Systems Analysis & Design

Morni Application

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[Course title]

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Introduction:

When a vehicle breaks down on the road, the vehicle owner faces difficulties in reaching a service provider for assistance or for towing the broken-down vehicle. One of the biggest obstacles is finding a nearby service provider, describing the location, and delays in obtaining the service.

Morni allows you to open the application directly from your smartphone and choose the required service. Then, Morni searches for the nearest service provider and notifies them of the required service and the location of the broken-down vehicle. Thus, the vehicle owner receives the service quickly, with minimal effort, and at very competitive prices.

What is the "Morni" application? It is an interactive, real-time electronic platform that offers roadside assistance services in the Kingdom of Saudi Arabia, through a dedicated application for smartphones, providing transportation services for individuals and institutions.

What are the services of the "Morni" application?

- Transporting broken-down vehicles.
- Recharging or changing batteries.
- Repairing and changing tires.
- Delivering and refilling fuel in case it runs out.

Why choose Morni?

- Free application: The application does not require payment of any amounts or subscriptions to purchase or use the application.
- Ease of use:
    - Registration via mobile phone number only.
    - The application does not require credit card information.
    - Payment upon receiving the service.
- Speed of service: Requests are processed electronically and the nearest certified service provider is directed in record time.
- Anytime, anywhere: We do not have working hours as we strive for your comfort around the clock and we do our utmost to expand our coverage throughout the Kingdom and the Gulf countries.
- Professionalism in dealing: Service providers are carefully selected to ensure user satisfaction. Contracts have been made with major companies that have long experience in this field and they work hard to serve you in a way that pleases you.

Scope

1. **Geographical Scope:**
    - The application primarily serves the Kingdom of Saudi Arabia, with potential expansion to other Gulf countries.
2. **Service Scope:**
    - Roadside assistance services including vehicle towing, battery recharge/replacement, tire repair/replacement, and fuel delivery.
    - Targeting individual vehicle owners and institutions requiring vehicle transportation services.
3. **User Scope:**
    - The application is designed for use by vehicle owners who require immediate roadside assistance.
    - It also encompasses service providers who offer the aforementioned services.
4. **Technology Scope:**
    - The platform is a mobile application, compatible with major smartphone operating systems (iOS and Android).
    - Incorporates location services, real-time notifications, and electronic payment systems.

Aim

1. **Primary Aim:**
    - To provide quick, reliable, and accessible roadside assistance to vehicle owners in Saudi Arabia.
2. **User Convenience:**
    - To simplify the process of requesting and receiving roadside assistance through a user-friendly mobile application.
3. **Service Efficiency:**
    - To reduce the response time for roadside emergencies by connecting vehicle owners with the nearest available service provider.
4. **Market Penetration:**
    - To establish Morni as a leading provider of roadside assistance services in the region.
5. **Quality and Affordability:**
    - To offer high-quality services at competitive prices, ensuring customer satisfaction and loyalty.

Background

1. **Market Need:**
    - The concept for Morni emerged from the identified need for a more efficient, reliable, and user-friendly way to access roadside assistance services in Saudi Arabia.
2. **Technological Advancement:**
    - Leveraging advancements in mobile technology and GPS services to provide real-time, location-based assistance.
3. **Cultural and Regional Considerations:**
    - Understanding the specific needs and preferences of vehicle owners in Saudi Arabia and the broader Gulf region.
4. **Industry Trends:**
    - Aligning with global trends towards digital solutions for traditional services, particularly in the context of the automotive and transportation industry.
5. **Regulatory Environment:**
    - Operating within the regulatory framework of Saudi Arabia, ensuring compliance with local laws and standards for service provision.

previous business processes vs. IS-supported business processes

Several other applications provide services similar to the "Morni" application, offering roadside assistance and vehicle-related services. Here are a few notable ones along with the benefits that "Morni" offers in comparison:

1. AAA Mobile (American Automobile Association)

Advantages:

- **Comprehensive Services:** Offers a wide range of roadside assistance services along with travel planning tools.
- **Reputation and Reliability:** Backed by the AAA's long-standing reputation.
- **Additional Benefits:** Provides travel discounts and other member benefits.

Disadvantages:

- **Membership Requirement:** Services are tied to AAA membership, which might not be ideal for non-members.
- **Cost:** Membership fees can be higher compared to pay-per-use services.
- **Limited Global Reach:** Primarily serves the United States, which might not be suitable for users in other regions.

2. Urgent.ly

Advantages:

- **On-Demand Service:** Provides immediate roadside assistance without the need for a subscription.
- **Transparent Pricing:** Clear pricing structure without hidden fees.
- **Nationwide Coverage:** Wide coverage across different regions.

Disadvantages:

- **Variable Service Quality:** As the network of providers is vast, service quality might vary.
- **Limited International Presence:** Primarily focused on the U.S. market.

3. Agero Roadside Assistance

Advantages:

- **Integration with Insurers:** Works closely with insurance companies, offering seamless service.
- **Digital Platform:** Modern interface and digital integration.
- **Customized Assistance:** Tailored services based on individual insurance policies.

Disadvantages:

- **Dependence on Insurance:** Services might be limited to what your insurance covers.
- **Less Direct Control:** Users may have less direct control over the choice of service provider.

4. Allstate Motor Club

Advantages:

- **Additional Perks:** Offers travel discounts and other benefits as part of its motor club.
- **Reliable Service:** Known for reliable roadside assistance.
- **Flexible Plans:** Offers different plans to suit various needs.

Disadvantages:

- **Membership Fees:** Requires a membership fee, which might not be cost-effective for infrequent users.
- **Service Limitations:** Some services might be limited based on the membership plan.

Morni Application

Advantages:

- **Localized Focus:** Specifically tailored for the Saudi Arabian market, potentially offering better localized services.
- **No Subscription Required:** Operates on a pay-per-service model, making it accessible without regular fees.
- **User-Friendly and Accessible:** Designed for ease of use with a focus on a user-friendly interface.
- **Competitive Pricing:** Offers services at very competitive prices.
- **Feedback System:** Incorporates a user feedback system for quality control.

Disadvantages:

- **Regional Limitation:** Currently limited to Saudi Arabia, which restricts its use to a specific geographical area.
- **Market Penetration:** As a newer player in the market, it might not have the same level of trust or recognition as established brands.
- **Scalability Challenges:** Rapid expansion, especially in international markets, could present operational challenges.

Stakeholders:

- **Vehicle Owners (Customers):**
  - Primary users of the app.
  - Their needs and feedback are crucial for the app's success.
- **Service Providers:**
  - Companies or individuals who provide roadside assistance services.
  - Their efficiency and quality of service directly impact the app's reputation.
- **Morni Application Developers and Management Team:**
  - Responsible for the development, maintenance, and updating of the app.
  - Management oversees the app's operations, marketing, and strategic direction.
- **Investors and Shareholders:**
  - Provide the necessary capital for the app's development and scaling.
  - Interested in the profitability and growth of the app.
- **Regulatory Authorities:**
  - Government and regulatory bodies that oversee transportation and digital services.
  - Ensure compliance with legal standards and practices.
- **Partners and Affiliates:**
  - Companies that might partner with Morni for cross-promotion or integrated services.
  - Include insurance companies, automotive companies, and others.
- **Customer Service Representatives:**
  - Handle user inquiries, complaints, and feedback.
  - Play a vital role in maintaining customer satisfaction and loyalty.
- **Marketing and Public Relations Team:**
  - Responsible for promoting the app and managing its public image.
  - Engage in market research to understand customer needs and trends.
- **IT and Cybersecurity Team:**
  - Ensure the technical robustness and security of the app.
  - Protect user data and handle any technical issues or breaches.
- **Local Communities and Road Users:**
  - Indirectly affected by the efficiency of roadside assistance services.
  - Can influence the app's reputation through word-of-mouth.
- **Emergency Services:**
  - In some cases, the app may need to interact with emergency services.
  - Coordination can be crucial in critical situations.

steps I take it for requirements gathering using reviews:

1. Identify Stakeholders

- **End-Users:** Vehicle owners who need roadside assistance.
- **Service Providers:** Tow truck operators, mechanics, and other roadside assistance professionals.
- **Morni App Development Team:** Developers, designers, and project managers responsible for the app.
- **Investors and Business Stakeholders:** Individuals or entities funding the project.
- **Regulatory Authorities:** Government bodies overseeing transportation and digital services in the operating regions.

2. Define Objectives

- **Understand User and Service Provider Needs:** Gather insights into what users expect from a roadside assistance app and what service providers need to effectively deliver services.
- **Identify Key App Functionalities:** Such as location services, service selection, provider matching, and payment processing.
- **Determine Security and Compliance Requirements:** Understand the necessary security measures and regulatory compliance for operating in the target regions.

3. Develop Interview Questions

- **For End-Users:** "What challenges have you faced with existing roadside assistance services?" "What features would you value most in the Morni app?"
- **For Service Providers:** "What are your requirements for joining and using a digital platform for service delivery?" "How can Morni streamline the process of receiving and responding to service requests?"
- **For App Development Team:** "What technical challenges do you anticipate in developing and maintaining the app?" "How will you ensure user data security and app reliability?"
- **For Investors:** "What are your expectations in terms of app performance and market reach?"
- **For Regulatory Authorities:** "What are the essential regulatory requirements for a digital roadside assistance service in this region?"

4. Schedule Interviews

- **Plan Interviews:** Arrange individual or group interviews with representatives from each stakeholder category.

- **Setting:** Ensure a conducive environment for open and honest communication, especially for service providers and users.

5. Conduct Interviews

- **Engage in Conversations:** Use a friendly and open approach to encourage detailed and honest feedback.
- **Focus on Experiences and Expectations:** Understand their past experiences, current needs, and future expectations.

6. Analyse Information

- **Identify Common Themes:** Such as the importance of quick service response, ease of use, transparent pricing, and reliable service.
- **Note Specific Requirements:** Pay attention to unique needs or suggestions from individual stakeholders.

7. Document Requirements

- **List of Requirements:** Compile a detailed list encompassing user interface design, app functionalities, service provider integration, payment methods, and security protocols.

8. Validate Requirements

- **Stakeholder Review:** Present the compiled requirements to the stakeholders for validation and gather additional input.

9. Obtain Approval

- **Formal Approval:** Seek formal approval from key decision-makers, including project sponsors and business stakeholders.

10. Review and Revise

- **Adaptability:** Remain open to revisiting and adjusting the requirements as the project develops and new information or challenges arise.

For the scenario involving the "Morni" application, which provides roadside assistance and vehicle-related services, the functional and non-functional requirements can be outlined as follows:

Functional Requirements

1. **User Registration and Authentication:**
    - Users must be able to register using their mobile phone number.
2. **Service Selection:**
    - Users should be able to select from a range of services such as vehicle towing, battery recharge/replacement, tire repair/replacement, and fuel delivery.
3. **Determine Location:**
    - The app able to access the user's location to locate the nearest service provider.
4. **Service Provider Registration:**
    - Service providers must be able to register in the application.
5. **Choose payment method:**
    - The application should provide a secure payment gateway for users to pay for services upon completion.
6. **Get Bill:**
    - Get bill information.
7. **Feedback and Ratings:**
    - After service completion, users should be able to rate the service and provide feedback.

Non-Functional Requirements

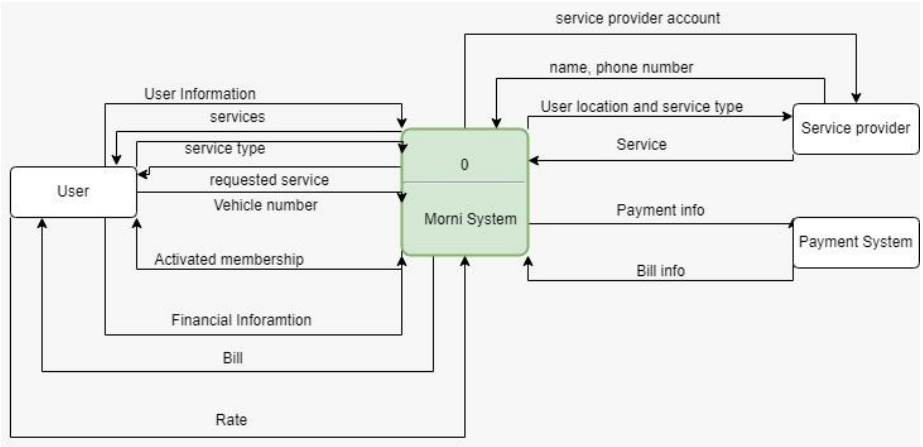
1. **Usability:**
    - The app should have an intuitive and user-friendly interface.
    - It should be accessible to users with varying levels of technical proficiency.
2. **Performance:**
    - The application should load and respond quickly to user inputs.
    - Service provider matching and notifications should occur in real-time or with minimal delay.
3. **Reliability:**
    - The application should have high availability, especially during peak hours and emergencies.
    - The system should reliably send and receive notifications and requests without loss of data.
4. **Scalability:**
    - The system should be scalable to handle a growing number of users and service providers.
    - It should maintain performance levels under increased loads.
5. **Security:**

- User data, including location and payment information, should be securely stored and transmitted.
- The application should comply with data protection regulations relevant to its operating regions.

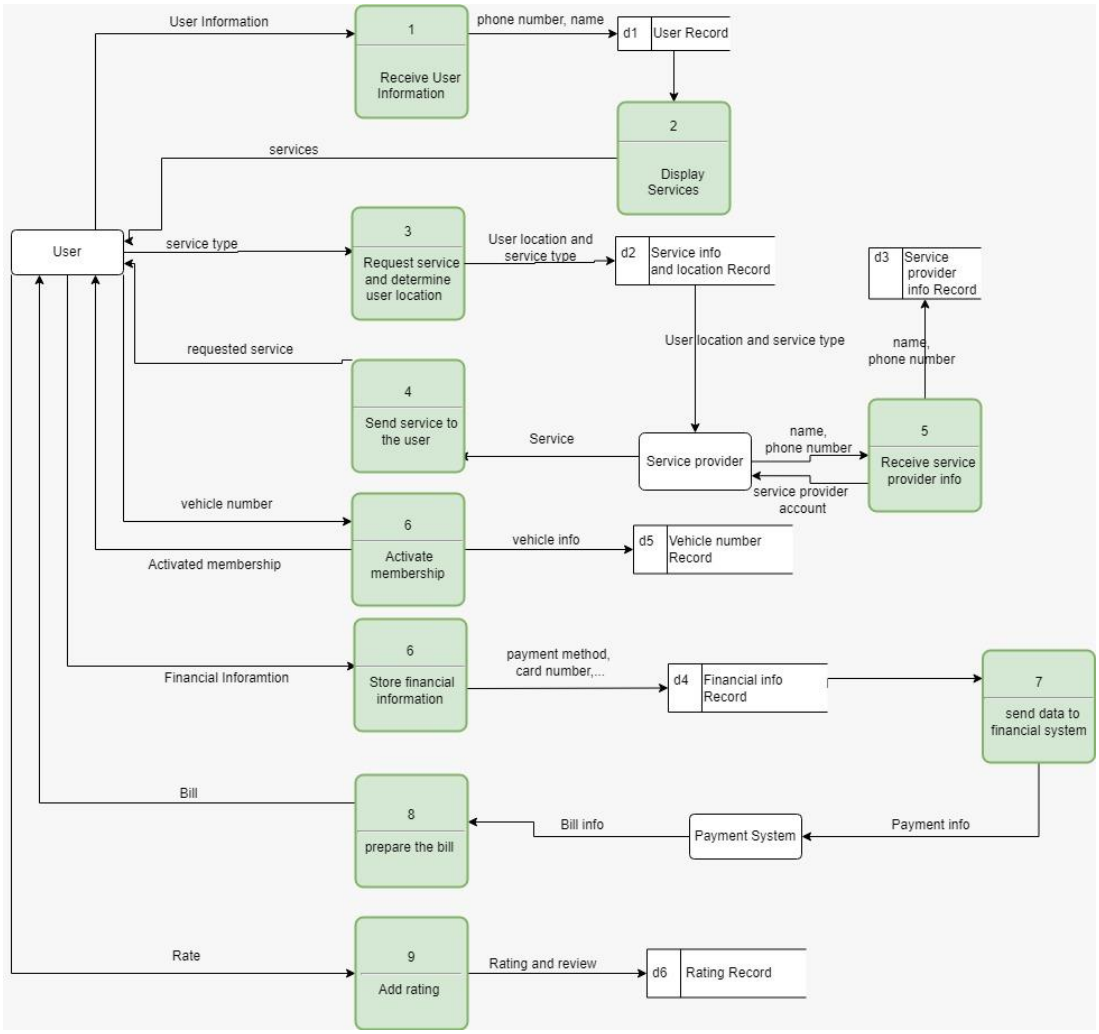
6. **Localization:**
    - The app should support multiple languages, especially those prevalent in its operating regions.
    - It should also handle different currencies for payment processing if operating in multiple countries.
7. **Compatibility:**
    - The application should be compatible with major smartphone operating systems, primarily iOS and Android.
    - It should be regularly updated to remain compatible with new OS versions.
8. **Disaster Recovery:**
    - The system should have a robust backup and disaster recovery plan to handle system failures.

Design:

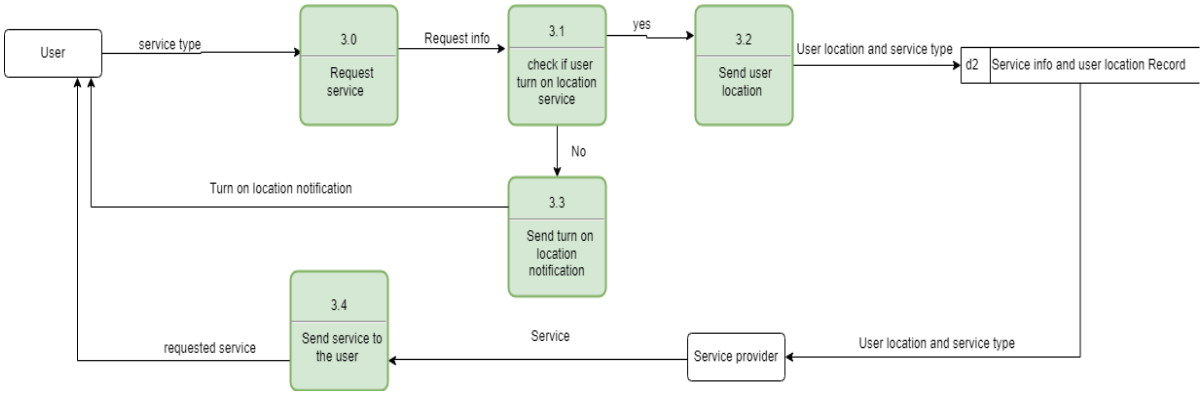
- **Context diagram:**



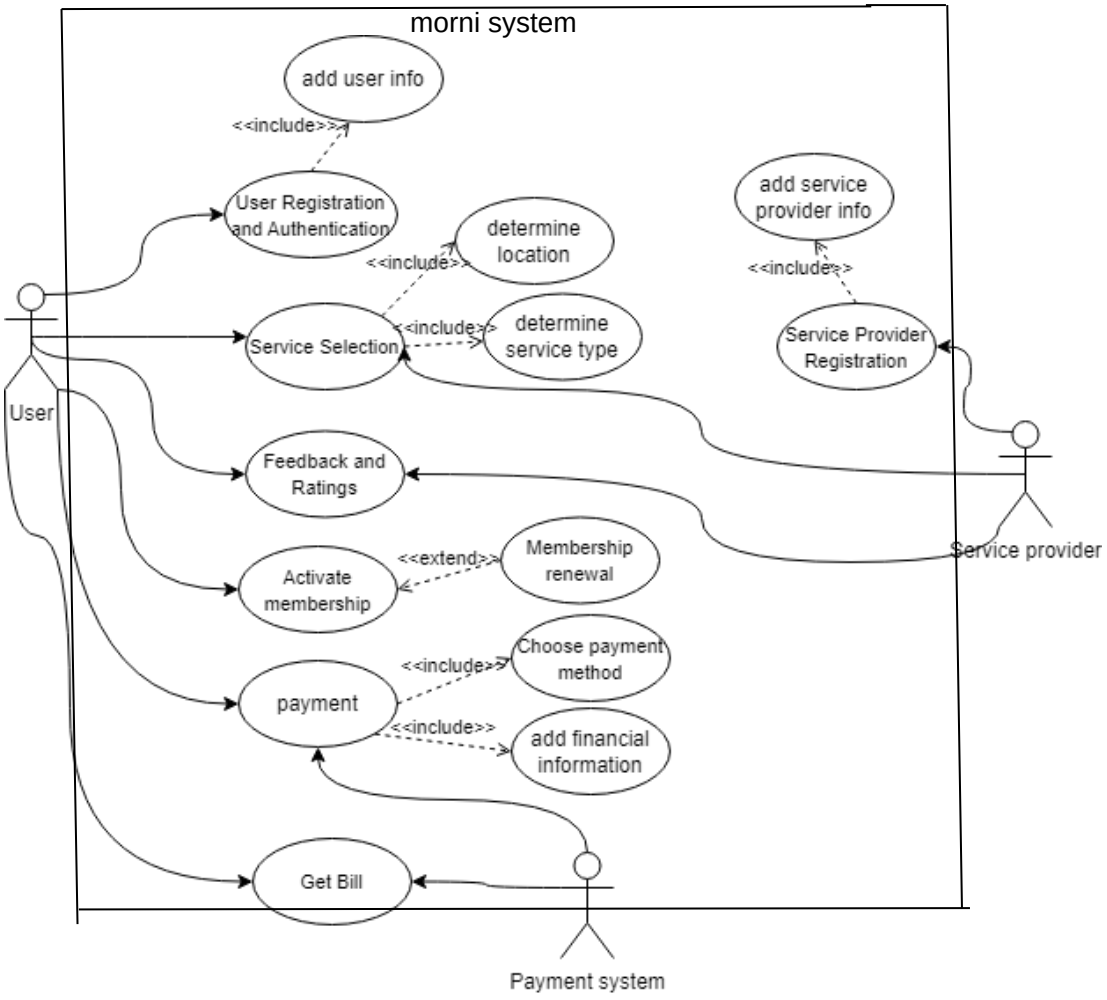
- **Level 0 diagram:**



- **Level 1 diagram for Request Service Process:**



- **Use case diagram:**



Use case title: Payment

Primary actor: User

Stakeholders: User, System, Payment system

Precondition: User has an account on one of the possible payment methods

Minimal guarantee: Financial information is protected

Success guarantee: The amount always reaches the required destination

Main success scenario:

1. **User choose payment method**
2. **User send his financial information to the payment system**
3. **Payment system send the bill information to the app**
4. **App system send the bill to the user**

Extensions:

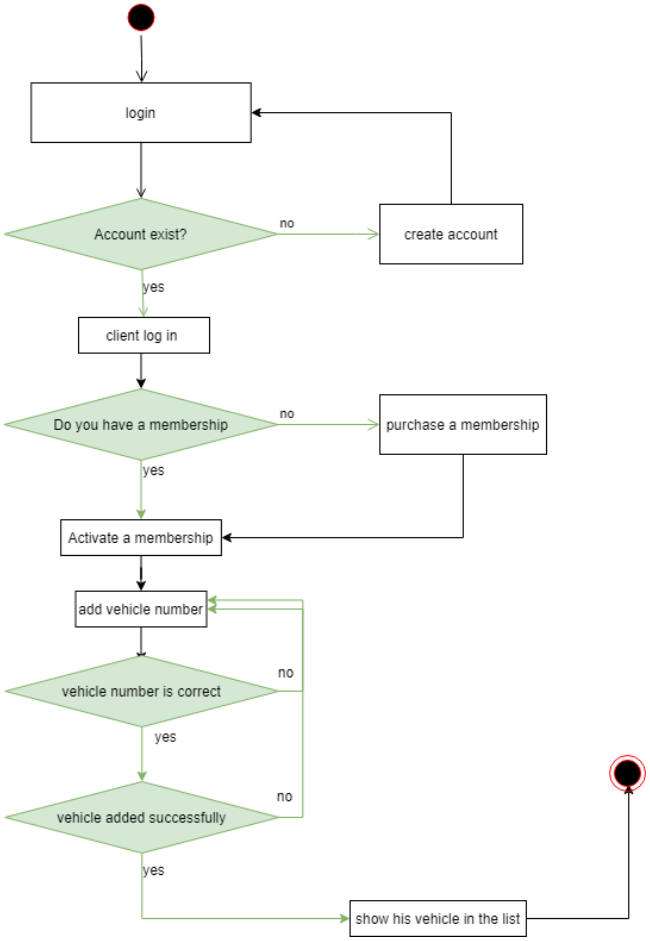
1a. The user doesn't have an account on any of the payment methods that the application deals with

1a1. The user exits the system or communicates with IT

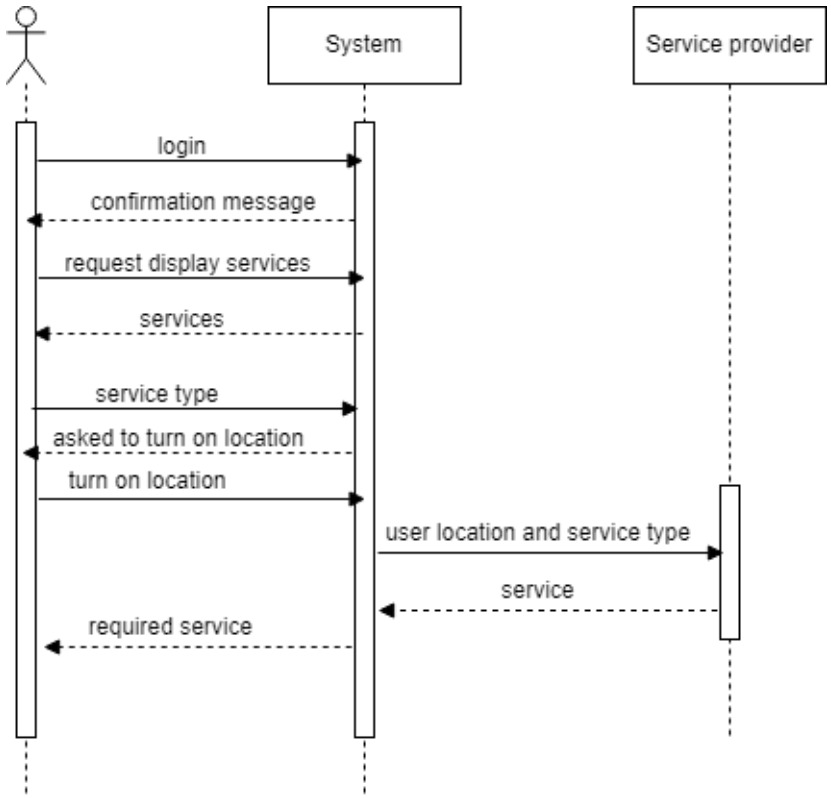
2a. User information not sent

2a1. User resubmit the information

- **Login Activity diagram:**



- **Sequence diagram:**



- **Conclusion:**

  In conclusion, the "Morni" project represents a significant advancement in the realm of roadside assistance and vehicle services, particularly within the context of the Kingdom of Saudi Arabia. This project, through its innovative use of information systems (IS), addresses the critical need for efficient, reliable, and accessible roadside assistance.

  Key highlights of the project include:

  1. **Digital Transformation:** The transition from traditional, manual processes to a digital platform marks a significant step forward in enhancing service efficiency and user experience.
  2. **User-Centric Design:** The application is tailored to meet the specific needs of vehicle owners, offering features like real-time tracking, easy service selection, and secure payment options, all within a user-friendly interface.
  3. **Improved Service Delivery:** By leveraging technology, Morni significantly reduces response times and improves the accuracy of service delivery, a crucial factor in roadside emergencies.
  4. **Enhanced Accessibility:** The app's 24/7 availability and its potential to cover a wide geographical area make it a valuable asset for vehicle owners across Saudi Arabia.

5. **Economic and Employment Opportunities:** The platform not only serves vehicle owners but also creates new opportunities for service providers, contributing positively to the local economy.
6. **Compliance and Security:** Adhering to regulatory standards and prioritizing data security and privacy, the project aligns with legal and ethical guidelines, ensuring trust and reliability.
7. **Scalability and Future Growth:** The Morni project is designed with scalability in mind, allowing for future expansion in services and geographical coverage, potentially even beyond Saudi Arabia.

   In essence, the Morni project stands as a testament to the power of integrating technology with traditional services. It not only enhances the roadside assistance experience for users but also opens up new avenues for service providers and contributes to the broader digital transformation goals within the region. As the project moves forward, it will continue to evolve, adapt, and expand, potentially setting a new standard for digital roadside assistance services.