

QuickFix Mechanics

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Abstract- *The proposed project aims to offer a comprehensive vehicle repair and maintenance service that addresses both emergency and scheduled needs for vehicle owners. With a focus on accessibility, convenience, and quality, the service will provide on-demand emergency repairs for breakdowns, accidents, or mechanical failures, along with a seamless platform for booking regular maintenance appointments. The system will include a mobile app and website, where users can request emergency services and schedule maintenance tasks such as oil changes, tire rotations, and more.*

The service will be supported by a network of certified technicians available 24/7, ensuring swift response times and expert care. Through real-time tracking, customer support, and transparent pricing, the project aims to reduce the inconvenience and downtime often experienced during vehicle-related issues, while fostering long-term customer loyalty with regular maintenance bookings.

1. INTRODUCTION

Vehicles are essential for daily commuting, business operations, and travel, making their functionality and reliability critical. However, vehicle breakdowns, accidents, and mechanical failures are inevitable, often occurring unexpectedly, at inconvenient locations, or during emergencies. Traditional vehicle repair services, although available, often face challenges such as slow response times, lack of 24/7 availability, and inconvenient booking processes for both emergency repairs and regular maintenance. In many cases, vehicle owners are left stranded for long periods, unsure of where to find quick assistance. Furthermore, traditional methods of finding a mechanic or a repair shop involve searching online, making numerous calls, or relying on word-of-mouth referrals, which can be time-consuming and inefficient. Delays in repairs can also result in higher costs and disruptions to daily life or business operations.

To address these challenges, our app provides emergency vehicle services designed to ensure

immediate access to professional assistance, no matter the time or place. The app offers round-the-clock access to emergency mechanics and roadside assistance, meaning that whether it's midnight or a holiday, help is just a click away. Users can make instant bookings for assistance, letting them request help quickly and efficiently, which saves valuable time during an emergency. Whether it's a flat tire, engine failure, or a routine vehicle maintenance check, the app offers both emergency services for urgent situations and pre-scheduled maintenance for regular check-ups, ensuring comprehensive vehicle care.

The app utilizes a geolocation system to identify the nearest available mechanics or service providers, minimizing response time and ensuring help arrives as quickly as possible. Real-time tracking allows users to monitor the location of the assigned mechanic or roadside assistance, so they always know when help is arriving. Our network of mechanics and service providers is thoroughly screened and vetted, ensuring that users receive help from skilled professionals and reducing the risk of poor-quality service. Additionally, the app provides clear pricing before a service is booked, eliminating surprises and giving users a sense of transparency regarding the costs of repairs. Multiple payment options, including credit/debit cards, mobile wallets, or cash, make it easier for users to pay in a way that suits their preferences.

After receiving service, users can leave ratings and reviews, which helps future users make informed decisions based on the experiences of others. For common vehicle issues, the app can offer diagnostic tools or troubleshooting tips to help users determine if their vehicle issue is urgent, potentially saving time if it's a minor problem that can be solved remotely. Safety and security are also prioritized in the app, ensuring that all service providers adhere to safety protocols, and users can view the credentials and background checks of the mechanic or service provider coming to assist. For regular vehicle

maintenance, users can set service reminders to stay on top of tasks like oil changes, tire rotations, and other routine checks, ensuring their vehicle remains in optimal condition.

The app is designed to support multiple vehicles on a single account, making it ideal for both individual users and business owners who need fleet management assistance. Additionally, the app can offer insurance support, helping users file claims in the event of accidents, and facilitating easy communication with insurance companies. For users who require frequent services, customizable service packages can be created, allowing them to bundle essential services for regular maintenance at a discounted rate. By addressing the common frustrations faced by vehicle owners in emergencies, our app provides a seamless, efficient, and reliable solution to vehicle-related problems, ensuring that users are never left stranded and that their vehicles stay in top condition year-round.

2. LITERATURE SURVEY

The growing demand for seamless, on-demand services in various industries has significantly influenced the vehicle repair and maintenance sector. Traditional vehicle servicing methods often face challenges such as slow response times, a lack of real-time support, and inconvenient booking processes. With the advancement of mobile technologies and digital platforms, there is an emerging trend in offering emergency repair services and scheduled maintenance through online booking systems. A review of relevant literature reveals the growing interest and advancements in both emergency vehicle repair services and vehicle maintenance scheduling, providing a foundation for the development of this project.

1. On-Demand Emergency Vehicle Repair Services

Research in the domain of on-demand services has been expanding, particularly with the rise of mobile applications that connect users with service providers in real-time. In the context of vehicle repairs, several studies have highlighted the advantages of such services in terms of convenience, speed, and reliability.

- **Mobile Vehicle Repair Apps:** Various mobile applications, such as Fixd, Car Care, and Your Mechanic, have been developed to offer on-

demand repair services. These platforms allow users to book services for emergencies such as flat tires, engine breakdowns, or electrical issues, directly connecting them with local mechanics. Studies by Sundararajan (2016) and Rosenblat and Stark (2016) discuss the significant impact of such platforms in increasing service efficiency and customer satisfaction by enabling real-time tracking and providing cost transparency.

- **Service Response Time and Efficiency:** Research by Bendoly et al. (2010) discusses the importance of minimizing service response times in on-demand services, as fast and efficient responses during emergencies significantly improve customer satisfaction and service quality. The integration of real-time GPS tracking, automated dispatching, and crowdsourced repair technicians has been a key factor in reducing response times for emergency services in sectors like vehicle repairs.

2. Vehicle Maintenance Scheduling Systems

Regular vehicle maintenance is essential for ensuring safety, performance, and longevity. However, studies show that many vehicle owners neglect timely maintenance due to lack of awareness, scheduling difficulties, or inconvenient service options. The importance of facilitating easy maintenance booking has been discussed in several works.

3. Customer Satisfaction and Experience in Vehicle Service Platforms

Customer satisfaction in service industries, particularly in vehicle repair and maintenance, is closely tied to response time, service quality, and ease of use. Literature shows that transparent pricing and clear communication are vital to building trust and ensuring a positive service experience.

Transparency in Pricing: Research by Homburg et al. (2017) highlights that customers are more likely to use a service again if they perceive the pricing to be fair and transparent. By offering upfront pricing and detailed breakdowns of service costs, customers feel more confident in making informed decisions. The use of digital payment systems in vehicle repair apps also promotes a seamless experience, allowing for easier and faster transactions.

- User Experience (UX): The importance of simple, intuitive interfaces for both mobile apps and websites in increasing customer satisfaction has been widely studied. Studies by Sterne (2010) emphasize that ease of navigation, quick booking.

3. PROBLEM STATEMENT

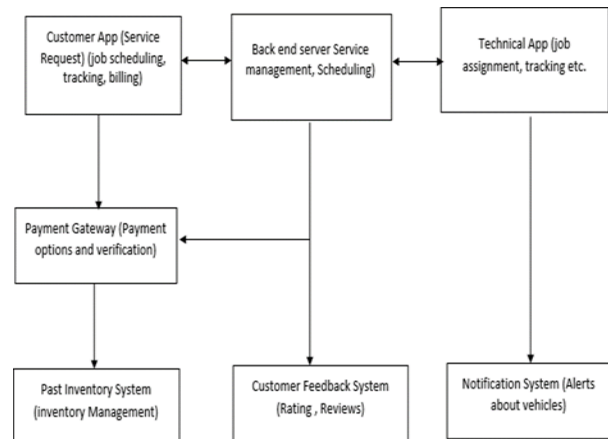
In today's fast-paced world, vehicle owners face the constant challenge of managing unexpected breakdowns, accidents, or mechanical failures, often at inconvenient times or remote locations. Traditional vehicle repair services are often not readily available during emergencies, and customers face long response times, high repair costs, and limited transparency in pricing. Additionally, the lack of easy access to reliable maintenance services leads to vehicle neglect, which can result in costly repairs or unsafe driving conditions.

The problem is further compounded by the inconvenience of maintenance, such as oil changes, tire rotations, and inspections, which can be time-consuming and difficult to coordinate. As a result, vehicle owners often neglect regular maintenance, which can lead to diminished vehicle performance and longevity.

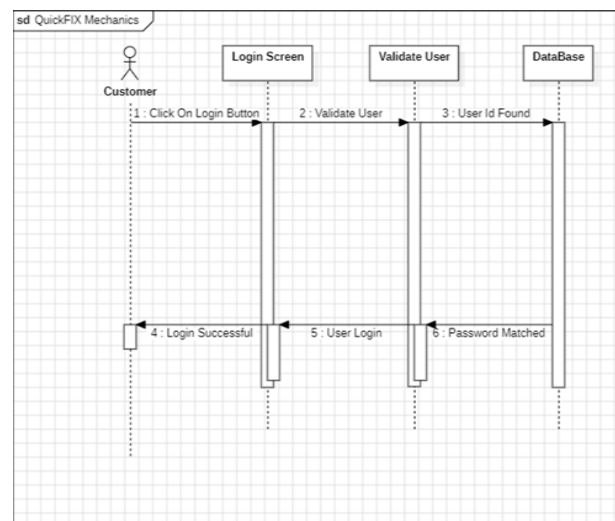
This project seeks to address these challenges by providing a reliable, efficient, and accessible emergency vehicle repair service coupled with an easy-to-use platform for scheduling regular maintenance appointments. Through the integration of mobile and web-based solutions, the project aims to minimize downtime, improve vehicle longevity, and ensure a seamless, transparent service experience for users, whether they need emergency assistance or wish to book routine vehicle maintenance.

The challenge lies in developing a system that ensures rapid, accurate, and reliable delivery of emergency services to customers, optimizing response times, communication, and resource allocation to minimize harm and save lives. Additionally, traditional emergency services may not be equipped to handle the rising demand in certain areas, leading to overstretched resources and an inability to respond quickly. This creates a critical gap in the delivery of timely, accurate, and coordinated emergency services that can save lives.

4. BLOCK DIAGRAM



5. SEQUENCE DIAGRAM



6. OBJECTIVES

1. Provide Accessible Emergency Vehicle Repair Services: To ensure vehicle owners have 24/7 access to on-demand emergency repair services, including breakdown assistance, tire replacements, engine repairs, and more.
2. Enable Seamless Scheduling for Vehicle Maintenance: To offer an easy-to-use platform for booking routine vehicle maintenance services such as oil changes, tire rotations, brake checks, and more.
3. Enhance Customer Experience with Real-Time Updates and Tracking: To implement real-time tracking features that allow users to monitor the status

of their emergency repair requests and scheduled maintenance services.

4. Promote Preventive Maintenance for Long-Term Vehicle Health: To encourage regular vehicle maintenance and reduce the risk of breakdowns or major repairs through proactive service reminders and tracking.

5.Improve Emergency Response Time with Location-Based Dispatch: To use GPS tracking for dispatching emergency responders from the nearest available unit, reducing response times.

7. CONCLUSION

The vehicle repairing emergency service and maintenance booking project is designed to address the growing demand for reliable, convenient, and efficient vehicle services in today's fast-paced world. As vehicles play an essential role in daily life, ensuring their functionality and safety through both emergency repairs and scheduled maintenance is critical. This project aims to revolutionize how vehicle owners access and manage their vehicle repair and maintenance needs.

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