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Design of Digital Market Place Using Mobile Application for Cash and Credit Cars in Medan City

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Abstrak

Kami berhasil mengembangkan aplikasi seluler baru, FF Motorcars, yang dibuat untuk membantu pemilik mobil seperti Anda dengan mudah menemukan layanan bengkel saat Anda membutuhkannya. Kami tahu betapa frustasinya menangani masalah mobil, itulah sebabnya kami mengembangkan solusi khusus untuk tantangan yang dihadapi pengemudi. Di FF Motorcars, Anda akan menemukan informasi berguna tentang masalah umum mobil dan tips tentang cara mendiagnosis dan memperbaikinya. Baik itu perawatan rutin atau perbaikan yang lebih rumit, kami menguraikan penyebab masalah ini serta alat dan teknologi terbaru yang digunakan dalam diagnostik otomotif. Fokus kami di Kabupaten Deli Serdang dan sekitarnya. Berdasarkan penelitian kami, terdapat sekitar 80 hingga 120 kasus terkait mobil yang dilaporkan di Deli Serdang selama dua tahun terakhir, yang berdampak pada berbagai jenis jalan. Dengan aplikasi kami, mendapatkan informasi yang Anda butuhkan tentang layanan perbaikan mobil, harga, dan lokasi garasi terdekat tidak pernah semudah ini! Ditambah lagi, hal ini menciptakan lebih banyak visibilitas bagi pemilik bengkel di Medan.

Kata Kunci: Mobil, Digital, Mobile, Aplikasi, FF Motorcars

Abstract

We successfully developed the new mobile app, FF Motorcars, created to help car owners like you easily find garage services when you need them. We know how frustrating it can be to deal with car issues, which is why we've developed a solution specifically for the challenges faced by drivers. In FF Motorcars, you'll find helpful information about common car problems and tips on how to diagnose and fix them. Whether it's routine maintenance or more complicated repairs, we break down the causes of these issues and the latest tools and technologies used in automotive diagnostics. Our focus is on the Deli Serdang regency and its surrounding areas. According to our research, there were around 80 to 120 car-related cases reported in Deli Serdang over the past two years, affecting various types of roads. With our app, getting the information you need about car repair services, pricing, and nearby garage locations has never been easier! Plus, it creates more visibility for local garage owners in Deli Serdang. We're here to make your car care experience smoother and more enjoyable!

Keywords: *Car, Digital, Mobile, Aplikasi, FF Motorcars*

I. PENDAHULUAN

We have successfully developed a mobile program to address the challenges car owners face in finding service garages. Our application, FF Motorcars, serves as a solution to the communication gap between car owners and garage locations. In this app, we examine common car problems encountered by drivers and discuss the methods used to diagnose and resolve these issues. From routine maintenance to

more complex repairs, we will explore the underlying causes of various car problems and the technologies and tools used in modern automotive diagnostics. Our focus is on the Deli Serdang regency and its surroundings. Data shows that between 2021 and 2022, the total number of car-related incidents in Deli Serdang ranged from 80 to 120 cases, occurring on various types of roads. FF Motorcars makes it easy for local residents to access information about car problem services, appropriate pricing, and nearby garage services. Additionally, it provides promotional opportunities for garage owners in Deli Serdang.

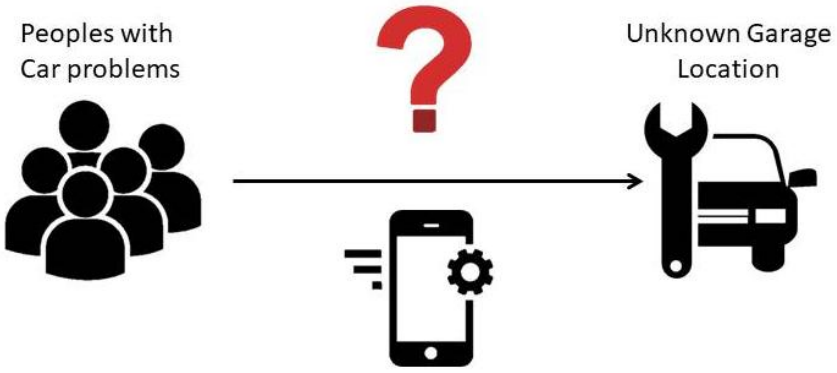

Figure 1. The problem in nowadays when peoples have car problems and difficult to find the location of car garage and this study aims to provide the solution.

This paper explores the development and functionality of a dedicated application designed to streamline the process of identifying and addressing car problems. Such applications leverage the power of mobile devices and connectivity to provide real-time diagnostics, maintenance schedules, and personalized recommendations tailored to individual vehicles. The proliferation of smart sensors, onboard diagnostics, and data analytics has empowered these applications to offer insights into a vehicle's health that were once reserved for professional mechanics. By harnessing the capabilities of these technologies, car problem applications not only enhance convenience for users but also contribute to safer and more reliable vehicle operation. Throughout this paper, we will examine the key features and benefits of car problem applications, discuss their impact on automotive maintenance practices, and explore case studies where such technologies have made a tangible difference in vehicle reliability and performance. Additionally, we will address considerations such as data security, usability, and the evolving landscape of automotive software development. By delving into the realm of car problem applications, this paper aims to provide a comprehensive understanding of how technology continues to reshape the automotive industry, empowering users to take proactive measures in maintaining their vehicles and ensuring a smoother driving experience.

II. METODE PENELITIAN

Developing a mobile application involves a systematic approach to ensure usability, functionality, and user satisfaction. This section outlines the research methods utilized to guide the development and refinement of the application, focusing on understanding user needs, evaluating competitors, and validating design decisions. A mobile application, commonly referred to as an "app," is software designed to run on mobile devices such as smartphones and tablets. These applications are tailored to utilize the unique capabilities of mobile platforms, offering functionalities that range from games and social networking to productivity tools and e-commerce. Mobile apps are typically downloaded and installed from app stores like Google Play for Android and the App Store for iOS. They enhance user experiences by providing access to content, services, and tools directly from handheld devices, often leveraging features such as GPS, camera, and touch interfaces for intuitive interaction. Furthemore, the features of the mobile application has 7 common benefits such as :

1. User Research:

- **User Interviews and Surveys:** Conducted to gather insights into user preferences, pain points, and expectations regarding similar applications.
- **Persona Development:** Based on collected data to create representative profiles of target users, guiding design and feature prioritization.

2. Market Analysis:

- **Competitor Analysis:** Examined existing applications to identify strengths, weaknesses, and gaps in the market.
- **Market Trends:** Researched current trends in mobile app design, functionality, and user expectations relevant to the application's domain.

3. Design and Prototyping:

- **Wireframing and Prototyping:** Iteratively designed and tested wireframes and prototypes to visualize user interfaces and gather early feedback.
- **Usability Testing:** Conducted usability tests with prototypes to evaluate navigation, user flow, and overall user experience.

4. Development and Iteration:

- **Agile Development:** Adopted an agile methodology to facilitate continuous improvement and responsiveness to changing requirements.
- **Feedback Loops:** Incorporated user feedback from testing phases into subsequent iterations to refine features and address usability issues.

5. Evaluation and Validation:

- **Beta Testing:** Released beta versions to a limited group of users to gather feedback on performance, stability, and feature satisfaction.
- **Metrics Analysis:** Utilized analytics tools to track user engagement, retention rates, and feature usage to inform further development priorities.

6. Ethical Considerations:

- **Data Privacy:** Ensured compliance with data protection regulations and implemented measures to safeguard user data and privacy.
- **Informed Consent:** Obtained informed consent from participants involved in user research and testing phases.

7. Tools and Technologies:

- **Development Tools:** Utilized IDEs (Integrated Development Environments), version control systems, and collaboration platforms to streamline development and communication.
- **Testing Tools:** Employed automated testing frameworks and device emulators/simulators to ensure compatibility across different mobile devices and platforms.

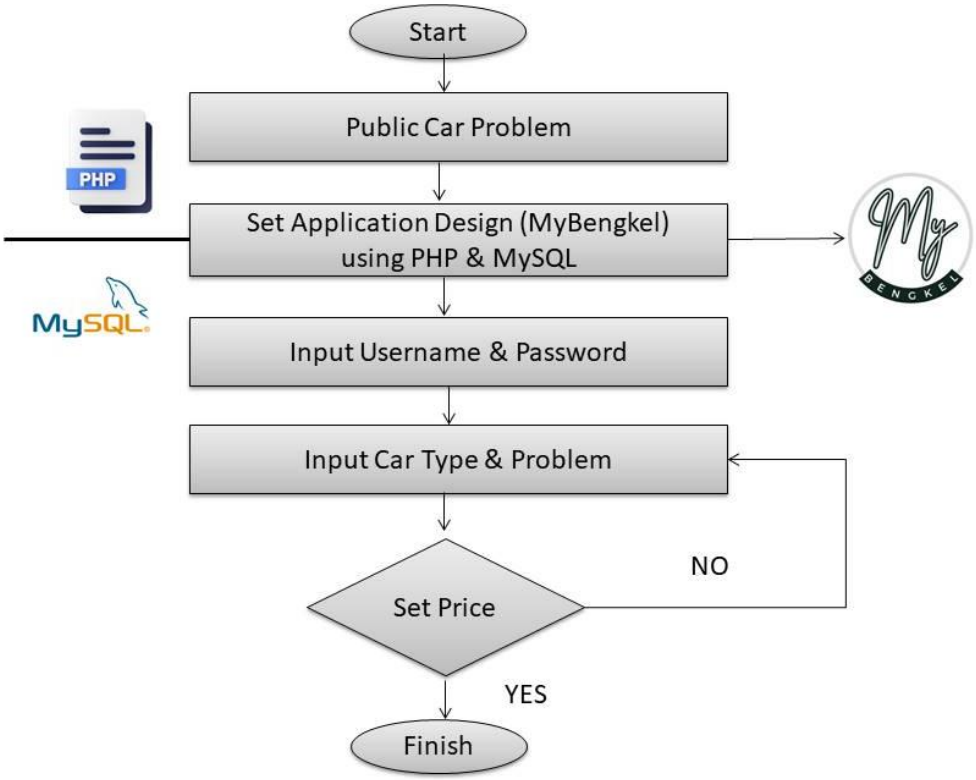

Figure 2. The flowchart of this study.

2.1 PHP (Hypertext Preprocessor)

PHP is a programming language that runs on Server-Side Scripting, meaning that this language certainly cannot be displayed on browser website pages and can also be used to create website-based games, which is different from the Javascript programming language that runs on Client-Side Scripting. Furthermore, PHP (Hypertext Preprocessor) is a widely-used server-side scripting language primarily designed for web development. It powers dynamic websites by embedding its code within HTML, enabling the creation of interactive and dynamic content. PHP is versatile, supporting various databases, web servers, and operating systems. It simplifies tasks like form handling, file processing, and database integration, making it a popular choice for developing web applications ranging from simple blogs to complex enterprise solutions.

For example, create a calculating program on a website and want to multiply three numbers using the PHP programming language. First, create a form to calculate multiplication with these three numbers. After that, create a PHP programming script to manage these three numbers. And now the final result of the form that we created using Client-Side Scripting and the PHP programming language that we created will be uploaded to the server. Next, if the user uses the website, the user will go to the server page and the user's position is the client. Next, the user will enter numbers in the form that we created and the function of the PHP language is to manage or calculate these numbers. And shows the final result of the number calculation to the client or user. (Generous, 2022)

2.2 MySQL

MySQL is a database management system that is open source. MySQL is a relational database management system. MySQL is a widely-used open-source relational database management system (RDBMS) known for its reliability, flexibility, and performance. It allows users to store, manage, and retrieve data organized in tables using Structured Query Language (SQL). MySQL supports various data types, transactions for ensuring data integrity, and features like indexing for efficient data retrieval. It is favored for web applications, data-driven websites, and business applications due to its scalability, robustness, and ease of integration with other technologies. This means that the data managed in the database will be placed in several separate tables so that data manipulation will be much faster. SQL can also be interpreted as a standard interface for relational management systems, including systems operating on personal computers. SQL allows a user to know where something is located, or how the information is organized. SQL is easier to use than programming languages, but complicated compared to spreadsheet and data processing software. A simple SQL statement can generate a set of requests for information stored on different computers in various scattered locations, requiring a lot of time and computing resources. (Perkasa and Setiawan, 2018).

III. HASIL DAN PEMBAHASAN

The result of this research is a Web-based Boarding House Search Application in the Bengkalis campuses and office areas. This application was built to help peoples

that have several car problems, starting from prices, facilities and location of the garage car in the Deli Serdang district. This application also makes it easier for car owners to promote their boarding car problems. The system was tested with thirty-five (35) car engine sounds according to the test categories of the system. Initial recordings were done in different environment conditions and in different places. These recorded sounds were processed and used for system tests.

Figure 3. Design logo of FF Motorcars for the program application.

The succeeding section shows the performance results of the developed application. The reference audio sounds were taken from Honda Civic cars with year model ranging from 1996 to 2000. The results show that the system is capable of total recognition at a rate of 56%. Fuel, timing and battery problems are 100% recognized. The fuzzy logic implementation in the Android platform is complete at a rate of 100%. The crisp output of the system is the same as with the Matlab output. This study also explored in using the designed Android application with other car models though the variability in the mechanical design of the engines would affect the sound that it produces. The ESA seems to be of no good when it comes to other car models considered in this study. Only a few percentages of match is seen in Figure 4. Though the reference is taken from a Civic, results show that a Sentra could possibly have the same start response with the reference. Jazz and Getz got 33.33% a piece while City has 25%.

Figure 4. The application program of FF Motorcars as the android program. The design of start menu with login menu (left) and the menu for the application that contains of several problems choosen.

This study was able to design and implement an acoustic based car engine fault diagnostic system running using the Android platform. An algorithm was made to work in order to analyze the sound coming from the car's engine using the correlation coefficients obtained from two distinct clustering methods of the power density of the spectrum. The implementation of fuzzy logic in the Android platform performed well as the results show a complete match between the crisp values from the Android platform and the crisp values obtained from the fuzzy logic toolbox in Matlab®. A graphical user interface was designed in order to control the functionality of the system. The GUI is equipped with button controls and display menus for result visualization. The car engine diagnosis was performed at varying level of recognition rate. Thus, in most of the car models used in this study, the recognition rate is acceptably high. The system was tested first using the reference cars then, to other car models, to see the applicability of the system's usage.

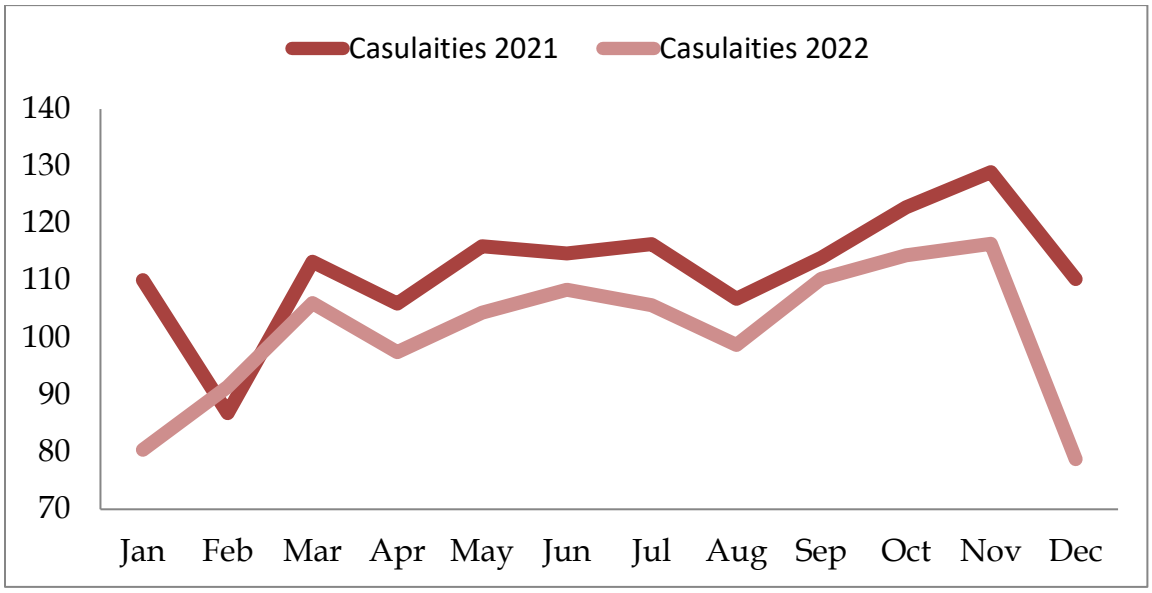

Figure 5. Graph shows the total causalities from input in the mobile application in 2021 and 2022.

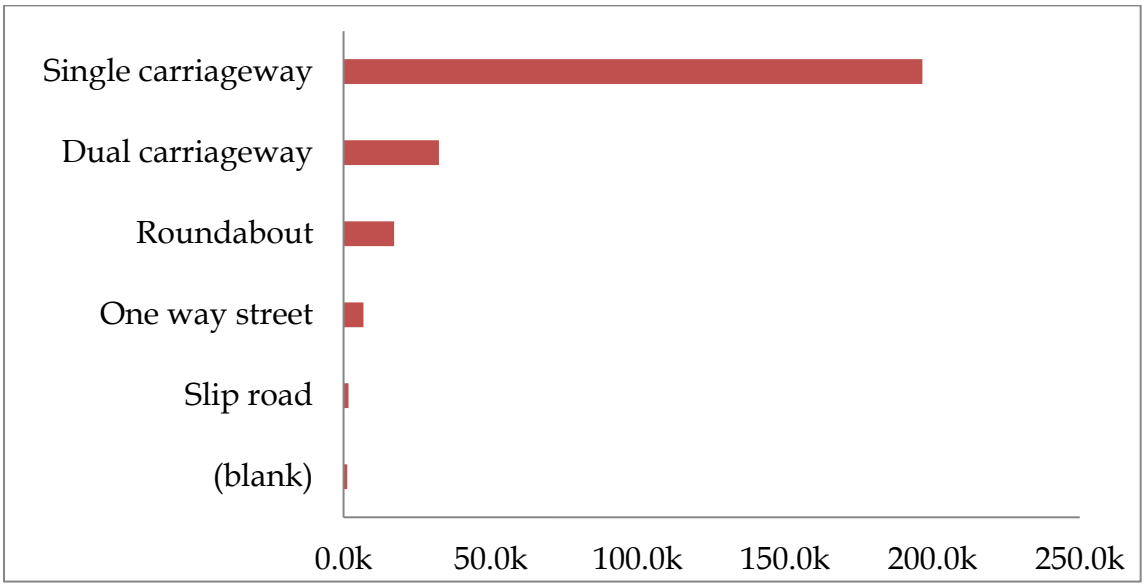

Figure 6. Graph shows the total car accident by roads type from global compilation and input data.

Processing car problems such as machine, gasoline, interior and exterior, is carried out by the car owner and also the admin. Meanwhile, seekers can see the location and the problem of their car with reasonable price. This application was built using the PHP programming language and MySQL as the database. The following displays the home page and registration page on the web-based boarding search application. The home page is the main page used by boarding car seekers to get the required boarding car information, and is also used by boarding car seekers and boarding car owners to log in which can be accessed recently.

IV. Simpulan dan Rekomendasi

This research designs and builds a web-based and mobile application boarding car probelm search application which aims to help peoples that have car accidents. The location interest in Deli Serdang regency and ist surrounding. The data compilation shows the total casualties in 2021 and 2022 is ranging at 80 – 120 cases in Deli Serdang with various roads type. This application makes it easy to get information on car problems facilities, appropriate prices and boarding car and garage service locations for local peoples and increases promotional opportunities for garage owners.

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