such as using a different interface or contacting

support for assistance.

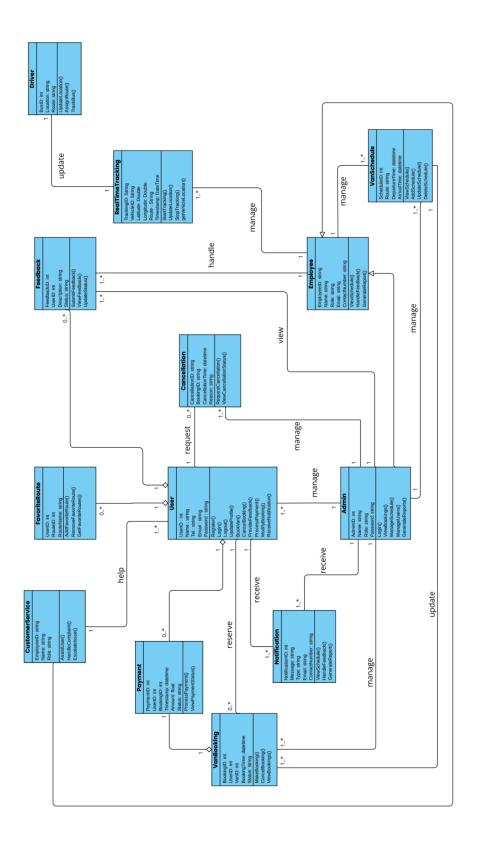
VIAVAN	Handle Incident
Use Case ID	UCC09
Objective	handling an incident involves promptly identifying, containing, and resolving any unexpected issues
Primary Actor(s)	Customer Service
Secondary Actor(s)	-
Input Data	Any unexpected issues
Output Data	The fixed issues
Trigger	-
Pre - Condition	-
Post - Condition	-
Normal Flow Actor	In the normal flow actor for "Handle Incident" in a van reservation app, administrators or support staff monitor the app for any incidents, such as booking errors, system glitches, or customer complaints, and take appropriate actions to resolve them efficiently.
Normal Flow System	In the normal flow system for "Handle Incident" in a van reservation app, the system continuously monitors various aspects of the application, such as booking processes, system performance, and user feedback. When an incident is detected, the system categorizes and prioritizes it based on severity. It then assigns the incident to relevant personnel for resolution, tracks progress, and updates stakeholders as necessary until the issue is resolved and normal operations are restored.
Exception Flow Actor	In the exception flow actor for "Handle Incident" in a van reservation app, if administrators or support staff encounter issues while managing incidents (such as communication breakdowns, lack of resources, or unexpected complications), the system generates alerts to notify them of the problem. It may also provide guidance on alternative methods for resolving the incident or

	prompt them to escalate the issue to higher-level personnel for assistance.
Exception Flow System	In the exception flow system for "Handle Incident" in a van reservation app, if the system encounters errors while managing incidents (such as database failures, system crashes, or communication breakdowns), it triggers automated alerts to notify support staff. Additionally, the system initiates error handling procedures, such as logging incident details and attempting to restore functionality through backup systems or alternative processes. Meanwhile, administrators or support staff are informed of the problem and provided with guidance on resolving the incident, including escalation procedures if necessary.

VIAVAN	Authenticate User
Use Case ID	UCC10
Objective	The objective of this use case is to authenticate a user before allowing access to the van seat reservation system, ensuring that only authorized users can make reservations.
Primary Actor(s)	Passenger
Secondary Actor(s)	-
Input Data	Username and Password
Output Data	Authentication Status (success/failure)
Trigger	The User attempts to access the van seat reservation system.
Pre - Condition	The User is registered in the van seat reservation system.
Post - Condition	The User is either successfully authenticated and granted access to the reservation system or denied access due to authentication failure.
Normal Flow Actor	In the normal flow actor for "Authenticate User" in a van reservation app, users input their credentials (such as username and password) into the app's login interface. The system verifies the credentials against stored user data and grants access to authenticated users, allowing them to proceed with their van reservation activities.
Normal Flow System	In the normal flow system for "Authenticate User" in a van reservation app, when users attempt to log in, the system verifies their credentials by comparing them to stored user data in the app's database. If the credentials are valid, the system grants access and provides users with the appropriate permissions to perform actions within the app, such as making reservations or viewing their booking history. If the credentials are invalid, the system denies access and prompts users to try again or reset their password if needed.

Exception Flow Actor	In the exception flow actor for "Authenticate User" in a van reservation app, if users encounter issues while attempting to authenticate (such as entering incorrect credentials, experiencing network connectivity problems, or encountering system errors), the system generates alerts to notify users of the problem. It may also provide guidance on troubleshooting steps, such as resetting passwords or checking network connections, to help users resolve the issue and successfully authenticate.
Exception Flow System	In the exception flow system for "Authenticate User" in a van reservation app, if the system encounters errors while attempting to authenticate users (such as database connection issues, authentication service downtime, or software bugs), it triggers automated alerts to notify support staff. Additionally, the system initiates error handling procedures, such as providing informative error messages to users and prompting them to retry authentication or seek assistance from support. Meanwhile, administrators or support staff are notified of the problem and work to resolve the underlying issue to restore normal authentication functionality.

7 Class diagram



8 Sequence diagram

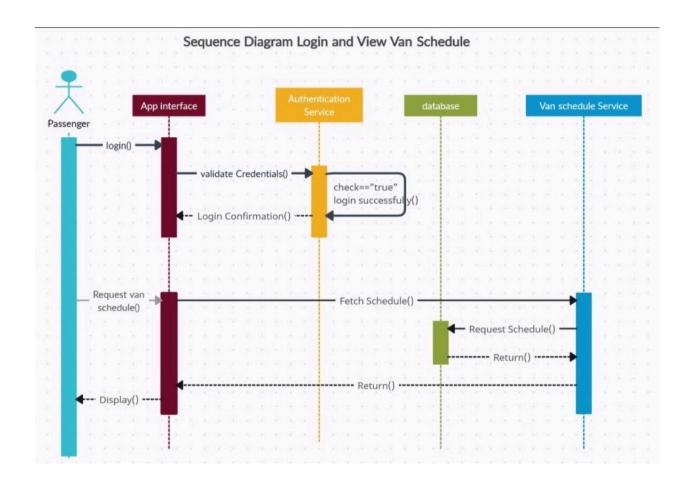


Figure 8-1: Login and view van schedule

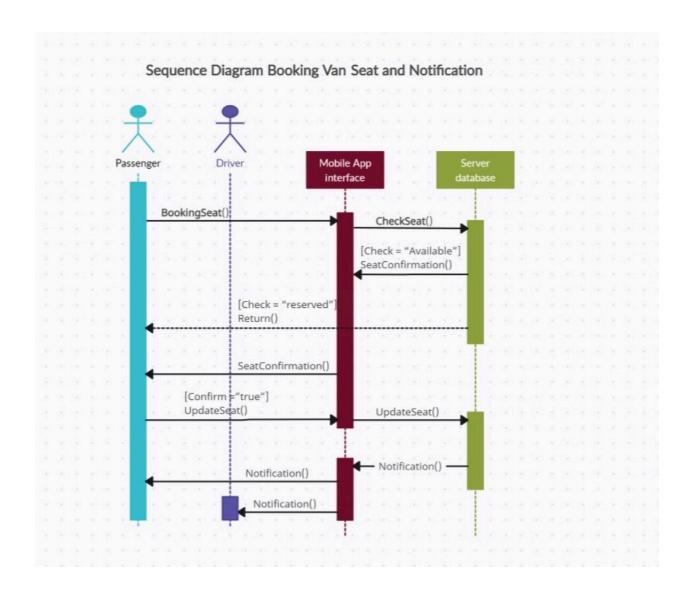


Figure 8-2: Booking van seat and notification

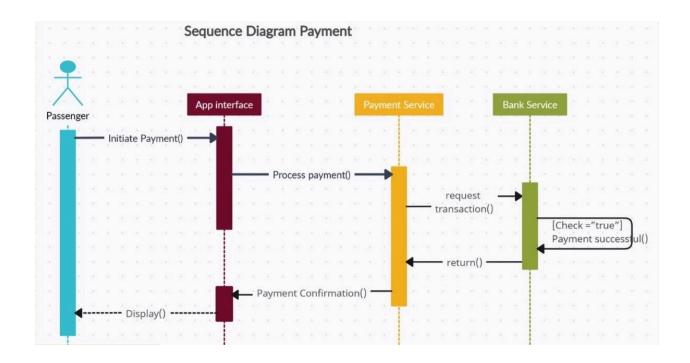


Figure 8-3 : Payment

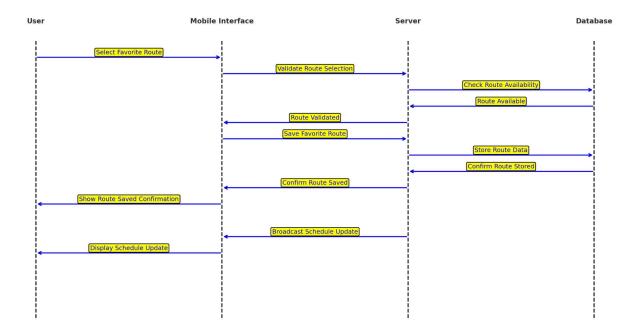


Figure 8-4 : Save favorite route

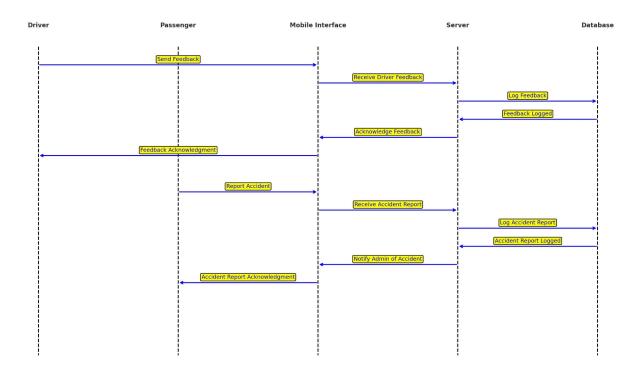


Figure 8-5 : Feedback

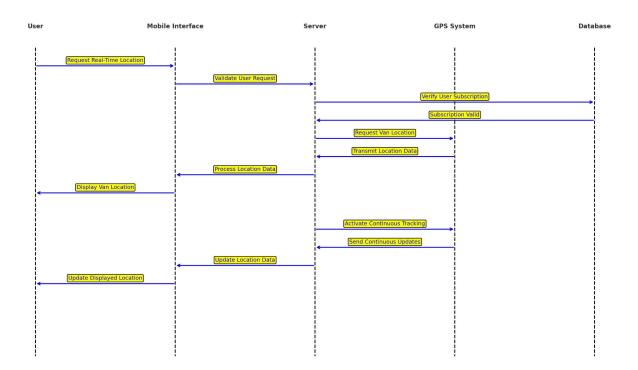
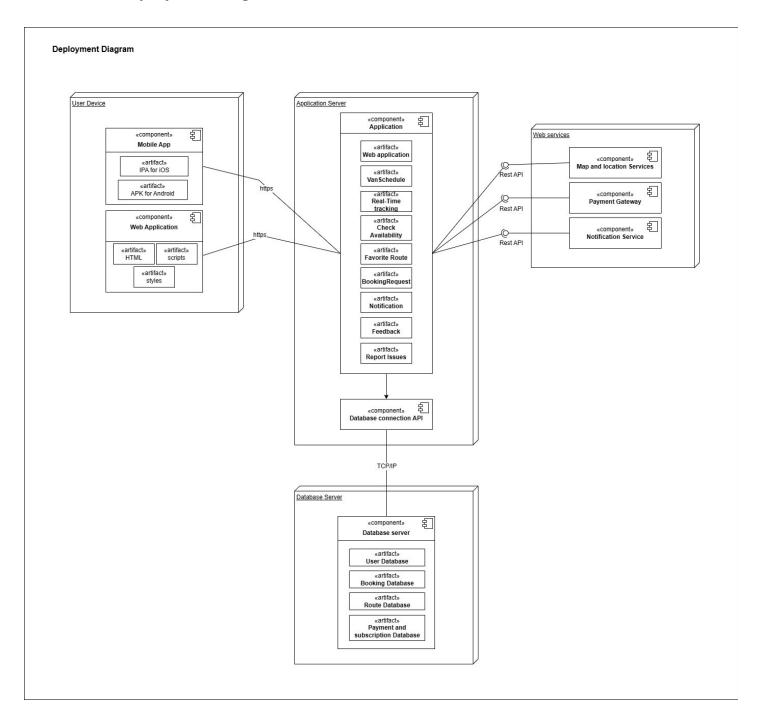
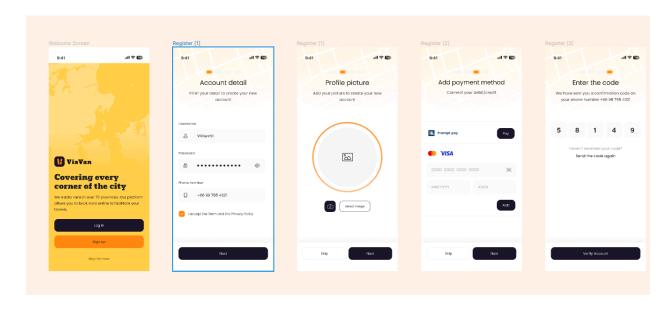


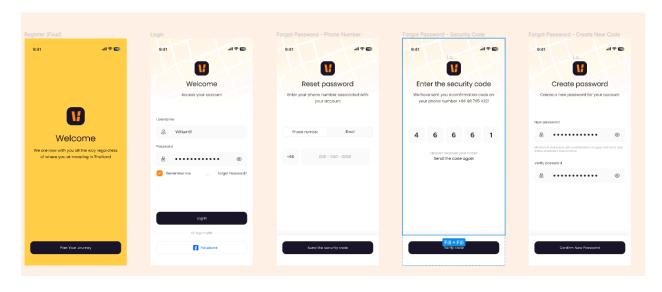
Figure 8-6 : Real-time tracking of the van

9 Deployment diagram

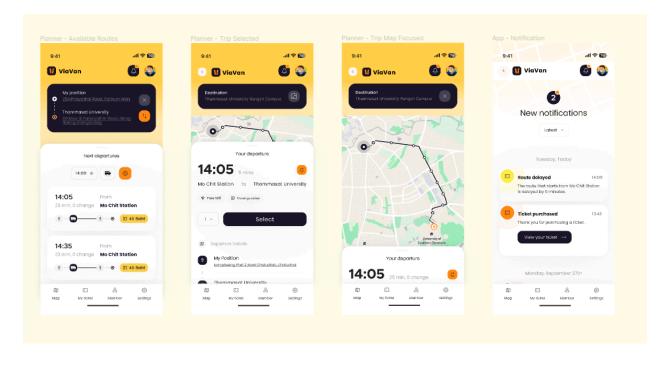


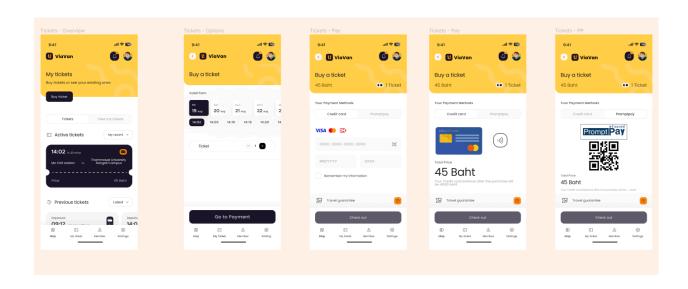
10 Mock-up

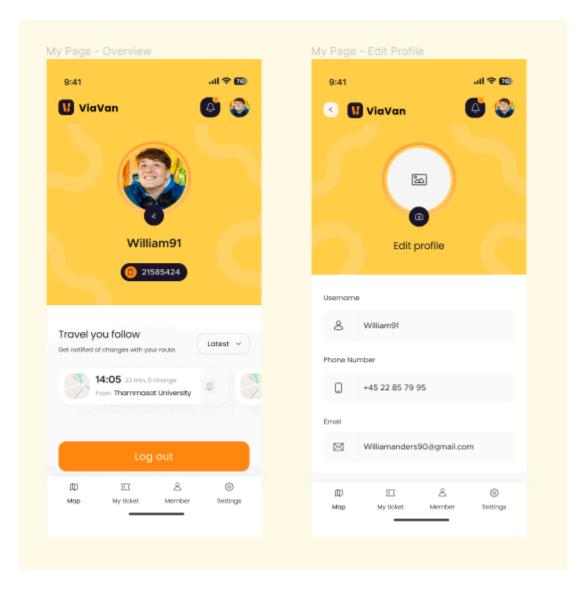


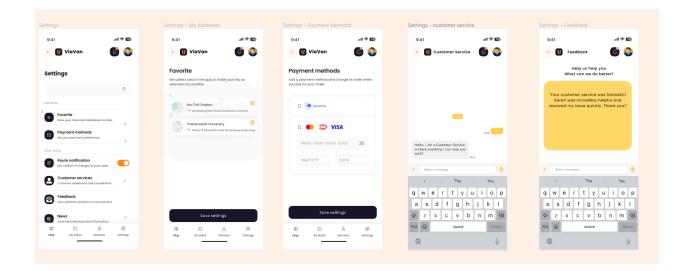












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