HAMMELWMSHI

DECEMBER 7, 2023

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Chapter 1 (proposal/request):

Part 1 (Problem Statement):

1. Problem Identification:

The specific problem in the HammelWmshi project is the inefficiency and dissatisfaction with the existing system for handling transportation service requests. The current system, built in MS Access, suffers from slow processing, calculation errors, and high additional charges.

2. Stakeholder Analysis:

- Registered businesses who require transportation services
  - Interests: Timely, accurate, and cost-effective.
  - Concerns: Slow processing in service requests, billing calculation errors, and high transportation charges.

- HammelWmshi Employees
  - Interests: Job security, efficient and effective work processes, and a system that supports their daily tasks.
  - Concerns: Adaptation to the new system, potential changes in job roles, and job satisfaction.

- Investors:
  - Interests: Investors want a good return on their investment in HammelWmshi, with confidence in the company's financial stability and growth.
  - Concerns: Investors are concerned about the new system's impact on profitability, potential risks during implementation, and how company resources are allocated. They also want clear and regular communication on progress.

3- Impact Analysis:

- Dissatisfaction among clients leading to potential loss of business.
- Increased operational costs due to manual calculations and additional charges.
- Reduced efficiency in request processing affecting officers' productivity.
- Potential errors in calculating transportation charges leading to financial losses.
- Reduced driver efficiency due to inefficient route planning.
- Overall negative impact on the organization's reputation and competitiveness in the market.

Part 2 (Proposal):

1. Introduction:

In this project, we will tackle the critical tasks of streamlining processes, improving accuracy, and enhancing customer satisfaction within HammelWmshi's local transportation services. This initiative is of paramount significance as it addresses longstanding inefficiencies, billing errors, and client dissatisfaction, positioning HammelWmshi for increased competitiveness and long-term success in the transportation industry.

2. Problem Statement:

The current system's slow request processing results in frustrating delays for clients, tarnishing the company's reputation. Billing errors not only lead to financial discrepancies but also erode trust. Client dissatisfaction, fueled by these issues, not only affects the company's customer relations but also hampers its ability to compete effectively in the market. Addressing these critical problems is imperative to boost operational efficiency, rebuild client trust, and ensure the company's long-term viability and success in the local transportation industry.

3. Project Objectives:

- Streamline request processing for local transportation services (to reduce delay and ensure a smoother experience for clients).
- Enhance billing accuracy and transparency (to eliminate errors and build trust with clients).
- Improve overall customer satisfaction and loyalty (to enhance the overall customer experience).

4. Scope:

- Inclusions:
  - Implementation of a modern software system (The development and deployment of a new software system to replace the existing one.)
  - Streamlined service request processing (Optimizing the handling of service requests for improved efficiency.)
  - Accurate billing calculations (Automating billing processes to ensure precision and transparency.)
  - Enhanced customer satisfaction (Improving overall client experience and satisfaction.)
  - Online client registration (Allowing clients to register through an online platform for convenience.)

- Exclusions:
  - No changes to the business model (Maintaining the existing business model without significant alterations.)
  - No third-party system integration (Not incorporating external systems into the project.)
  - Limited employee training (Minimizing training requirements for employees.)

- Constraints/Limitations:
  - Budget constraints (Working within predefined financial limitations.)
  - Reliance on existing infrastructure (Leveraging the current infrastructure without major upgrades.)
  - Potential resistance to change (Acknowledging potential challenges in adopting the new system due to resistance from stakeholders.)

5. Methodology:

- Agile Development: An industry-standard approach favored by professionals for its flexibility and collaboration.

- Technologies, Tools, and Frameworks:
  - Programming Language: Java, a widely adopted choice among professionals.
  - Front-End: Angular, a trusted framework for responsive and dynamic web applications, aligning with the project's chosen technology stack.
  - Database: PostgreSQL, known for its reliability and performance, widely used in professional settings.
  - Development Environment: Visual Studio Code for its popularity and Git for professional version control.
  - Testing: JUnit for robust unit testing and Cypress for end-to-end testing, both trusted tools among professionals.
  - Deployment: Docker containers for scalability and AWS, a trusted professional-grade cloud hosting platform.

Part 3 (System Request):

1. Executive Summary:

Our project modernizes HammelWmshi's transportation services, optimizing processes for efficiency and accuracy. This enhances customer satisfaction and competitiveness in the industry.

2. Business Case:

This project offers a strategic investment opportunity for HammelWmshi. By improving customer satisfaction, reducing operational costs, and enhancing competitiveness, it aims to deliver a significant return on investment (ROI) while ensuring long-term success in the local transportation services sector.

3. Project Scope:

- Inclusions:
  - Implementation of a Modern Software System: This project will encompass the development and deployment of a cutting-edge software system. The new system will

replace the existing one, providing improved capabilities and addressing the identified issues effectively.

- Streamlined Service Request Processing: Clients will have access to an intuitive online platform for submitting service requests. This feature will significantly reduce the processing time for requests, enhancing overall operational efficiency.
- Accurate Billing Calculations: The proposed system will automate billing processes, ensuring precision and transparency in calculations. This automation will eliminate errors, providing clients with clear and reliable billing information.
- Enhanced Customer Satisfaction: Client satisfaction is a central focus of this project. Online client registration will simplify interactions, while real-time updates and notifications will offer clients greater transparency and improved experiences throughout their engagements with HammelWmshi.

- Exclusions:
  - No Changes to the Business Model: The project scope does not entail alterations to HammelWmshi's existing business model. The core business principles and strategies will remain unchanged.
  - No Third-Party System Integration: The project will not involve integrating external systems. It will primarily focus on the development and implementation of the internal software system.
  - Limited Employee Training: The project aims to minimize the need for extensive employee training, ensuring a smooth transition to the new system with minimal disruptions.

- Constraints/Limitations:
  - Budget Constraints: The project will operate within predefined financial limitations to ensure cost-effectiveness and prudent resource allocation.
  - Reliance on Existing Infrastructure: Leveraging the current infrastructure without major upgrades or overhauls is a key constraint. This approach ensures continuity while implementing the new system.
  - Potential Resistance to Change: Acknowledging potential challenges arising from resistance among stakeholders is crucial. Addressing these challenges is essential to the successful adoption of the new system and its alignment with the company's objectives.

4. System Requirements:

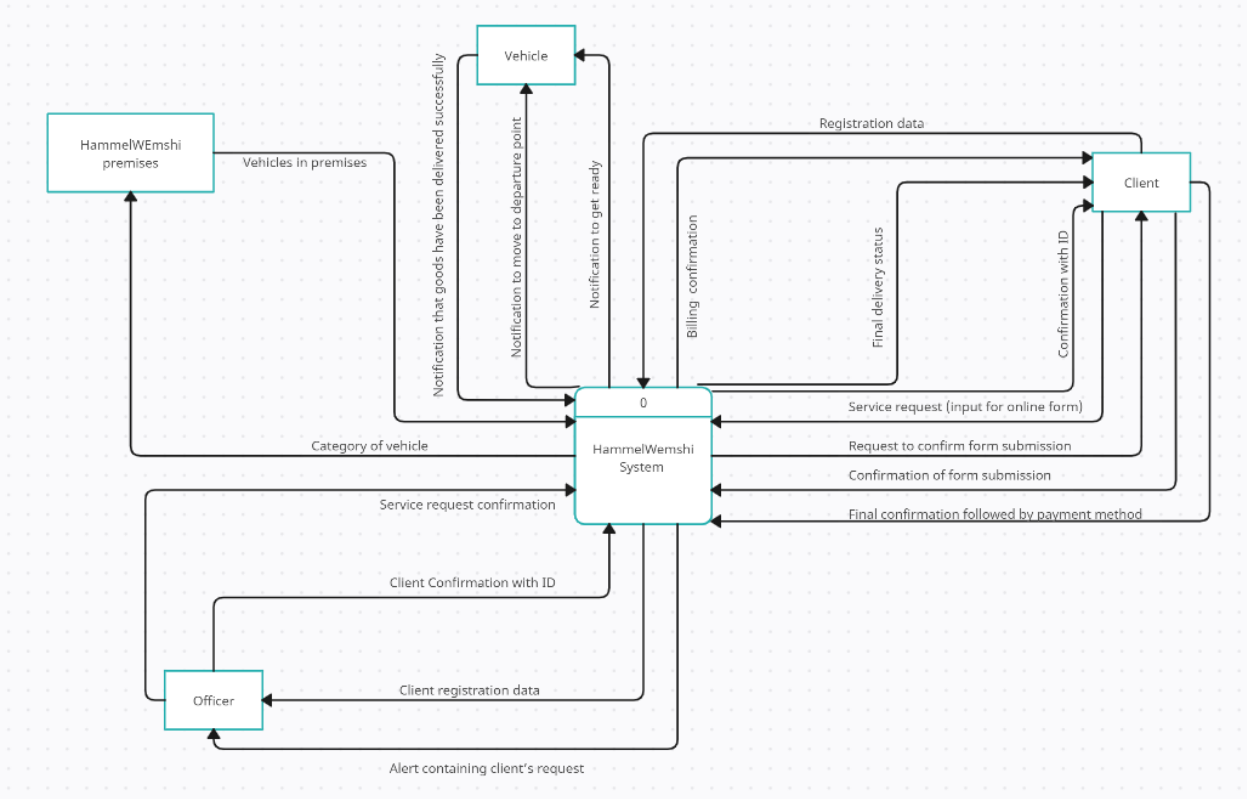
- Functional Requirements:
  - User Registration and Authentication: Enhances security and client trust.
  - Service Request Management: Improves efficiency and customer satisfaction.
  - Distance Calculation: Prevents revenue loss with accurate billing.
  - Billing and Payment Processing: Streamlines financial processes, reducing errors.
  - Vehicle Tracking: Reduces response times and operational costs.
  - Notification System: Enhances transparency and communication.
  - Reporting: Provides insights for optimization and decision-making.

- Non-Functional Requirements:
  - Performance: Ensures timely responses, preventing delays.
  - Reliability: Builds trust and minimizes service disruptions.
  - Security: Protects data and enhances trust and compliance.
  - Scalability: Accommodates growth without performance issues.
  - Usability: Reduces training needs and enhances user satisfaction.
  - Compliance: Mitigates legal risks and upholds integrity.

Chapter 2 (DFD):

Part 1: Context Diagram

1. Overview:



2. Description:

The operational workflow involves various entities within the system. The client initiates the process by submitting comprehensive registration details through an online form. Subsequently, the system transmits this registration data to the designated officer for verification. Upon confirmation, the officer issues a unique identification (ID) which is then relayed back to the client by the system.

Following registration, the client submits service requests comprising departure, destination, and goods details to the system. The system, in turn, notifies the officer of the service request, triggering a confirmation process. Upon officer confirmation, the system prompts the client to verify the submitted service request.

Upon client confirmation, the system communicates the required vehicle category to HammelWEmshi premises. The premises then provides the system with a list of available vehicles, from which the system selects and notifies the chosen vehicle to prepare for the assignment.

Further in the process, the system sends billing confirmation to the client, who subsequently confirms and proceeds with the payment method. The system, in turn, alerts the chosen vehicle to commence

movement towards the departure point. Upon successful delivery of goods, the vehicle informs the system, which, in its final step, updates the client with the conclusive delivery status. This orchestrated flow ensures seamless and efficient logistics operation.

3. Purpose and interactions:

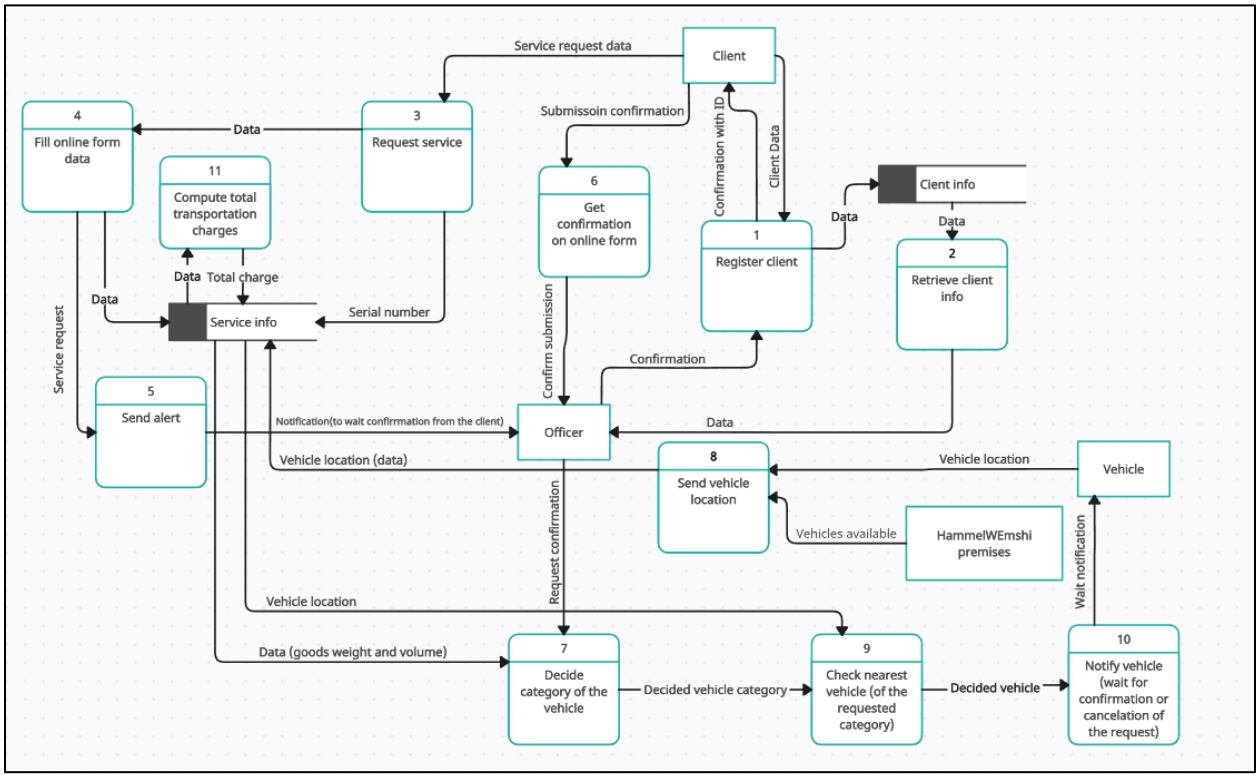
The purpose of the context diagram provided above is to offer a high-level visual representation of the interactions and relationships between external entities and a logistics and transportation system. It serves to define the scope of the system, outline the flow of information between entities and the system, and provide a broad overview of the key processes involved in the logistics operation. The context diagram helps stakeholders understand how the client interacts with the officer, how service requests are processed, how vehicle selection is coordinated with HammelWEmshi Premises, and how the system communicates billing and delivery status information to the client. Overall, the context diagram provides a concise and comprehensible snapshot of the system's operational workflow.

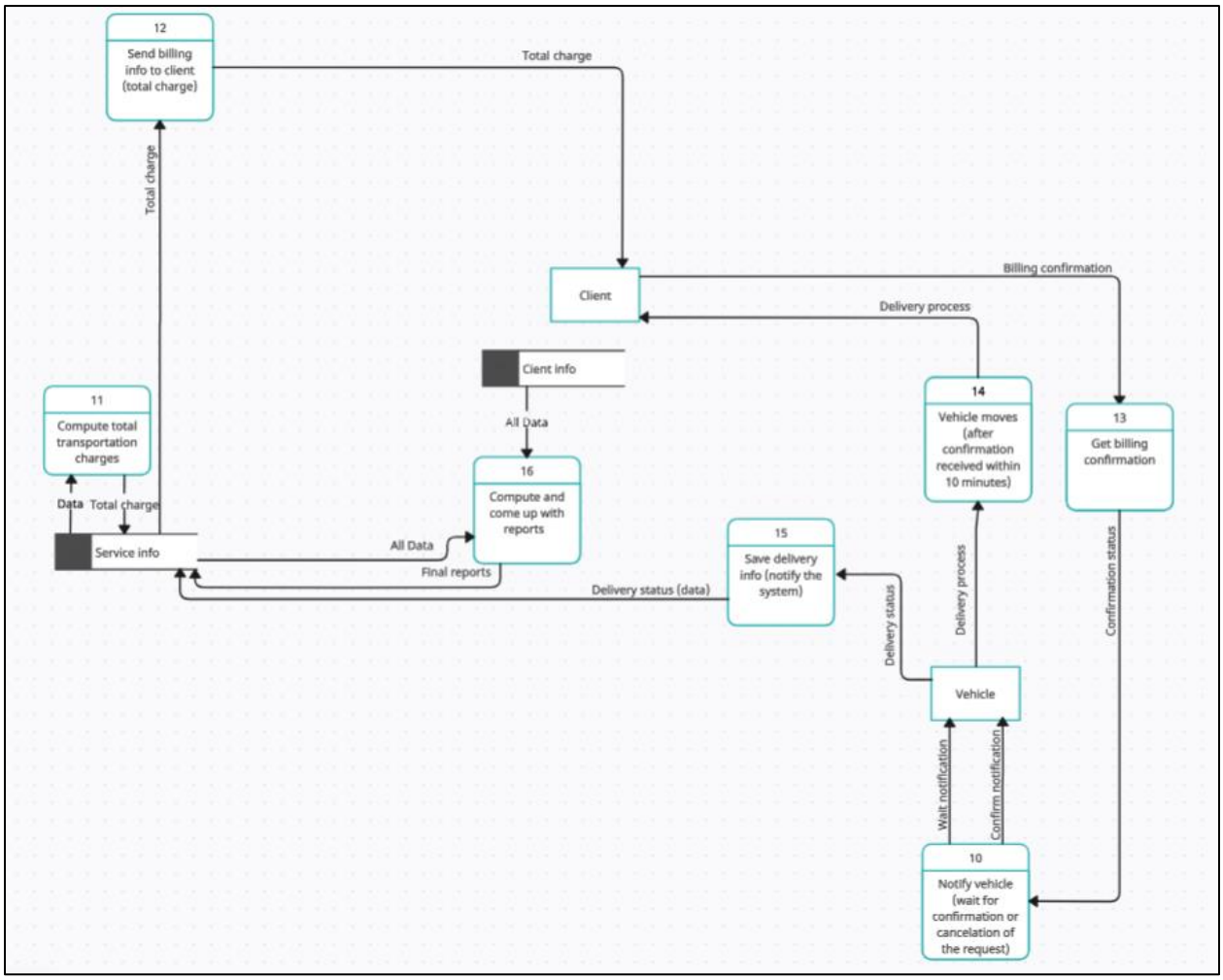
Interactions:

- Client Registration:
  - The client submits registration details.
  - System transmits data to the officer for verification.
- Officer Verification and ID Issuance:
  - Officer verifies registration and issues a unique ID.
  - Unique ID is relayed back to the client.
- Service Request Submission:
  - Client submits service requests with details.
  - System notifies the officer, triggering confirmation.
- Officer Confirmation of Service Request:
  - Officer confirms the service request.
  - Client verifies the submitted request.
- Client Verification of Service Request:
  - Client verifies the service request.
  - System communicates required vehicle category to HammelWEmshi Premises.
- Vehicle Category Notification to HammelWEmshi Premises:
  - System communicates the required vehicle category.
  - HammelWEmshi Premises provides a list of available vehicles.
- Vehicle Selection and Notification:
  - System selects and notifies the chosen vehicle.
- Billing Confirmation and Payment Process:
  - System sends billing confirmation.
  - Client confirms and proceeds with payment.
- Vehicle Commencement of Movement:
  - System alerts the chosen vehicle to commence movement.
- Delivery Status Update:
  - Vehicle informs the system upon successful delivery.
  - System updates the client with the conclusive delivery status.

Part 2 (Level 0 diagram):

1. Overview:





2. Description:

- **External Entities:**

1. Client: Initiates the system by registering into the website.

2. Officer: Receives and confirms client registration, provides confirmation to the client, and retrieves client information.

3. Vehicle: Provides location information and category confirmation.

4. HammelWemshi Premises: Supplies available vehicle information.

- **Processes:**

1. Register Client:

  - Input: Client data
  - Output: Confirmation ID
  - Description: Handles client registration and provides confirmation.

2. Retrieve Client Info:

  - Input: Client data from client database
  - Output: Client information
  - Description: Retrieves client information for officer reference.

3. Request Service:

  - Input: Service request data
  - Output: Serial number
  - Description: Initiates service request, associates a serial number, and passes data to the next process.

4. Fill Online Form Data:

  - Input: Service request data
  - Output: Service request data
  - Description: Collects and stores online form data in the Service Info data store.

5. Send Alert:

  - Input: Service request
  - Output: Notification to the officer
  - Description: Informs the officer about the client's request.

6. Get Confirmation on Online Form:

- Input: Confirmation form submission
- Output: Confirmation from the client
- Description: Verifies the client's confirmation and proceeds accordingly.

7. Decide Category of the Vehicle:

- Input: Goods weight and volume
- Output: Decided vehicle category
- Description: Determines the category of the vehicle based on the online form data.

8. Send Vehicle Location:

- Input: Nearest vehicle location or Available vehicle in premises
- Output: Vehicles' location (all vehicles available)
- Description: Saves the available vehicles' location in the Service Info data store.

9. Check Nearest Vehicle (of the requested category):

- Input: Decided vehicle category, Vehicles' locations
- Output: Chosen vehicle
- Description: Identifies the nearest vehicle of the requested category.

10. Notify Vehicle (Wait for confirmation or cancellation of the request):

- Input: Chosen vehicle, Confirmation status
- Output: Notification (wait), Confirmation notification
- Description: Informs the decided vehicle to get ready, then waits for billing confirmation from the client and passes the confirmation to the vehicle which shall proceed (once the vehicle is notified to wait for the billing confirmation, at the same time processes 11-13 happen)

11. Compute Total Transportation Charges:

- Input: Service info data
- Output: Total transportation charges
- Description: Calculates the total transportation charges based on service information data.

12. Send Billing Info to Client (Total charge):

- Input: Total charge
- Output: Total charge
- Description: Sends the billing information to the client.

13. Get Billing Confirmation:

- Input: Billing confirmation
- Output: Confirmation status
- Description: Waits for confirmation from the client before proceeding (within 10 minutes).

14. Vehicle Moves (After confirmation received within 10 minutes):

- Input: Delivery process
- Output: Delivery process
- Description: Initiates the movement of the vehicle after receiving confirmation.

15. Save Delivery Info (Notify the System):

- Input: Delivery status
- Output: Delivery status(data)
- Description: Updates the Service Info data store with delivery information.

16. Compute and Come Up with Reports:

- Input: Client info data, Service info data
- Output: Bills report between 2 dates, Vehicle report between 2 dates, Client report between 2 dates, Request report between 2 dates
- Description: Generates and stores various reports based on client and service information.

➢ **Data Stores:**

1. Client Info:

- Description: Stores information related to clients.

2. Service Info:

- Description: Stores service-related information, including online form data, serial numbers, vehicle locations, total charges, delivery status, and final reports.

3. Purpose and interactions:

Purpose:

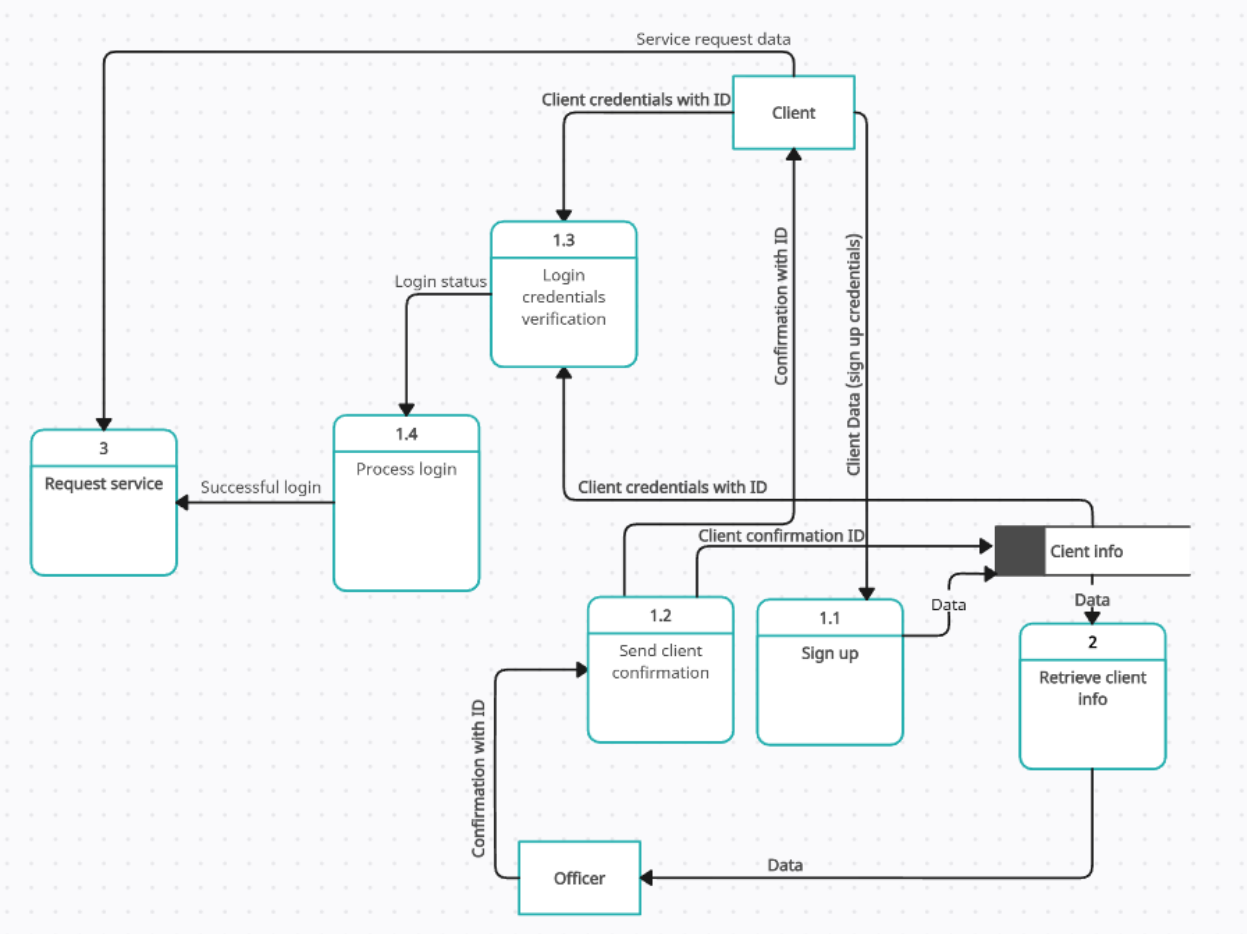
- Breaks down the high-level view into major processes, showcasing the flow of data between them and external entities.
- Provides a detailed representation of the primary functions within the system.

Interactions:

- Register Client: Initiates client registration and confirmation.
- Retrieve Client Info: Retrieves client information for officer reference.
- Request Service: Initiates a service request, assigns a serial number, and forwards data to subsequent processes.
- Fill Online Form Data: Gathers and stores online form data in the Service Info data store.
- Send Alert: Notifies the officer to wait for client confirmation.
- Get Confirmation on Online Form: Verifies client confirmation and progresses accordingly.
- Decide Category of the Vehicle: Determines the vehicle category based on online form data.
- Send Vehicle Location: Updates vehicle location in the Service Info data store.
- Decide Nearest Vehicle: Identifies the nearest vehicle of the requested category.
- Notify Vehicle: Informs the vehicle to wait for billing confirmation.
- Compute Total Transportation Charges: Calculates charges based on service information.
- Send Billing Info to Client: Sends billing information to the client.
- Get Billing Confirmation: Waits for confirmation from the client before proceeding.
- Vehicle Moves: Initiates vehicle movement after receiving confirmation.
- Save Delivery Info: Updates the Service Info data store with delivery information.
- Compute and Come Up with Reports: Generates various reports based on client and service information.

Part 2 (Level 1 diagram):

1. Overview:



2. Description:

1. Sign up (Process 1.1):

- Description: New clients initiate the registration process by providing required information.
- Input:
  - Sign up credentials (Name, contact person, phone, email, company license, address)
- Output:
  - Send data
- Mechanism:
  - Client data is sent to the "Client Info Database" for storage.

2. Retrieve client info (Process 2):

- Description: Fetches client information and sends them to the officer.
- Input:
  - Client data from the database
- Output:
  - Client data sent to officer
- Mechanism:
  - Officer receive client details and generates a unique ID.

3. Confirmation and ID Assignment (Process 1.2):

- Description: Send confirmation with a unique ID for login.
- Input:
  - Officer's confirmation with ID
- Output:
  - Confirmation with ID
- Mechanism:
  - Officer confirms client details and sends a unique ID.

4. Login credentials verification (Process 1.3):

- Description: Registered clients log in using credentials and assigned ID.
- Input:
  - Client ID
  - Login Credentials (Username/Password)
  - Stored client credentials with ID (After the client has created and account and received confirmation ID from officer)
- Output:
  - Login Status
- Mechanism:
  - Client provides ID and credentials for verification.

5. Login Credentials Verification (Process 1.4):

- Description: Validates client credentials for successful login.
- Input:
  - Client ID
  - Entered Credentials
- Output:
  - Login Status
- Mechanism:
  - Compares entered credentials with stored data in the "Client Info Database."

6. Client Request Services (Process 3):

- Description: Authenticated clients can request services after successful login.
- Input:
  - Verified client status
  - Service Request Details
- Output:
  - Service Request data
- Mechanism:
  - Authenticated clients submit service requests.

3. Purpose and instructions:

Purpose:

The Level 1 DFD illustrates the high-level flow of information within the client registration and login system. It serves to provide a clear overview of the processes and interactions involved in the client's journey from registration to accessing services. The diagram outlines the key steps, data stores, and interactions necessary for the successful onboarding and authentication of clients on the website.

Interactions:

1. Sign Up (Process 1.1):
   - Interaction: Initiates the registration process by collecting new client data.
   - Input:
     - Sign-up credentials (Name, contact person, phone, email, company license, address)
   - Output:
     - Send data
   - Mechanism:
     - Client data is sent to the "Client Info Database" for storage.

2. Retrieve Client Info (Process 2):
   - Interaction: Fetches client information from the database and sends it to the officer.
   - Input:
     - Client data from the database
   - Output:
     - Client data sent to the officer
   - Mechanism:
     - Officer receives client details and generates a unique ID.

3. Confirmation and ID Assignment (Process 1.2):
   - Interaction: Sends confirmation with a unique ID for login.
   - Input:
     - Officer’s confirmation with ID

- Output:
  - Confirmation with ID
- Mechanism:
  - Officer confirms client details and sends a unique ID.

4. Login Credentials Verification (Process 1.3):
   - Interaction: Validates client credentials for a successful login.
   - Input:
     - Client ID
     - Login Credentials (Username/Password)
     - Stored client credentials with ID (After the client has created an account and received a confirmation ID from the officer)
   - Output:
     - Login Status
   - Mechanism:
     - Client provides ID and credentials for verification.

5. Login Credentials Verification (Process 1.4):
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     - Service Request Details
   - Output:
     - Service Request data
   - Mechanism:
     - Authenticated clients submit service requests.

Chapter 3 (Use case):

Part 1 (Identification):

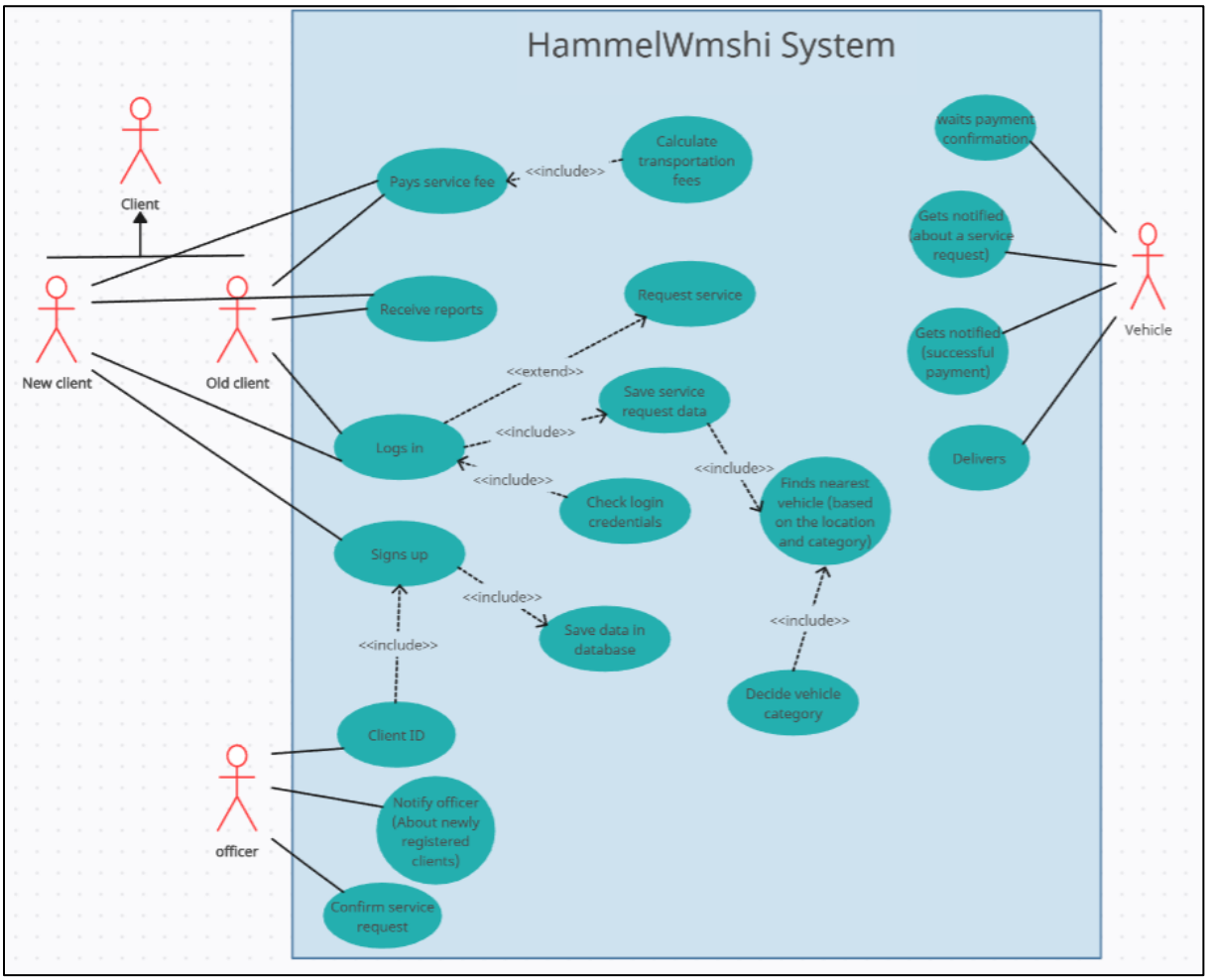
- Actors:
  - Client (new client-old client)
  - Officer
  - Vehicle

- use cases:
  - Signs up
  - Logs in
  - Request service
  - Check login credentials
  - Client id
  - Save data in database
  - Notify officer about newly registered clients
  - Confirm service request
  - Receive reports
  - Pays service fees
  - Calculate transportation fees
  - Save service request data
  - Finds nearest vehicle
  - Decides vehicle category
  - Delivers
  - Gets notified(about a service request)
  - Gets notified(successful payment)
  - Waits payment confirmation

- Use case relationships(include/extend):
  - Calculate transportation fees include:
    - Pays service fees
  - Client id includes:
    - Signs up
  - Signs up includes:
    - Save data in database

- Check login credentials include:
  - Logs in
- Decide vehicle category include:
  - Finds nearest vehicle
- Save service request data include:
  - Finds nearest vehicle
- Logs in include:
  - Save service request data
- Logs in extend:
  - Request service

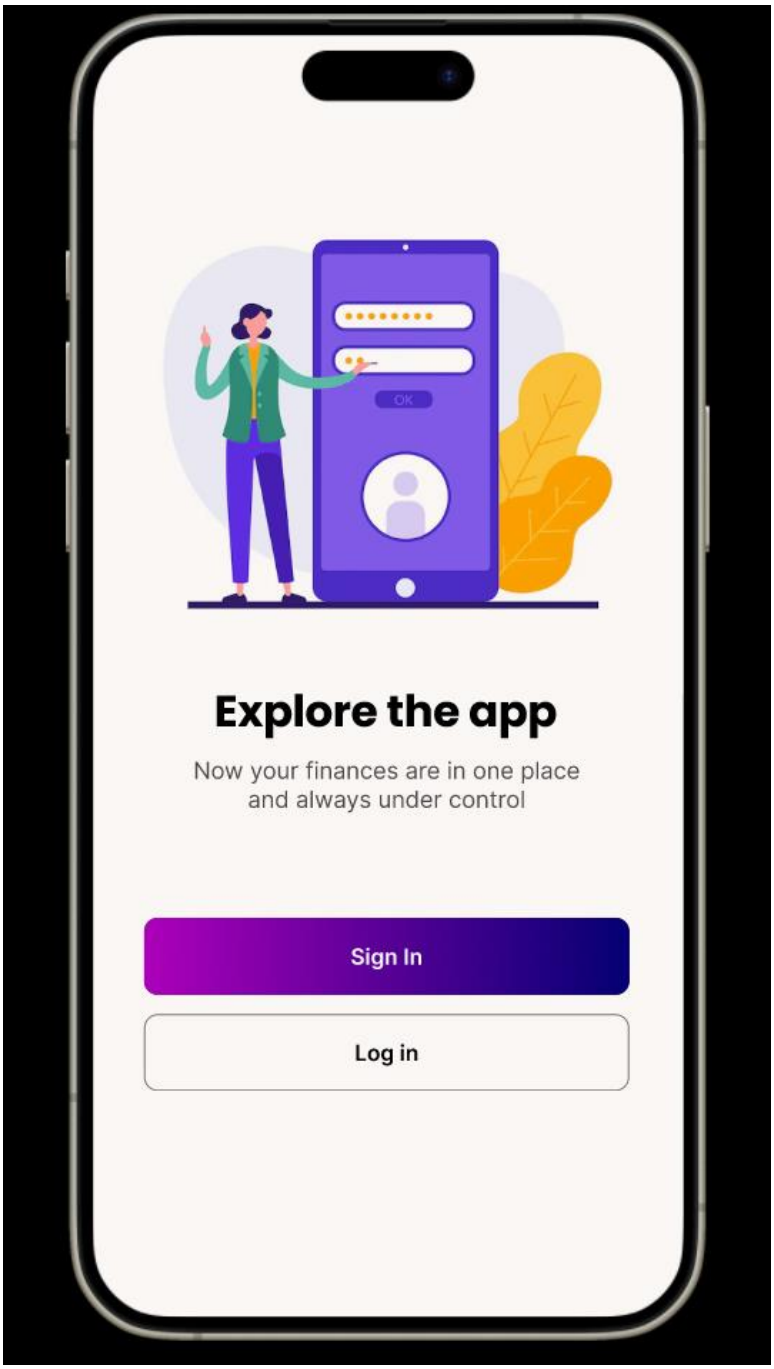
Part 2 (Overview):



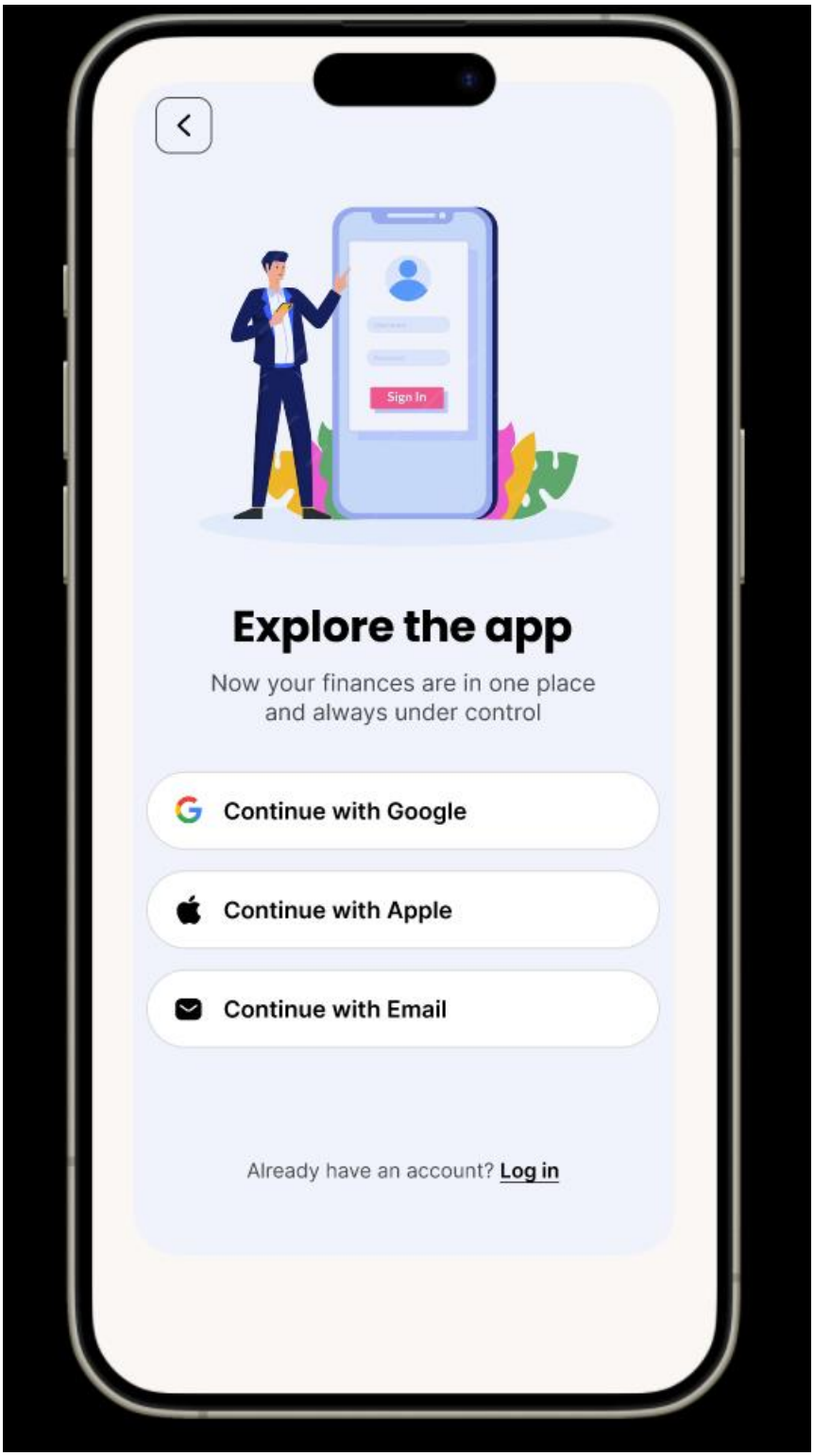
Chapter 4 (Prototype design):

Part 1 (Design overview):

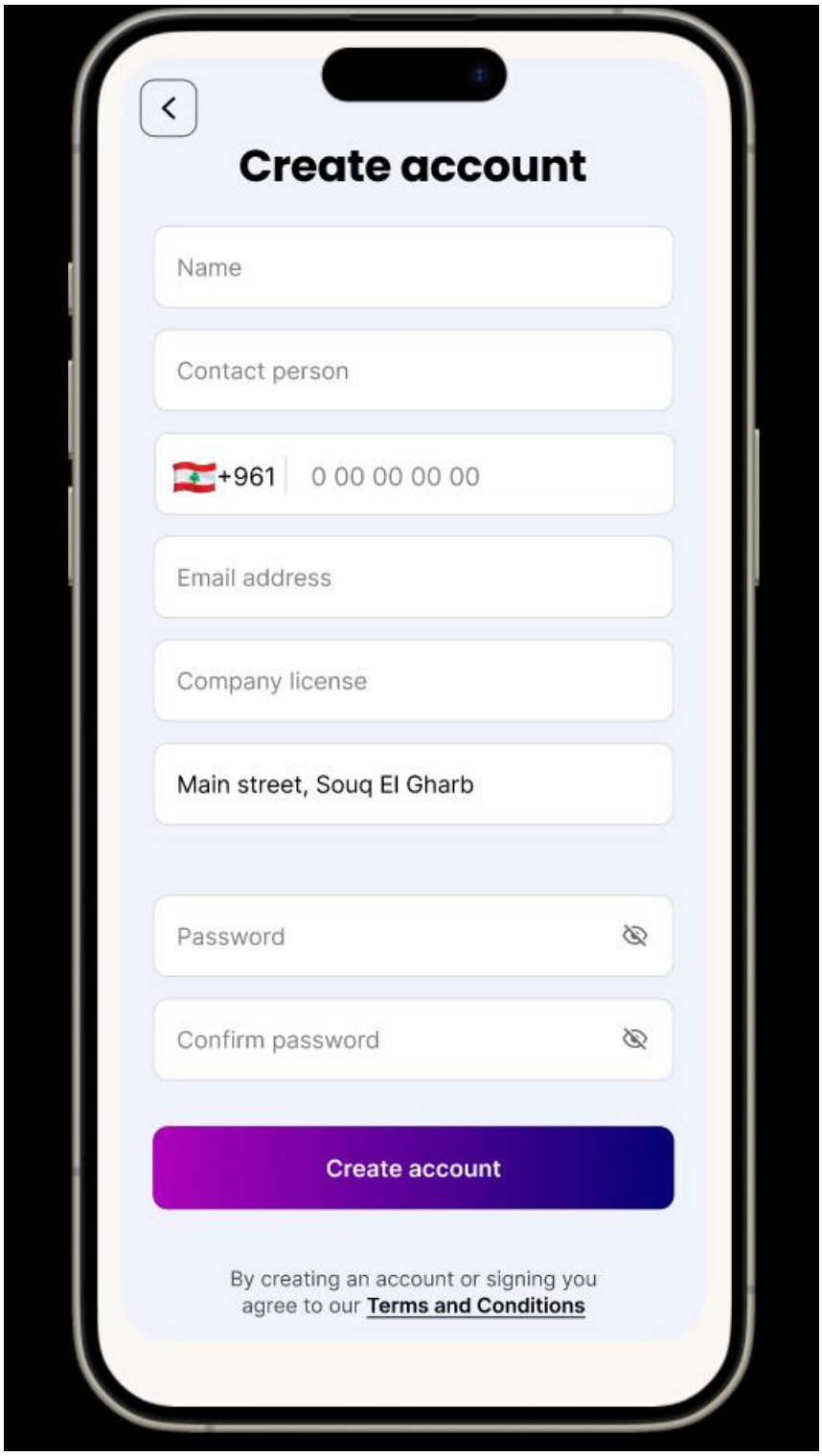
- **Opening screen:**



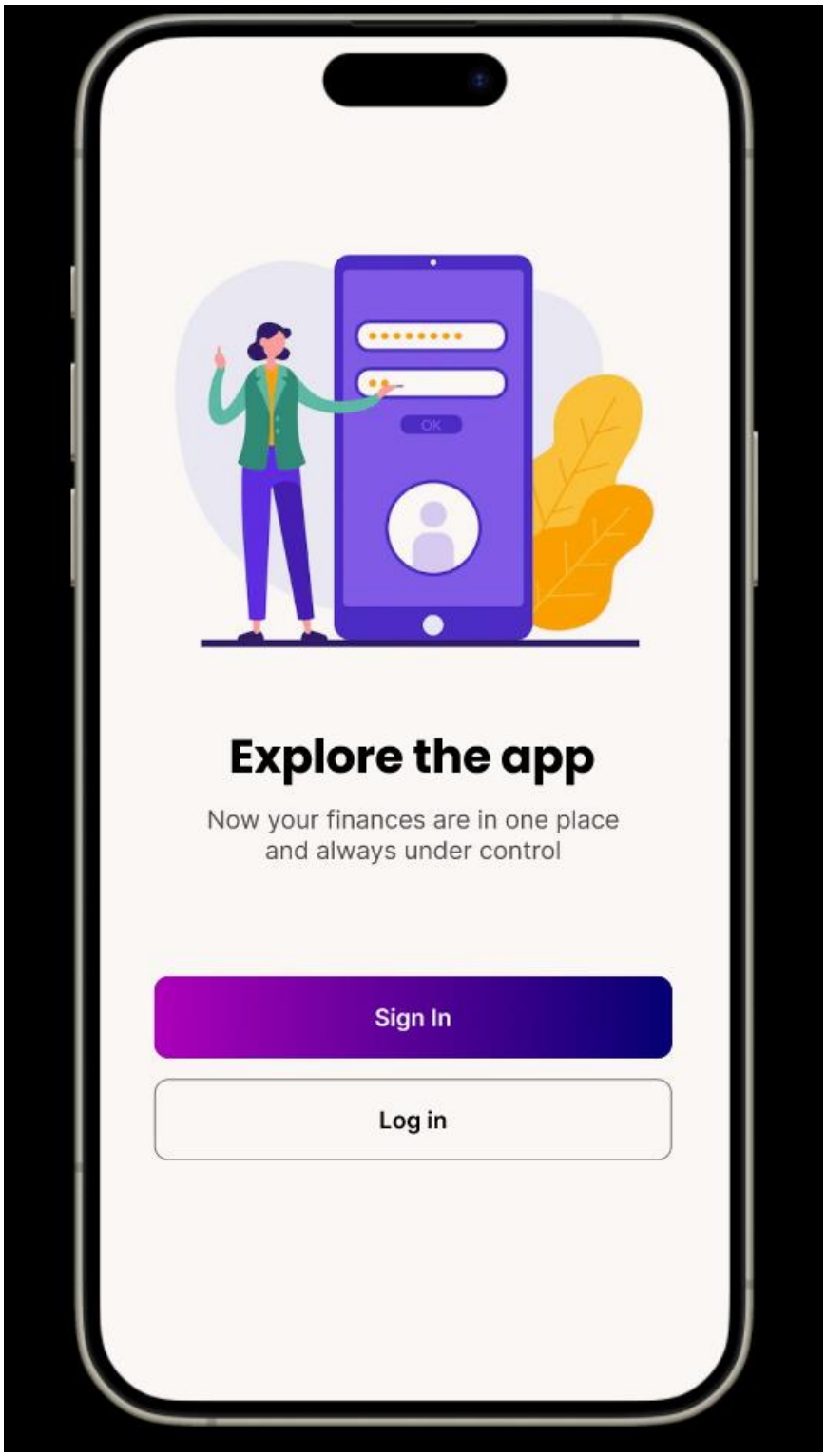
- **Sign up options:**



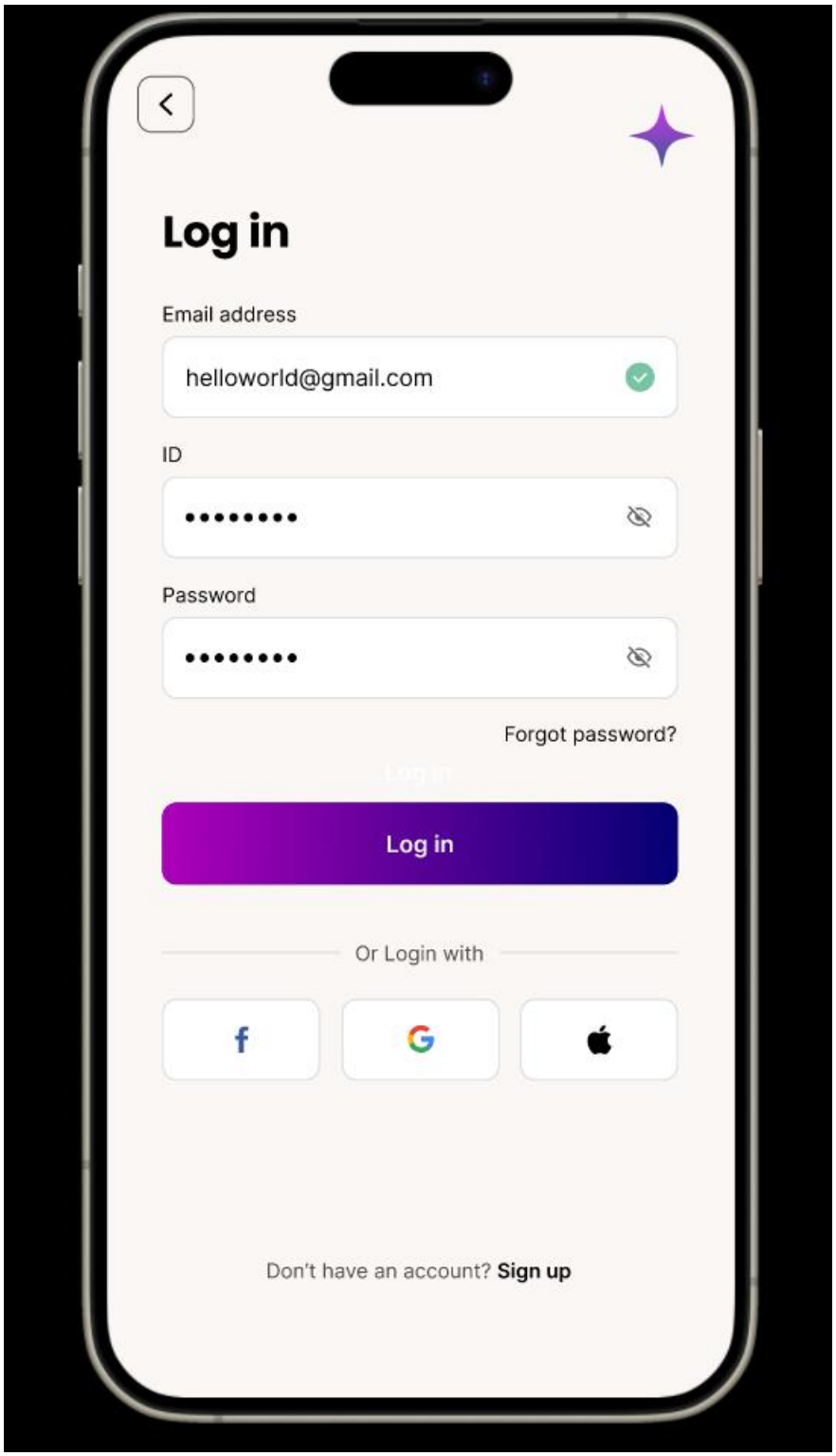
- **Sign up:**


Create account
Name
Contact person
+961
0 00 00 00 00
Email address
Company license
Main street, Souq El Gharb
Password
Confirm password
Create account
By creating an account or signing you agree to our Terms and Conditions

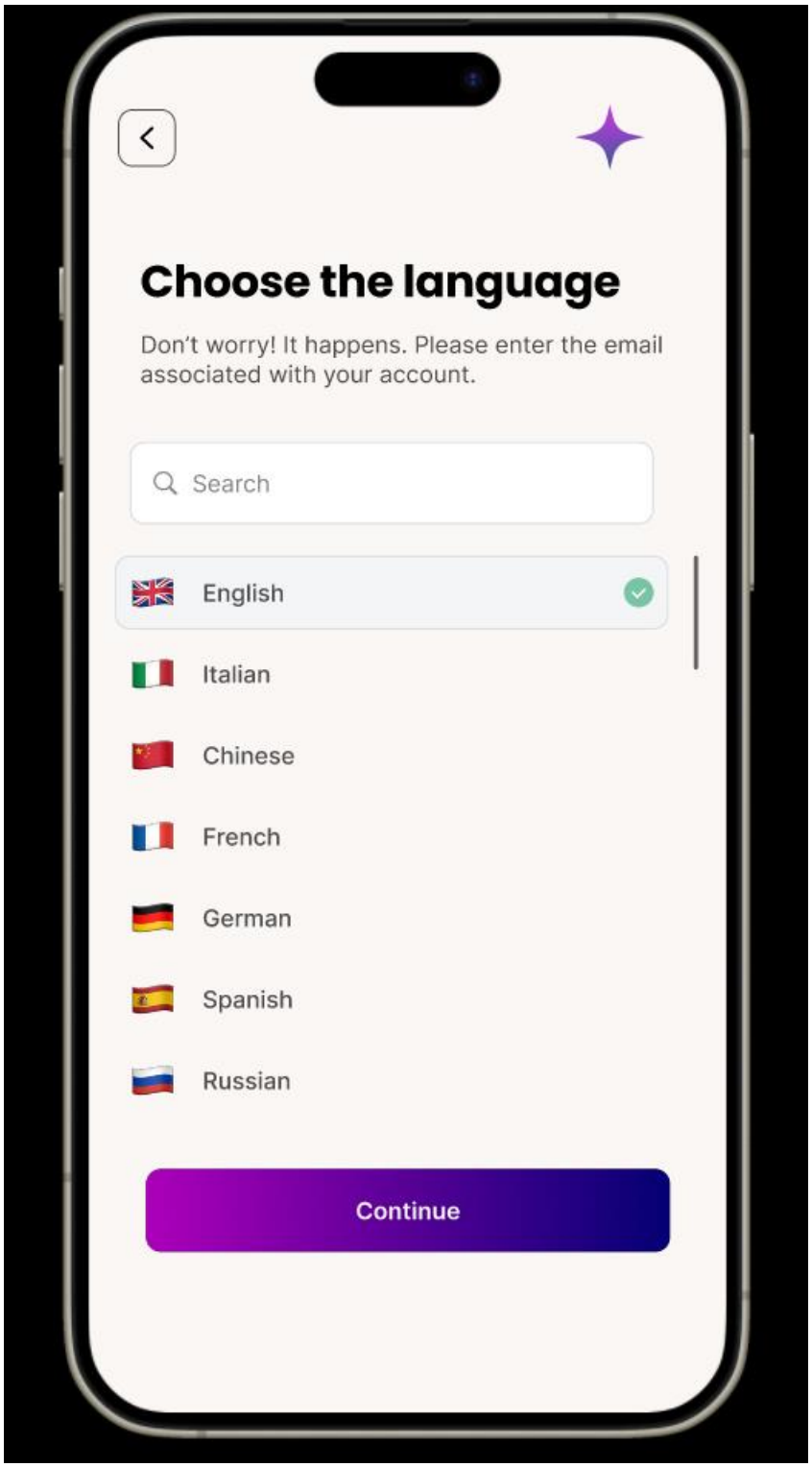
- **Opening screen:**



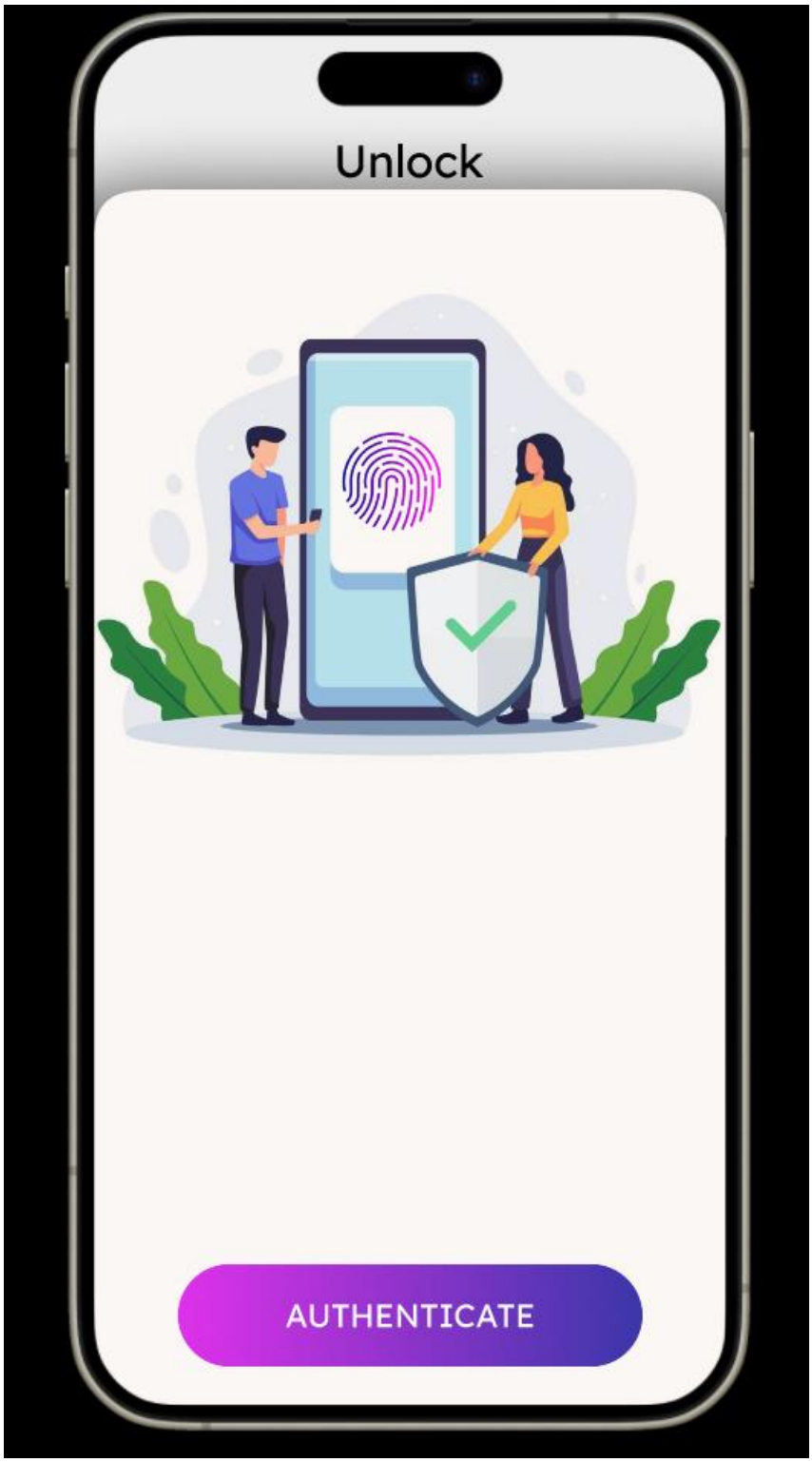
- **Log in:**


Log in
Email address
helloworld@gmail.com
ID
Password
Forgot password?
Log in
Or Login with
Don't have an account? Sign up

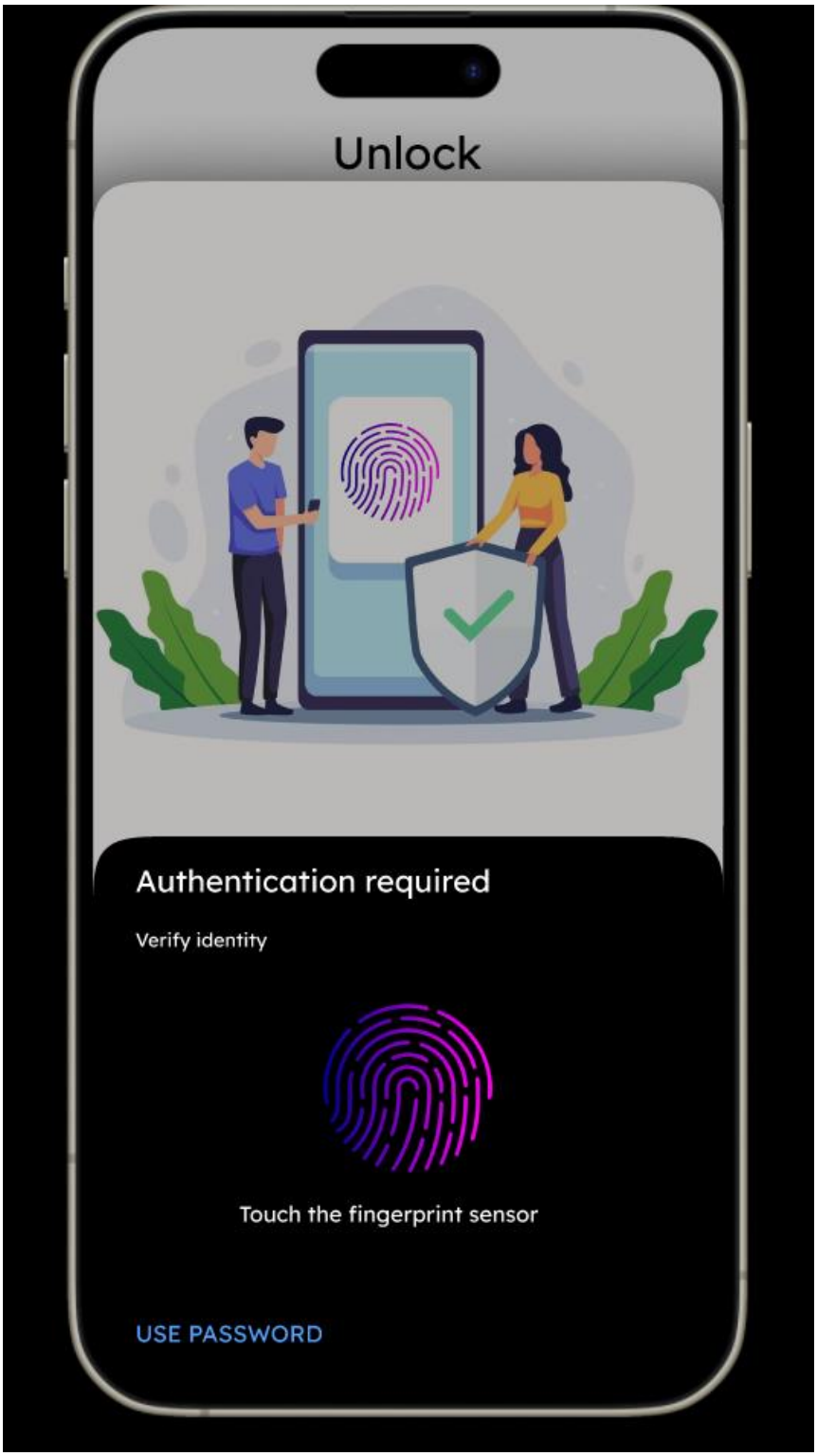
- **Choose the language:**



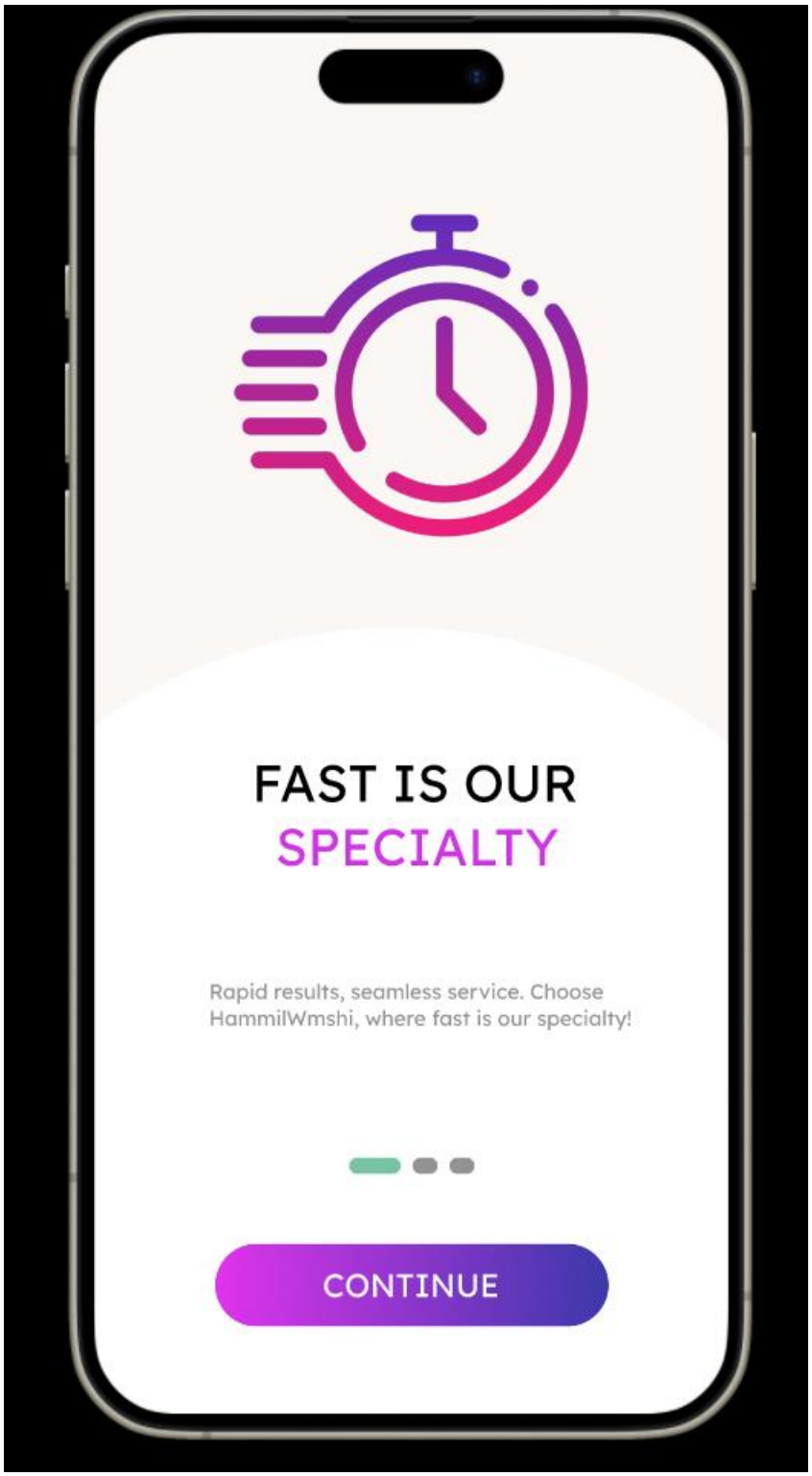
- **Authenticate:**



- **Fingerprint panel:**

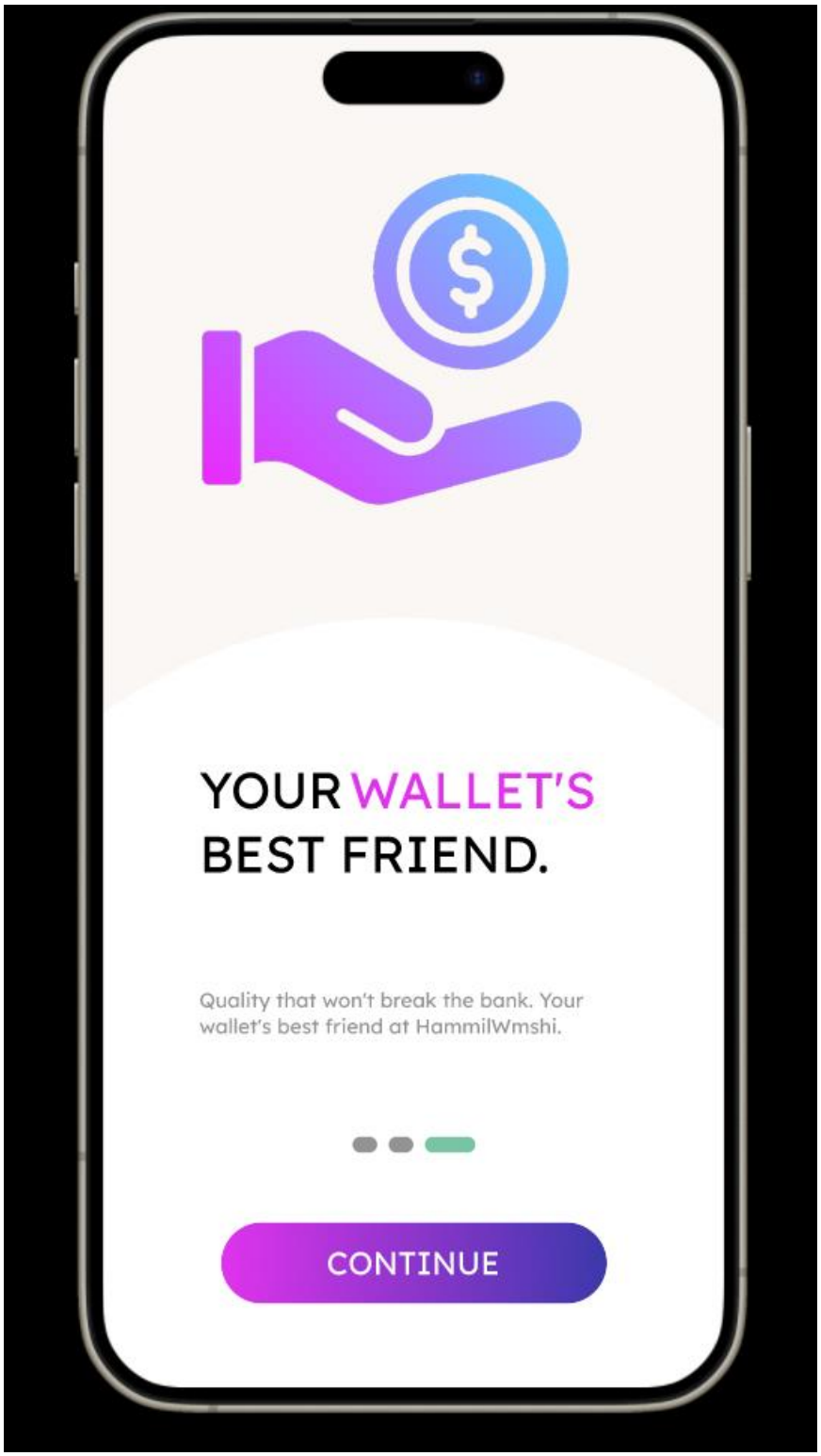


- **Introduction 1:**

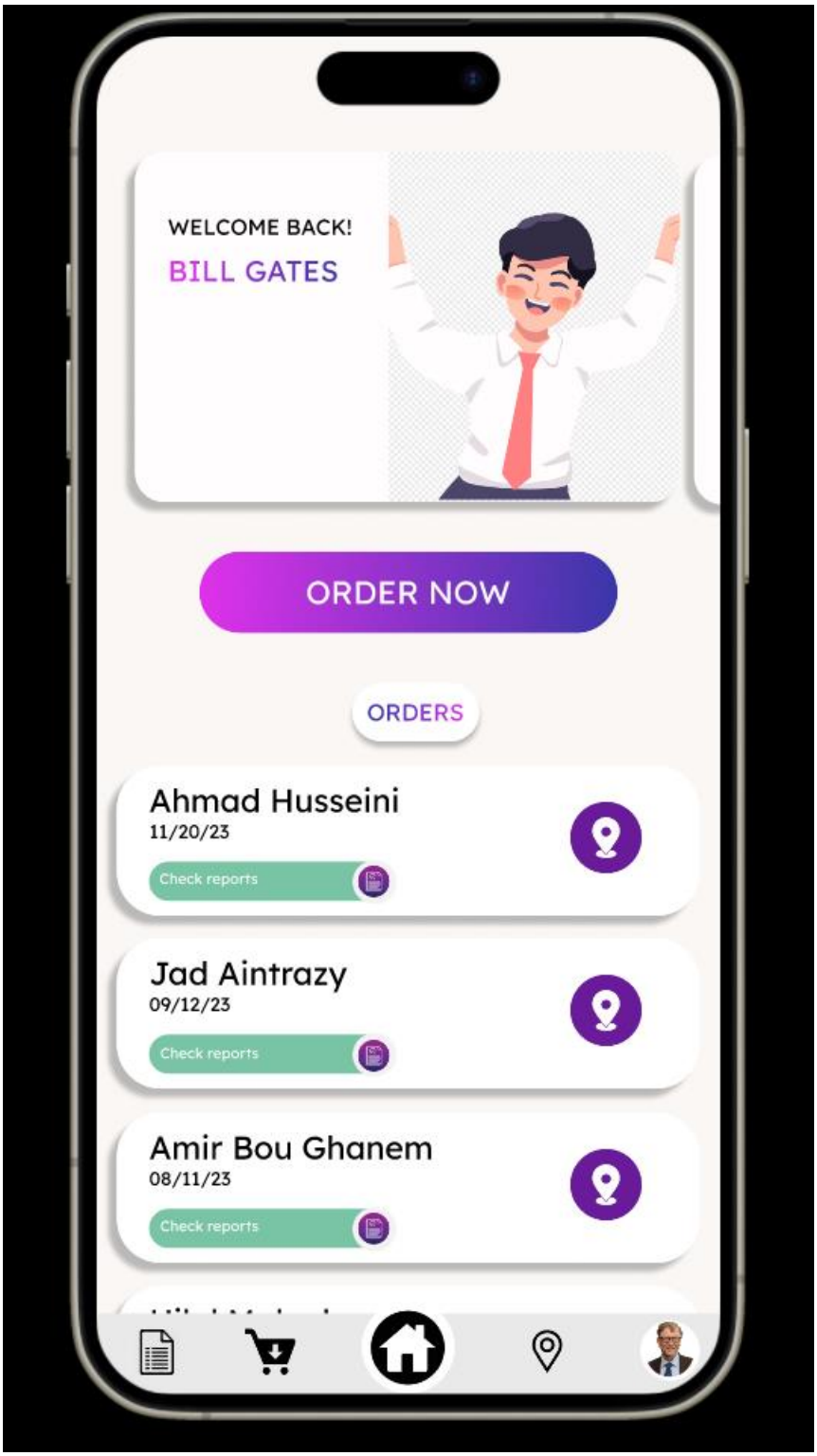


- **Introduction 2:**

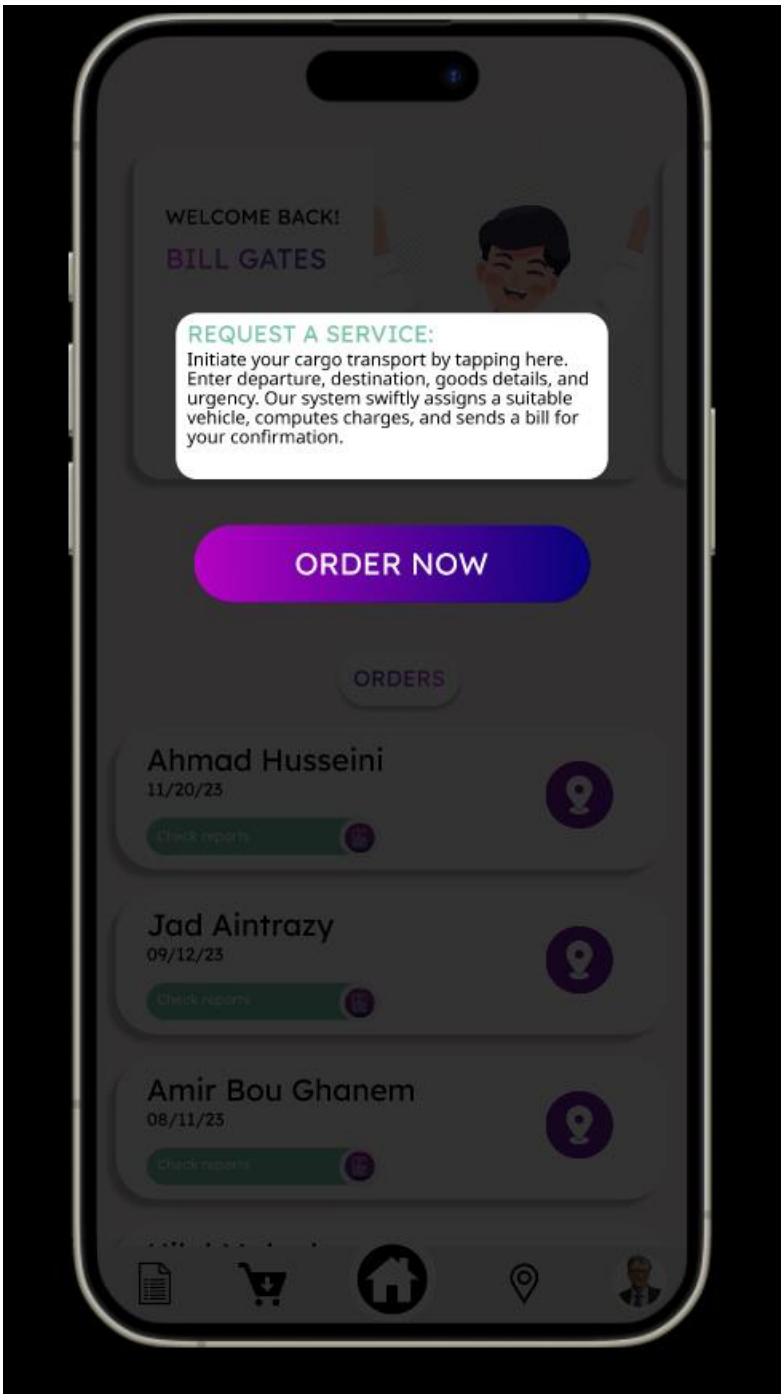
- **Introduction 3:**



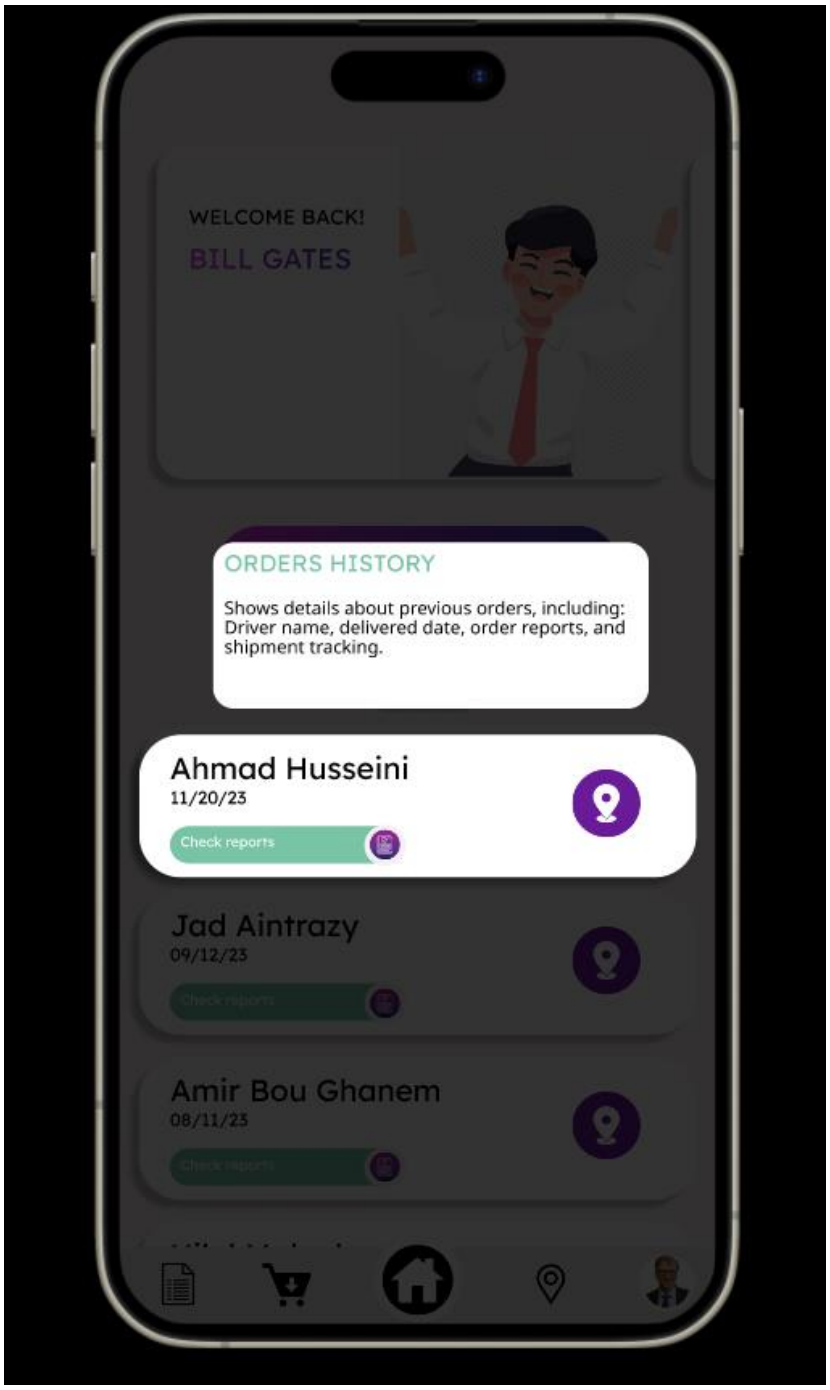
- **Home:**


WELCOME BACK!
BILL GATES
ORDER NOW
ORDERS
Ahmad Husseini
11/20/23
Check reports
Jad Aintrazy
09/12/23
Check reports
Amir Bou Ghanem
08/11/23
Check reports

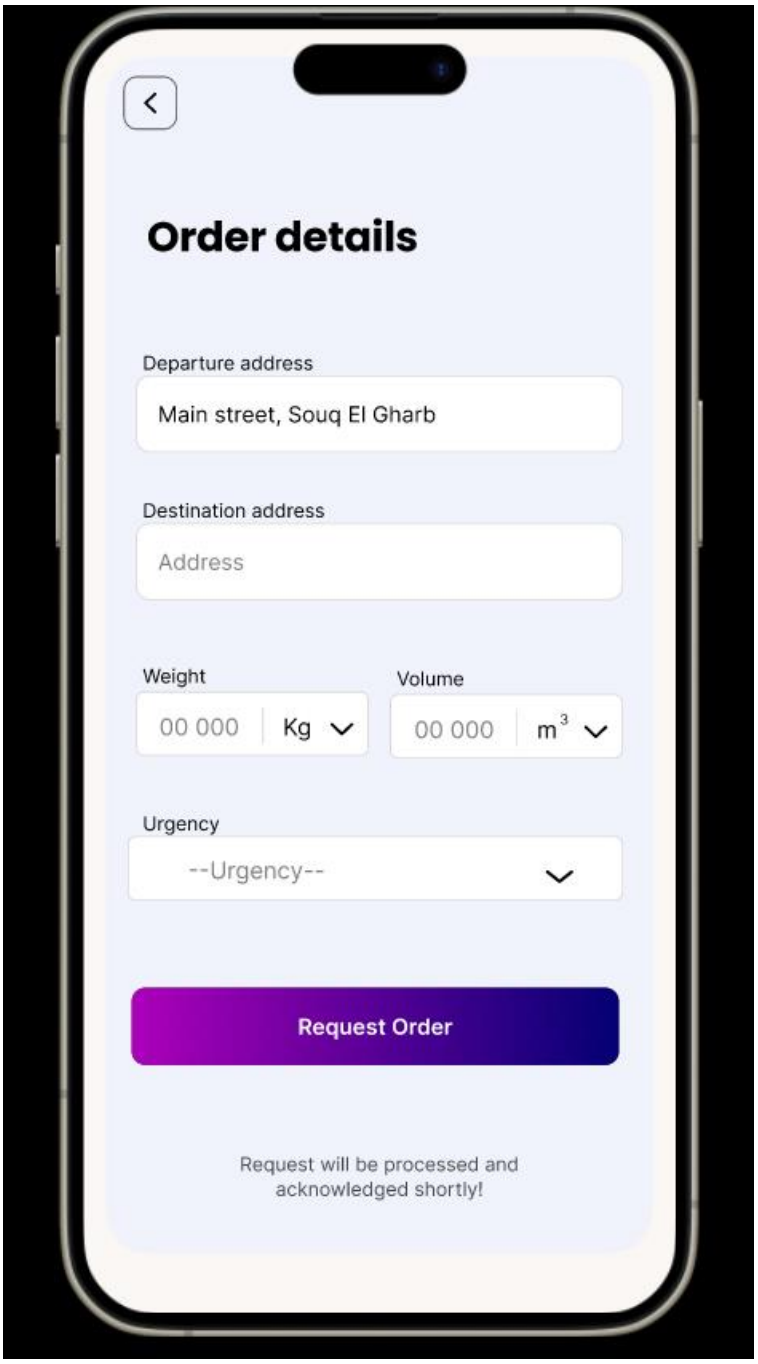
- **Home guide 1:**


WELCOME BACK!
BILL GATES
REQUEST A SERVICE:
Initiate your cargo transport by tapping here. Enter departure, destination, goods details, and urgency. Our system swiftly assigns a suitable vehicle, computes charges, and sends a bill for your confirmation.
ORDER NOW
ORDERS
Ahmad Husseini
11/20/23
Jad Aintrazy
09/12/23
Amir Bou Ghanem
08/11/23

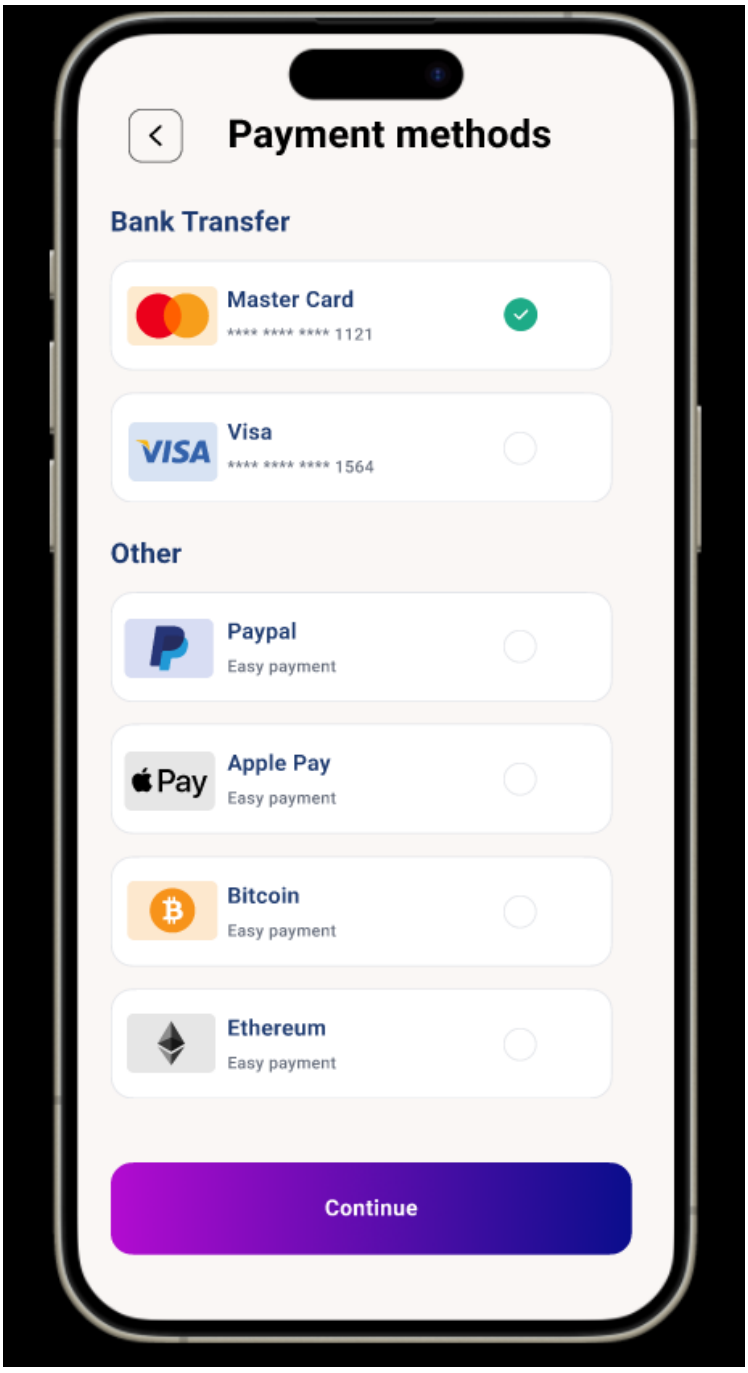
- **Home guide 2:**


WELCOME BACK!
BILL GATES
ORDERS HISTORY
Shows details about previous orders, including: Driver name, delivered date, order reports, and shipment tracking.
Ahmad Husseini
11/20/23
Check reports
Jad Aintrazy
09/12/23
Amir Bou Ghanem
08/11/23

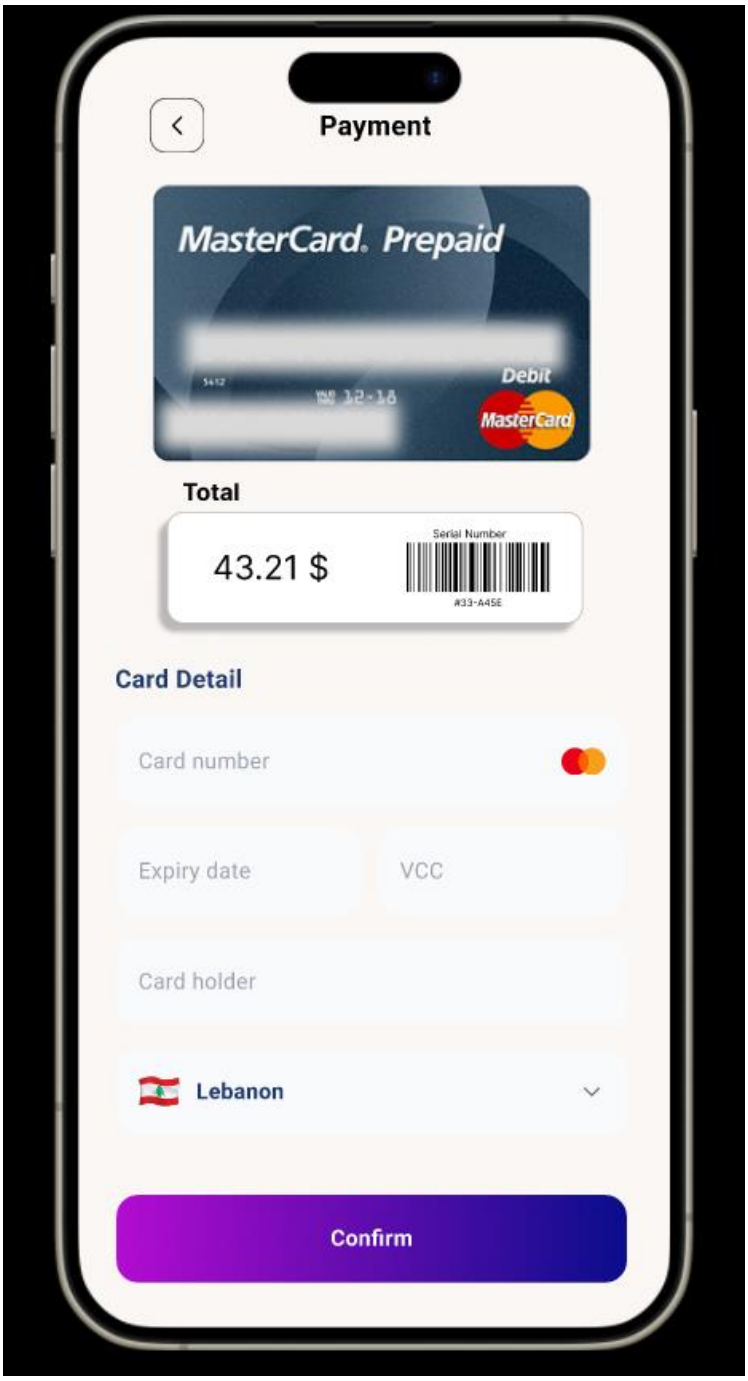
- **Order form:**


Order details
Departure address
Main street, Souq El Gharb
Destination address
Address
Weight
00 000
Kg
Volume
00 000
m3
Urgency
--Urgency--
Request Order
Request will be processed and acknowledged shortly!

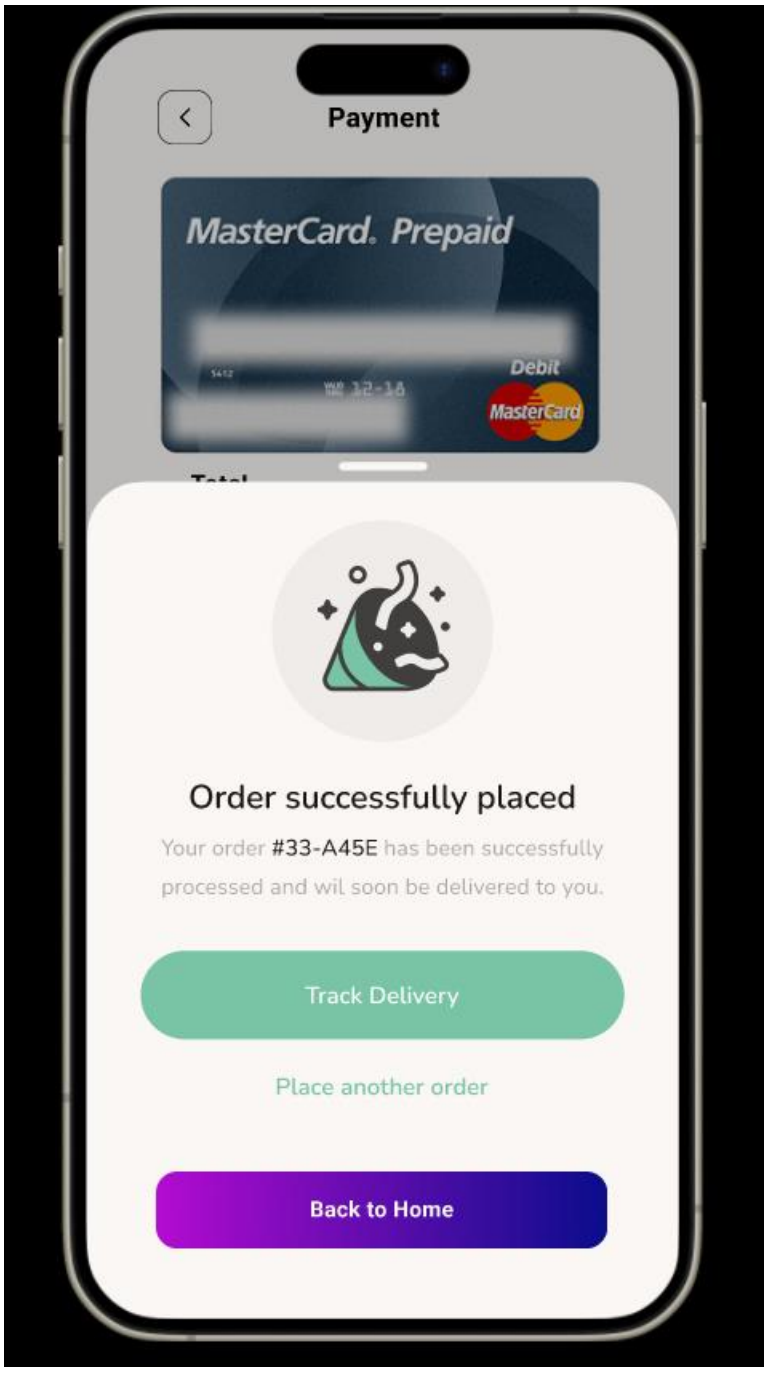
- **Payment methods:**



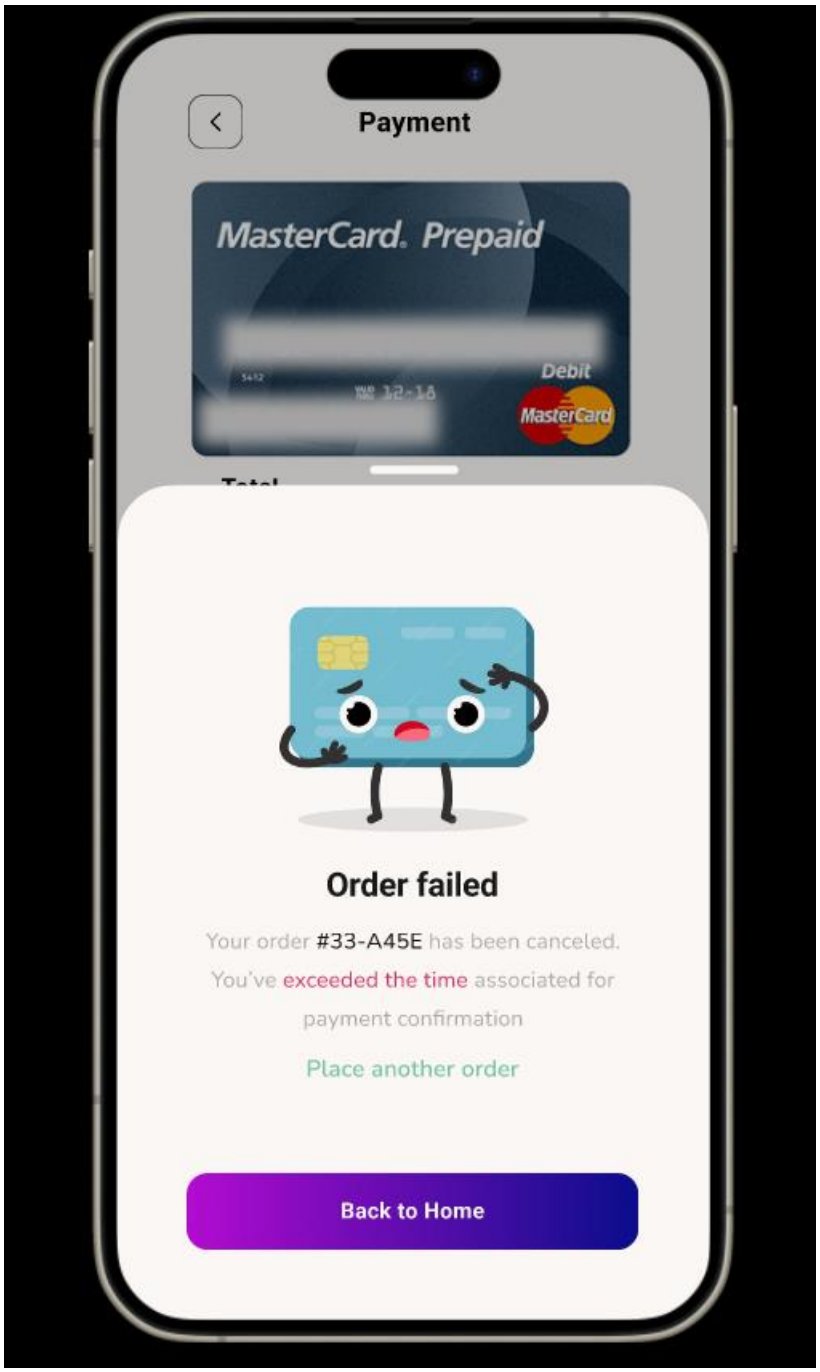
- **Card information:**



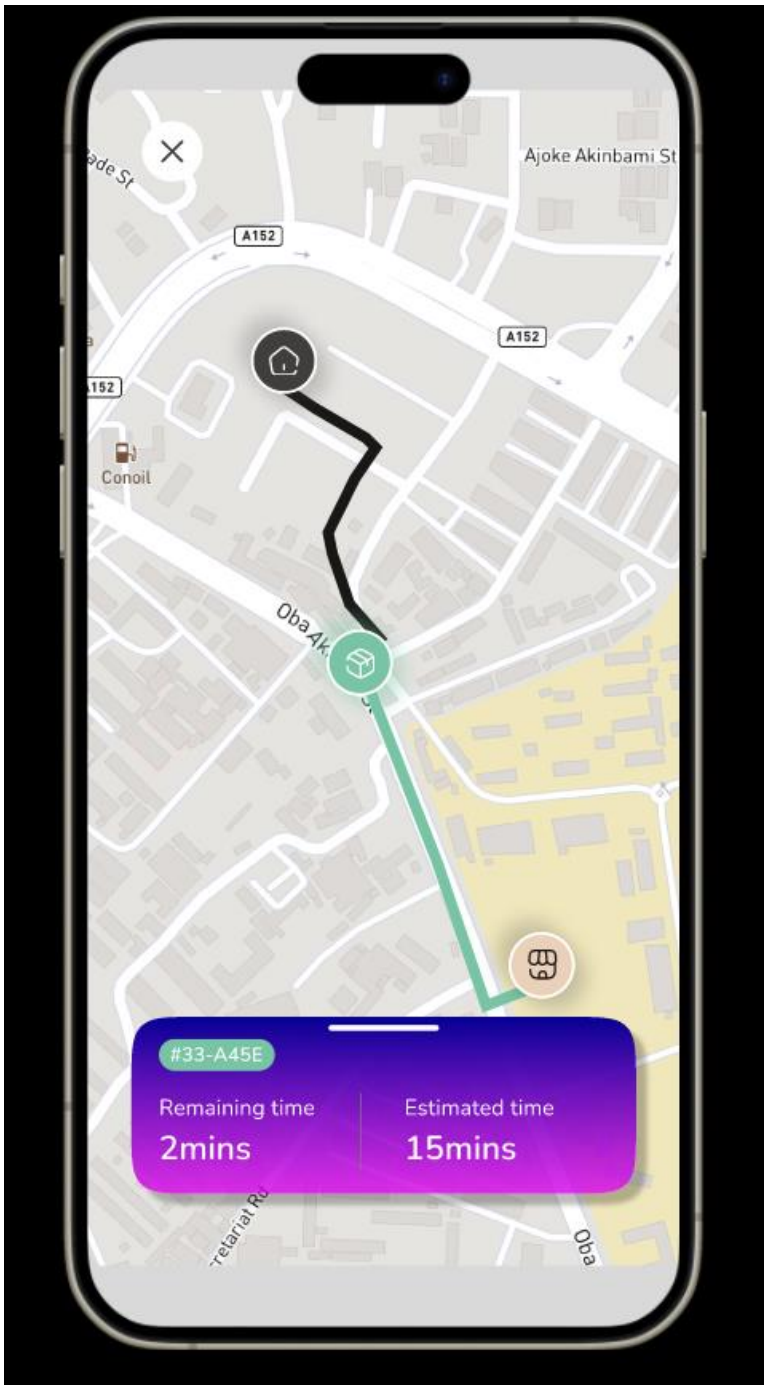
- **Successful payment:**



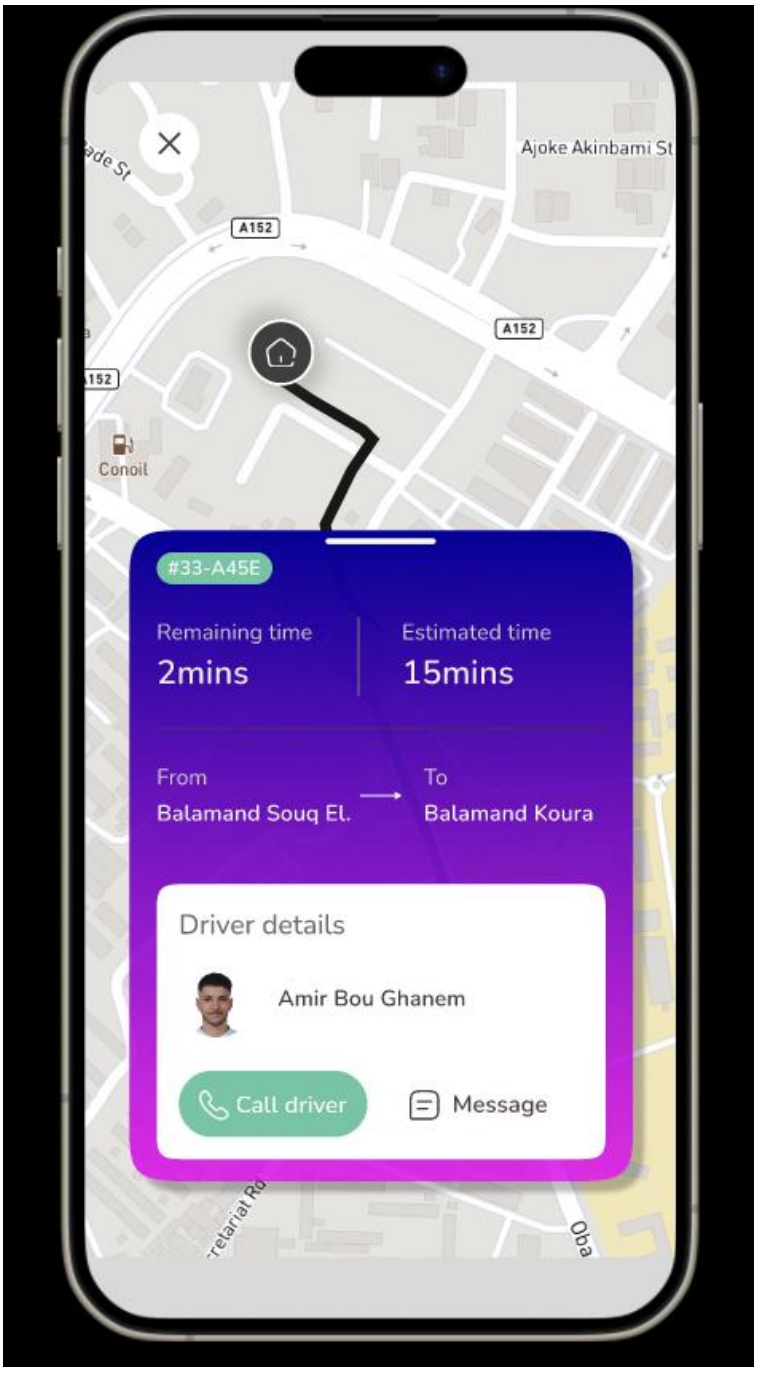
- **Failed payment:**



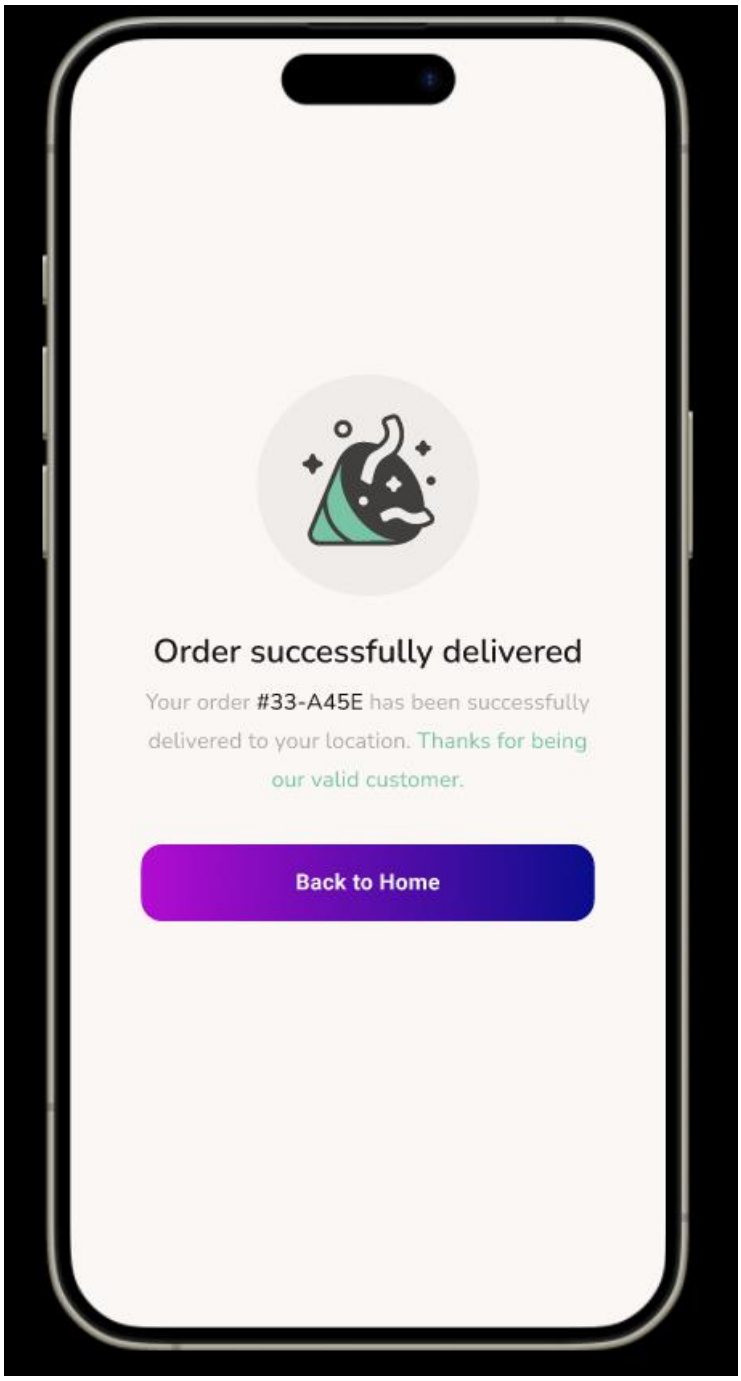
- **Track delivery:**



- **Track delivery (detailed):**



- **Order delivered:**



Part 2 (Description):

- **Sign Up:**
  - First-time users sign up, receiving a unique ID via SMS required for subsequent logins.
- **Login:**
  - Users log in with their unique ID, select their preferred language, and are introduced to our key services: fast, 24/7, and affordable.
- **Home Page:**
  - Users land on the home page, guided to explore the "Order Now" button for new requests and view details of previous orders.
- **Order Placement:**
  - Clicking "Order Now" leads to the Order Details page, where users input specifics. On submission, users proceed to select a payment method.
- **Payment Confirmation:**
  - Users view the total charge and receive a unique serial number associated with the request. Confirming the order initiates the delivery process.
- **Order Confirmation:**
  - A successful pop-up appears for timely confirmations; otherwise, a pop-up notifies if the time limit has been exceeded.
- **Track Delivery:**
  - After confirmation, users can track their order. A layer displays estimated and remaining time. Clicking reveals more details. Upon delivery, users land on the "Order Delivered" page with an option to return to the home page.

Part 3 (Extra):

Admin dashboard:

Chapter 5 (Software Testing and Maintenance Plan):

Part 1 (Maintenance Plan):

1. **Regular Updates:**
   - Schedule regular updates to address security vulnerabilities, improve performance, and enhance compatibility.
   - Minimize disruptions to users by maintaining a well-organized update schedule.

2. **Proactive Security Measures:**
   - Implement security patches promptly and efficiently.
   - Conduct regular security audits to identify and address potential vulnerabilities.
   - Educate users on best security practices through accessible channels.

3. **Performance Optimization:**
   - Monitor system performance regularly and address any performance issues proactively.
   - Optimize code and database performance as needed to ensure optimal system functionality.
   - Plan for scalability to accommodate future growth.

4. **User Feedback Integration:**
   - Establish a user feedback mechanism and regularly review user input.
   - Prioritize and implement user-suggested enhancements to improve user satisfaction.

5. **Documentation Updates:**
   - Keep all system documentation up-to-date, including new features, updates, and changes.
   - Ensure documentation is accessible and easily understandable for all relevant stakeholders.

Part 2 (Acceptance Testing):

1. **User Acceptance Testing (UAT):**
   - Conduct UAT sessions involving registered businesses, the end-users, to validate that the software aligns with their specific transportation service requirements.
   - Gather feedback from end-users regarding the functionality, features, and overall usability of the system to ensure it meets business needs.

2. **Regression Testing:**
   - Periodically execute regression testing after software updates, fixes, or enhancements to ensure that existing functionalities remain intact and unaffected.

- Detect and rectify any unintended side effects or issues that may arise due to changes in the software.

3. **Usability Testing:**
   - Assess the user interface and overall user experience within the context of local transportation service needs.
   - Identify areas for improvement to enhance user interaction and satisfaction, particularly focusing on ease of placing service requests and understanding billing information.