# Web-Based Design for Vehicle Management Information System Of Widyatama University

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## ABSTRACT

Vehicle inventory management and data collection information system is a system based on a Management Information System so that it has complete implementation functions that aim to record all vehicles. The main objective of developing this information system is to provide services that are faster, transparent and accurate on the service side of borrowing official vehicles within the Widyatama University environment. In the current vehicle inventory information system, it is not yet computerized and is done manually. The inventory registration information system is expected to be useful for minimizing errors that have occurred so far such as the unclear condition of the vehicle and when the vehicle will return, the design of the inventory information system is expected to produce an inventory information system that can work optimally and efficiently can perform testing services, readiness of drivers and management of motorized vehicles that operate according to the provisions that have been regulated, where the type of service can be adjusted to vehicle test data that is periodic, mutations in (Arrive) / out (booking) can be seen clearly by officers or users, other functions are there are changes to the function and status of the vehicle so that the vehicle will always be available and ready to be used.

## INTRODUCTION

In the 21st century, the development of Information Technology is increasingly widespread, this is in line with the development of computer technology from year to year, which develops gradually with technological advances from version to version. With Information Technology, office work can be done easily and effectively, which is essentially to support the work activities of Human Resources (HR) in the field of Computer Technology (TEKOM) or IT. To manage information, good technology is needed because good technology will create a computerized system that really supports speed, it will also provide convenience in collecting, managing and storing data as well as the need for distributing the information that will be obtained. The rapid development of computer technology and the development of hardware and software as well as communication technology is an alternative for an organization or company to obtain the flow of information needed, for this reason, every organization or company needs to make adjustments to both management information systems and businesses. which supports the speed, accuracy and accuracy of information If the activities carried out are still classified as manual, it will result in difficulties in knowing the data or information precisely and accurately.

## LITERATURE REVIEW

Internet is an abbreviation of the word Interconnection Networking. The Internet is also defined as a global network of computer networks or a computer network on a global/worldwide scale. This computer network is international in scale which allows each computer to communicate with each other. This network forms an inter-connected network which is connected via the TCP/IP protocol. The internet was first developed and tested in 1969 by the US Department of Defense in the ARPAnet project. Intranet is a limited network that can also use a browser and HTML which is usually used to work together in a group or team. An intranet is also an organization (usually a company) that is equipped with one or more web servers for the needs of that organization. Web servers are used for daily internal purposes such as storing memos, market surveys, and so on. Usually access to this web server can only be done from within because it is protected by a firewall. A private network with the same system and hierarchy as the internet but is not connected to the internet network and is only used internally.

The transportation system in Indonesia has a very big influence large and the main support to increase the economic factors in Indonesia, while in government agencies the transportation system used for operational activities, in vehicle government agencies service is used as an asset that must be maintained and repaired if having damaged (I Made Dwika Kusuma Putraa, Kadek Suar Wibawa, M.T., Anak Agung Ngurah Hary Susila, S.TI., M.MT., 2022).

An official vehicle has a very important role for government agencies and has become the main requirement for an organizational activitycan run smoothly, the vehicle managementinformation system can be implemented on a

website basis using the waterfall method as a reference for system testing and can provide information on vehicle types, condition and capacity (Alfiyanus Shaf'at , Dwi Retnoningsih , Hardika Khusnuliawati., 2020).

The aim of creating a vehicle information system is to facilitate the repair process and provide information on the condition of the vehicle both in terms of distance, continuous service and the purpose for which the vehicle was borrowed. Another function is to maximize the function of the vehicle so that it adapts to the type of vehicle and destination route (Lidya Siti Hafsari, Tacbir Hendro Pudjiantoro, Irma Santikarama., 2022).

Every company or agency needs to have a vehicle management system so that it can be used optimally, apart from that the operational aspects make it possible to optimize the distance traveled from the vehicle so that the system will provide a calculation  when the vehicle enters a repair service by taking into account the kilometers and distance traveled (Yudianto D. T., Noertjahyana A., dan Andjarwirawan J, J. Infra.) The principle of vehicle monitoring has a meaning, namely that it is carried out systematically continuously and becomes feedback information for improvement system and provide morning information to service users (Kartakusumah M. M. F.,).

The large number of vehicles in a company requires data processing, the data will record all usage activities, these activities can be important vehicle information and displayed in an integrated information system into several other systems, either website-based or with mobile applications, from The vehicle's historical information can be viewed and analyzed easily and this application is reliable, even a A good system can display how much operational costs are required for one vehicle, either in terms of hours or one day even one year. (A. Rahmawati, R. Kridalukmana, and I.P. Windasari,, 2015.)

In a more sophisticated information system the vehicle management system can use in the form of a car or by using a user interface based application, this system can created a digital form as a substitute for using manual forms which tend to be damaged or lost , the form data is summarized and made in accordance with the vehicle management business process as supporting data on facilities and infrastructure so that the vehicle can be used and can run according to operational needs. (Katon Abdul Fatah , Mohamad Jamil , 2022).

In previous research, a vehicle management system could be combined with a parking system, where with this system a process of analysis and calculation of the number of vehicles is carried out Entering a campus or company area so that it is more organized and safer, this system uses web-based application and uses a mysql database as a digital data storage place. (S. Farizy and G. Andrianto,, 2022).

In further developments, there is the use of QR code data used in the system vehicle management, this method is usually used as a tracking and tracing system, or better known as a vehicle security access system, this system is also commonly referred to as inventory management system (T.J. Soon, A. Data, and C., 2008).

The use of IT technology allows an institution or company to be integrated business processes, especially in companies that continue to grow and continue to get bigger so requires technological assistance to organize, record and make decisions, models This digital technology is also widely used in the field of e-commerce, online or mobile transactions, whereas in a company that has many operational vehicles that require a good vehicle management and maintenance information system, but the drawback of the IT (information technology) system requires a process special maintenance and must follow the progress of the times (Loane, 2005).

The function of vehicles in a company can be used as a means of transportation or logistics, The vehicle itself can work perfectly with the support of several systems starting from the driver, spare parts and fuel, the smooth running of a company depends on how ready the mode of transportation it has can be used at the right time and fast. Damage and unpreparedness of vehicles, both drivers, can cause large losses and have a negative impact on company performance (X. Ji, W. Zhou, and T. Ma, 2018).

In a more sophisticated system a company can equip the vehicle logistics section with utilizing GPS technology, this technology can function to find the coordinates and position of the vehicle when used, the system will display the location where the vehicle is and how long does it take to reach your destination, so that if there is information that the vehicle is not ready and experiences traffic jams while traveling, you can divert to another road (R. D. Sapta,, 2009).

Testing this web-based vehicle inventory system usually uses the black box method, this method is very commonly used to test an application-based system where this method works by looking at the system response or displaying an output and adapted to business processes, this system is usually tested on two menus, namely the admin view and the user view in this case users, from the results of the test it will be possible to see whether the application created is effective or not. The programmer will usually create a test scenario, where this method will sequentially test all the available features and will be used as consideration for whether this application will be released or not. (F. C. Ningrum, D. Suherman, S. Aryanti, H. A. Prasetya, and A. Saifudin, 2019).

Testing methods for information systems are very important because the website itself has its own features and menus adjusted to business capabilities and processes, the function of the test will later be adjusted with the needs of the software used and adapt it to the characteristics of the software In addition to the appearance of the application being created, the program code, interface design and database will be tested. The purpose of this testing is to measure the capabilities of an application by minimizing errors program when used (Cholifah, W. N., Yulianingsih, Y., & Sagita, S. M., 2018).

The black box method itself has an important role because of the development of IT technology can be integrated with each other, this type of testing also applies to an application that is still in prototyping form, the initial testing will look at the main function of a system by comparing and read the design specifications so that if there is damage the feature will be repaired to suit the needs and flow chat of an initial design. (Ferry Kurniawan, Erlin Ayu Khrisnawati, Rizka Hadiwiyanti, A. S. F, 2022)

## METHOD

The method of data collection that is in accordance with the subject matter of the research discussed above is carried out by direct practice at the location viewing and having direct (interactive) dialogue with the head of the informatics study program facility and the head of the field in charge of his staff.
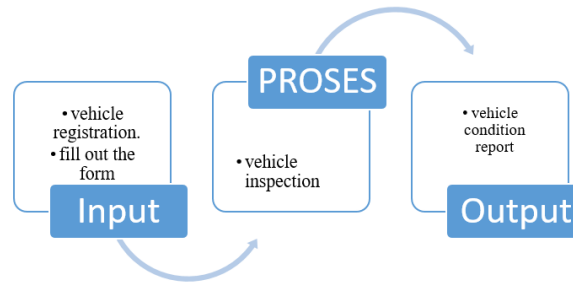
Figure 1. Information System  Cars Manajemen System

System analysis is the addition of software requirements. In this phase it is necessary to understand the information domain, behavior, performance and required interfaces. The need for a system/software for driver and route testing registration officers. The analysis stage can be described as follows.

**Face to Face Analysis (interface)**

At this stage it is described how the system can run properly and there is reciprocal interaction with the user. The system must be designed in such a way that it is easy for users to operate. In face-to-face with the system (interface) the system will follow the commands executed by the user.

**System development analysis**

The system must always be updated and updated according to usage and the latest developments in registration. The system design stage is designing the information system components that have been obtained at the analysis stage with the aim of making registration easier for users. The Design Stage can be described as follows:

1. **Database Design**

The database design stage requires identification of files that have been processed by the system used by the information system.

2. **Information Design**

Information design is a stage of relationship or reciprocal interaction between system users and the system that has been created, the user here is the vehicle owner who will register his vehicle for online testing of Android mobile-based driver and route routes.

3. **System Architecture Design**

The system architecture design here describes the relationship or reciprocal interaction between interconnected system components used online registration for website-based KI and route testing. Sequence diagrams are used to construct conceptual data models, model data structures and relationships between data and implement databases logically and physically with a DBMS (Database Management system). With this entity relationship diagram we can test the model without ignoring the processes that must be carried out. Entity relationship diagrams can help in answering questions about the data needed and how the data is related to each other.

## RESULT

In this section, the researcher will explain the results of the research obtained. Researchers can also use images, tables, and curves to explain the results of the study. These results should present the raw data or the results after applying the techniques outlined in the methods section. The results are simply results; they do not conclude.

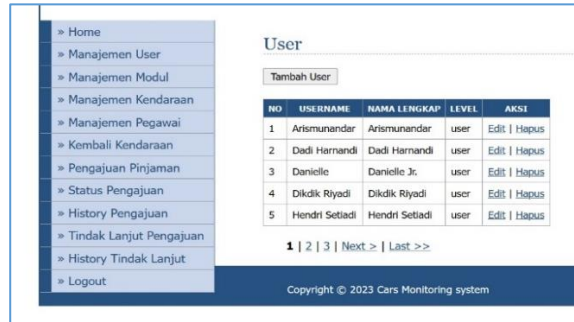Figure 2.  Modified Research Model Main page



Figure 3.  Modified Research Model Enter vehicle data



Figure 4.  Modified Research Model  Vehicle loan input



Figure 5.  Modified Research Model vehicle submission status data

In figure (2) is the main page of the Widyatama University vehicle inventory system, this menu is used by the admin or user to view and record existing vehicles, in this system three levels of access rights are provided, namely for admin, user and driver. In the menu image (3) is a menu for recording drivers who use official vehicles and for setting passwords and accounts for each driver so that they can record their respective vehicles and find out which vehicles are ready to use or not. On menu (4,5)  is a menu for recording the number of official vehicles, on this menu the admin can input the type of vehicle, vehicle brand, type, vehicle plate, passenger capacity, year of manufacture, vehicle status or condition and lastly is the action that makes the vehicle ready used or not.
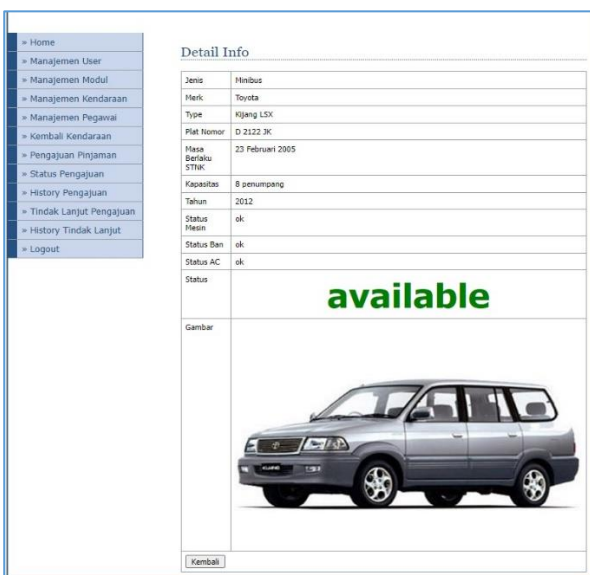


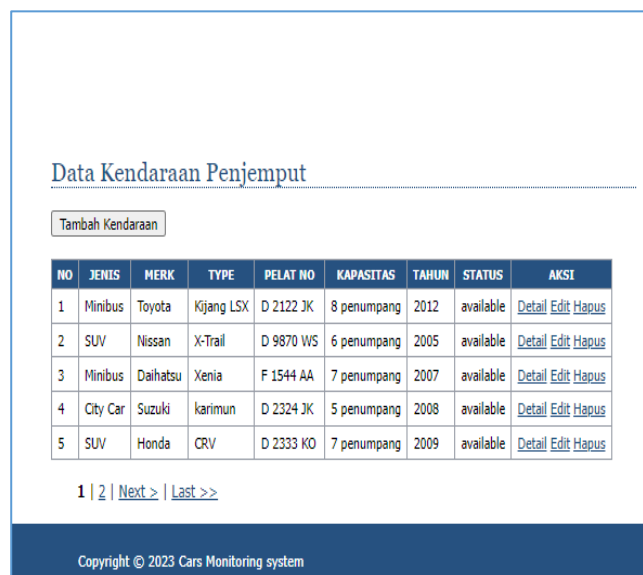Figure 6.   Detail for  vehicle submission status data



Figure 7 .   Add New  vehicle submission status data

In the menu in figure 6 above is a menu provided by the admin to add vehicle data, vehicle data added with several categories, namely in terms of brand capacity, vehicle number plate and when the vehicle will be returned, The vehicle data will continue to be recorded every day according to the results of the technician or mechanic's checks, Damaged vehicles will be given a statement by the admin with the statement "unusable" while those that are in good condition. The road will be given a description of being ready for use or avialeble. Meanwhile in Figure 7 there is data on the types of vehicles available and has not been used, the data is sent by the vehicle mechanic which will later be validated by the admin and then submitted to vehicle users by adjusting the conditions and when the vehicle is used.

## DISCUSSION

From the experimental results it can be concluded that the creation of a web-based official vehicle information system can be easily implemented, in testing this system involves two test scenarios namely the admin and user sections, at the admin level test using the blackbox method the system has input results that match system requirements and This application has features that are easy to use, while in user testing it is divided into two, namely drivers and vehicle technicians, on the menu the driver can see which vehicles are ready to be used while the technician can see and provide information on which vehicles are still under repair or ready to use. For further suggestions and improvements to the system, it can be developed into a mobile-based application with even more complete vehicle information, for example, the system can display directly the vehicle's kilometer number, passenger capacity and when the vehicle will be able to return.

## CONCLUSION

This vehicle management information system can be implemented easily, but features It has several weaknesses, firstly updates the vehicle data inputted by the admin and user It still depends on the network and internet connection, vehicle data may not be captured on the network unstable so that the vehicle data entered by the mechanic on certain days will not be read, this will result in disruption of company activities and become ineffective and weak, the third is that there are no security features in the system that has been created so that the personal data of the admin or Employees are very vulnerable to being lost, to overcome this problem it is necessary to create data backups on the database server with additional data security that can be installed on the server and a data encryption system in the login feature when entering the application.

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