APPLICATION OF 3D VIRTUAL MEDIA PROMOTION AS MODIFIED CAR (CASE STUDY HANJAYA MOTOR CIANJUR)

Zulfi Ramdani1, Dedeng Hirawan, Kom., M.Kom2

[1.2]Indonesian Computer University
Jalan Dipatiukur No. 112 Bandung, West Java 40132
E-mail: zulfiramdani7@gmail.com1, dhirawan88@gmail.com2

ABSTRACT

Hanjaya Motor Cianjur is one modification workshop famous car in Cianjur, with a very strategic location where the garage Hanjaya motor adjacent to the side of the road present, but there are some problems that are there are the modifications to the car a less attractive so that when consumers will modify the car sometimes not in accordance with the original and just as with employees, sometimes like difficulty in explaining to consumers regarding modifications to the car.

Therefore to assist employees and consumers section made development of interactive multimedia applications for the desktop-based custom car using Object Oriented Programming (OOP), analysis and design tools include, BPMN, xampp, usecase, activity diagrams, class diagrams, and sequence diagrams.

Based on the research, testing, with application of 3D car modification can facilitate employees in doing modif car and facilitate consumers in making modifications to the car.

Keywords: Car, Modified car, custom car based desktop

1. PRELIMINARY

Hanjaya Motor established in 1996, is a company engaged in the Automotive Industry is *service, spare parts, body repair*, Assecoris and shworoom. The aim of the company Hanjaya Motor is of service providersfor all kinds of cars and the provision of spare parts and filling the opportunities of the market share is still wide open for service and repair vehicles globally. Hanjaya kerjsama motors also established with the leading insurance companies in Indonesia. .Berlokasi precisely in a strategic area in Jalan Dr.Muwardi 151 (BYPASS) CIANJUR, we try to help the owners of vehicles in the area BOPUNCUR (Bogor, Puncak Cianjur) in general, to be able to enjoy or feel good service or repair the equipment of vehicles with very satisfied. Occupying an area of 6,000 square meters, with an area of workshop 2000 square m² which can accommodate as many as 80 vehicles, then the optimal Hanjaya Motor can work a total of 200 units / month ..

Communication plays a very important for the company because without communication consumers and society as a whole will not know the existence of products on the market. Communication is also prudent and calculating the correct plan in perusahaanan communication. Determining who are the target of communication will determine the success of communication, with the determination of the appropriate target, the communication process will run effectively and efficiently,some of the problems associated that of the Consumer own difficulties in obtaining the desired picture car modification or who are described by the employee.

Similarly, the communication to the employees themselves a very important role in terms of the advantage of the consumer, then from interviews with several employees in Hanjaya Motor Cianjur on issues related to that employee difficulties in identifies in detail the body repair that will be applied to the car prospective customers because a lot of several prospective customers are not satisfied at all with the results desired modifications potential consumers as possible of things communication is lacking.

2.After conducting interviews with the mother Sisca Putri Hansardi, BA, MBA as Director in Hanjaya Motor Cianjur that the company has a problem that occurs is difficult to create a picture of cars that will be modified with a draw. So the director wanted an application that could resolve some of the problems related to the company.

3.With these considerations, the author considers it important persamalahan already described to bring up an application on the modification of the car. The discussion will be written into the thesis entitled "DEVELOPMENT OF 3D VIRTUAL MEDIA PROMOTION AS MODIFIED CAR MOTOR HANJAYA CIANJUR".

1.1 Research Methodology

Research Methodology is the means used to merancangan or build an application or system to be built, and therefore requires a structured analysis that can be understood

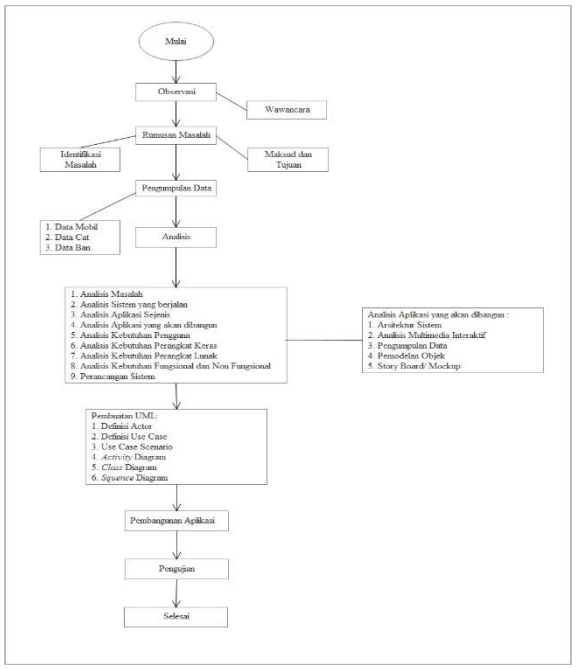


Figure 1. Flow Research

1.2 Systematics Writing

Preparation of this paper is divided into several chapters systematically in response to the problem issues were discussed. The systematics of writing in general is asfollowing:

CHAPTER 1 PRELIMINARY

In this chapter discusses common problems associated with the development of an application modifications to the car, including the background of the problem, formulation of the problem, the intent and purpose of research, problem definition in building the car modification to Hanjaya Motor Cianjur, method used when building an application, how author, how the authors collected data in the study. As well as software development model that will be built in the development of this car modification application. and the last one writing systematic preparation of this thesis.

CHAPTER 2 LITERATURE REVIEW

In this chapter discusses the theories and discussion of the basic concepts related to application development 3D car modification and other supporting theories related to the topic of the development of software and hardware. It examines the various terms of support so that the reader can understand the hardware and software built into this car modification.

CHAPTER 3 SYSTEM ANALYSIS AND PERANCAGAN

In Chapter This describes the analysis of problems concerned with the construction of car modification application, analysis of data requirements, functional requirements analysis, and analysis of non-functional requirements. The results of the analysis are used to perform software design and hardware design. In this chapter is also expected that the reader knows how the system is constructed so that no strange idea in the mind of the reader in the construction of car modification.

CHAPTER 4 IMPLEMENTATION AND TESTING SYSTEM

In this chapter contains the results of the implementation of the results of the analysis and design of systems that have been created with the results of the testing system has been created and observed whether the system has been built already qualified as a test method in the construction of car modification application.

CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS

In this chapter contains the conclusion obtained from previous chapters, especially the link between the problems encountered with the aim of the thesis and suggestions are constructive of all parties concerned in order to fix the flaws in the thesis. In this chapter the reader also can add or develop applications that will be made of this. by revisiting of previous chapters.

2. LITERATURE REVIEW

2.1 Profile Hanjaya Motor Cianjur

Hanjaya Motor established in 1996, is a company engaged in the Automotive Industry that service, spare parts, body repair, assecoris and showroom.Tujuan of companies Hanjaya Motor is a provider of services to all types of cars and the provision of spare parts and filling the opportunities of market share still wide open to service and repair vehicles globally. Hanjaya kerjsama motors also established with the leading insurance companies in Indonesia. .Berlokasi precisely in a strategic area in Jalan Dr.Muwardi 151 (BYPASS) CIANJUR. [1]

2.2 Basis Theory

2.2.1 Modification

Modify word derived from the English language that modification. Here are a few terms.

- *Modify:* 1 modify, alter, limit 2, 3 reducing *(John M. Echols, Indonesian-English Dictionary, p. 384)*
- *Modification:* modification, alteration *((John M. Echols, Indonesian-English Dictionary, p. 384)*
- *modification:* 1 change, 2 replacement or addition of something *(KBBI, p.* 653). [3]

2.2.2 Modification history

Activity modification walked changing times as well as the development of science and

technology. For example, motorcycle and car technology today has far different from automotive technology decades ago. Every year dikeluatkan innovation and new technologies are more sophisticated as the modification changes the old. Changes on the machines injection engine technology is now able to make the vehicle capable of performing a terrible but still efficient use of fuel. The shape of the new vehicle output also much more modern factories from time to time. From the ancient former to be more futuristic. For example, a car manufacturer Honda began producing the Corolla in the era of the 70s with inclined oval and convex shape, at the beginning of the '80s born Corolla DX is starting to look sporty,

2.2.3 Multimedia

Multimedia is the use of computers to create and combine text, graphics, audio, moving images (video and animation) by combining text, links and tools that allow users to navigate, interact, create and communicate. [4]

2.2.4 desktop

Desktop is a user interface (user interface) from the main computer. When you turn on the computer, the desktop is displayed after the startup process is complete. It includes a desktop background and icon files and folders that may have been saved to the desktop.

2.2.5 Luther method Sutopo

Multimedia development is based on six stages, namely the concept, design, material collecting, assembly, testing, and distribution. The sixth stage is not to be sequential in practice. Each stage can exchange positions, although the concept stage so it should be the first thing to do. Here is a picture of a method luther Sutopo.

2.2.6 System Design Method

OOP or Object Oriented Programming is object-based programming techniques. Programming is divided into objects later in these objects there is property and method. This property is known as a variable that is public and this method is a function. These objects can be expanded again by inheritance or derivative. The objects of this derivative was used to create an object that is a modification of other objects.

by grouping This grouping will then programming is well structured and easy to manage (manage). Programming language that implement OOP was C ++ and Java. PHP programming lately also developed into a programming language based on OOP (Object Orieented Programming) with the birth of PHP based frameworks. [5]

2.2.7 Google Maps

GoogleMaps is an online map or open an online map, can be done easily via the free service from Google. In fact, this service provides an API (Application Programming Interface) that allows other developers to take advantage of this application in his application. GoogleMaps display can be selected, based on the original photo or image map route alone [6].

2.2.8 UML (Unified Modeling Language)

In the development of object-oriented programming techniques, muncullahsebuah standardization that modeling for software development pemogramanan yangdibangun using object-oriented techniques, namely UnifiedModeling Language. UML offers a standard for designing modelsebuah system. UML notation is mainly derived from the 3 notation has adasebelumnya: Grady Booch OOD (Object-Oriented Design), Jim Rumbaugh OMT (Object Modeling Technique), and Ivar Jacobson OOSE (Object-Oriented SoftwareEngineering). [6]

2.2.9 *Unity 3D Engine*

Game Engines like Unity is the tool of the drivers behind the games (games) that we know and enjoy doing. Unity is one of the development tools are widely used and favored to pemngembangan game and used by everyone from the hobbyist to the big studios to develop games - games (games) as well as provide an interactive experience on the web, desktop, mobile phones and consoles. Unity Game Engine is the software used to create video games based on two or three-dimensional and can be used free of charge, in addition to making games, Unity 3D can also be used to create more interactive content such as, visual architecture and real-time 3D animation, other than as a Unity 3D game engine can also be used as an editor for existing games. Unity 3D is built using perogram C ++, but the user does not need to use the C ++ language is difficult, because Unity 3D supports another programming language such as JavaScript, C # and Boo, Unity has similarities with the game engine such as, Blender game engine, Virtools, GameStudio , adapaun excess of Unity 3D, Unity can be operated on Windows and Mac OS platforms and can produce games for Windows, Mac, Linux, Wii, iPad, iPhone, google Android and browser. For the browser, we require a plugin, namely the Unity Web Player, as well as the Flash Player in the Browser.

3. Analysis and Implementation

3.1 Collecting material

Collecting material is in the form of image material collection phase equipment, audio, text, video, navigation buttons, about the evaluation and assets associated with application development

1. ***graph (*Picture)**

Images are used to present a modification of 3D car to be built with attractive, and capable of delivering information at once

2. ***Text***

Text is the easiest multimedia data to be stored, recognized, understood, to introduce 3D car modification information in Hanjaya cianjur motors.

3. ***animation***

Animation is a collection of images that are displayed alternately and sequentially so visible engaged and living in a car modification application development using 3D interactive multimedia in the motor Hanjaya cianjur

4. ***Audio***

Audio has an important role in the delivery of a form of information to be delivered.

5. ***controlling***

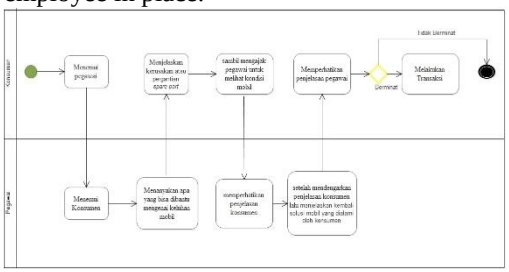
The controller is used to move an object to be driven like a car modification 3D.

3.2 Ongoing Analysis System

Analysis of the current system is analyzing the activity of work procedures that occur on the system is running in Hanjaya Motor Cianjur. Results from this analysis of activities in the form of a real picture of the sequence of work activities in Hanjaya Motor Cianjur.

The car modification procedure in Hanjaya Motor Cianjur today are:

1. Employees meet consumer Hanjaya Motor Cianjur.
2. Consumers see the employee.
3. Asking an employee what could be assisted to the complaints against the company.
4. Consumers explain damage or replacement Spare parts to employees.
5. Consumers came out, car show and explain the damage to consumer cars to employees.
6. Employee pay attention to the explanation of the consumer.
7. After hearing from the consumer, and employee explaining car repair to consumers.
8. Consumers pay attention to employees explanation.
9. If consumers are interested to do custom car you want then Consumers are required to conduct the transaction in advance and enter the data described by employees such as police number, brand or type of car and insurance.
10. Employee makes receipt receipts will be submitted to the Consumer.
11. Consumers receive a receipt from the employee at the same time make payments to the employee in place.



Picture 1, BPMN Custom Cars

3.3 Car Modification Analysis Will Be Built

Car Modification analysis that will be built is part describing the Modified car that will be built. Applications that will be designed and constructed thatCar Modification Application using 3D interactive multimedia In Hanjaya Motor Cianjur,

3.3.1 Analysis System Running

Analysis of the current system is analyzing the activity of work procedures that occur on the system is running in Hanjaya Motor Cianjur. Results from this analysis of activities in the form of a real picture of the sequence of work activities in Hanjaya Motor Cianjur.

The car modification procedure in Hanjaya Motor Cianjur today are:

1. Employees meet consumer Hanjaya Motor Cianjur.
2. Consumers see the employee.
3. Asking an employee what could be assisted to the complaints against the company.
4. Consumers explain damage or replacement Spare parts to employees.
5. Consumers came out, car show and explain the damage to consumer cars to employees.
6. Employee pay attention to the explanation of the consumer.
7. After hearing from the consumer, and employee explaining car repair to consumers.
8. Consumers pay attention to employees explanation.
9. If consumers are interested to do custom car you want then Consumers are required to conduct the transaction in advance and enter the data described by employees such as police number, brand or type of car and insurance.
10. Employee makes receipt receipts will be submitted to the Consumer.

3.3.2 System Architecture

Analysis of system architecture is a process to describe the physical system to be built and also the components of supporters. Here is an overviewsystem architecture will be built as shown below:

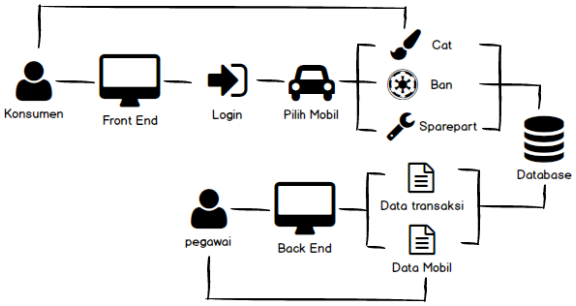


Figure 2 System Architecture

The following is an explanation of the system architecture as shown picture above, namely:

1. Consumers Doing login first to a laptop or PC that is already available.
2. Consumers Choosing the type of car that will be modified.
3. Consumers choose the type of car or car selection that will be modified.
4. Consumers get into the car like a menu custom menu automobile paint, automobile tires menu, as well as car spare part menu.
5. Consumers choose the paint menu for part paint or color the car when the car will be in custom.
6. Consumers choose a menu tires for a car tire parts when the car will be in custom.
7. Consumers choose a menu Spare car parts which it contains several parts such as spoilers, mirrors
8. When consumers mengcustom desired car system will save the database.
9. If you already fix then the employee shall record the transaction manually to the desired modif car consumers.
10. When the transaction is completed it will be entered into the database.

3.3.3 Analysis of Interactive Multimedia

This analysis is necessary to provide ease in 3D car modification information delivery using interactive multimedia. Application will be made filled with some of the components required in the manufacture of interactive multimedia applications, among others:

table 1 *Multimedia components*

No.	Multimedia components	Function
1	The graph (Figure)	Images are used to present a good appearance, and be able to deliver multiple words at once.
2	Text	Text is the easiest multimedia data to be stored, recognized, understood, to introduce the car modification information
3	animation	Animation is a collection of images that are displayed alternately and sequentially so it looks to move and live.
4	Audio	Audio has an important role in the delivery of a form of information.
5	controller	The controller is used to move the camera in the tools unity

3.3.4 *Storyboard / Mockup*

To illustrate the outline of the application to be built, then made a storyboard / mockup. The storyboard / mockup built is shown in the following table.

table 2 Storyboard / Mockup

Scene: Custom Menu	
	Description : This view is shown to create a custom menu memlih car modificatio n

3.3.5 Software Requirements Specification

Software requirements specification of the system to be built for 2, namely SKPL-NF (Non-Functional Requirement Specification) and SKPL-F (Fungsioanl Requirement Specification). The requirement specifications are:

table 3, *Non Functional SKPL*

Number	Description of Requirement
SKPL-F-01	This system can login by entering your username and password
SKPL-F-02	This system can choose the types of cars that are available in the system

SKPL-F-03	This system can choose the car that have to be modified
SKPL-F-04	The system will go into a menu of custom cars and custom menus can choose several cars available such as paint, tires, spoilers and mirrors.
SKPL-F-05	The system can select and access the car color
SKPL-F-06	The system can select and tires
SKPL-F-07	Openness can select and access a car spare parts
SKPL-F-08	The system can display data obil
SKPL-F-09	The system can manage the data mobi

table 4 *Non-Functional SKPL*

Code	Description of Requirement
SKPL-NF-01	user needs
SKPL-NF-02	Hardware requirements
SKPL-NF-03	Software requirements

3.4 *Use Case*

In the case of this functional requirement analysis, used the concept of Object Oriented Programming to develop modeled with UML (Unified Modeling Language). UML is used in the design and application development 3D Car Modification using interactive multimedia-based Desktop In Hanjaya Motor Cianjur, among others, are Use Case Diagram, Activity Diagram, Class Diagram and Sequence Diagram.

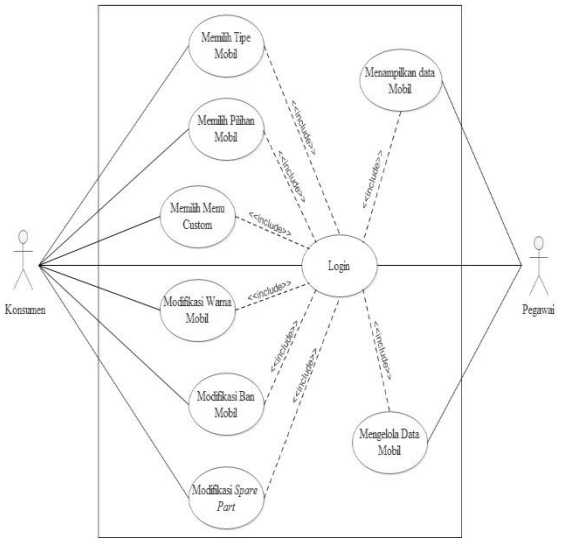


Figure 3. Use Case

Table 5. definitions Actor

Actor	Description
Consumer	A user of the application to be built, namely *Consumer* itself will use the application 3D Car modifications that will use this application.
employee	A user of the application to be built, the employee acts as the person who manages the data of the car.

Table 6. Definition Use Case

Use Case	Description
doing Login	A process to Login
Choosing Car Type	Is the process of selection of the type of cars that will be modified.
Choosing Car Options	A process where ConsumerSelecting or managing car choice
Choosing a Custom Menu	A process where Consumer can display custom car
Color modification Car	A process where consumers can perform color replacement car available
Modification Tires	A process where Consumers Substitution can make car tires available
Modification Parts	Spare Part election process is another that will be modified as spoilers, mirrors
Displays Car Data	A process where employees can display car data
Managing Data Drives	A process where employees can manage mobile data

Activity Diagram Choosing Car options describe how the activities carried out by the user on an activity diagram Car options.

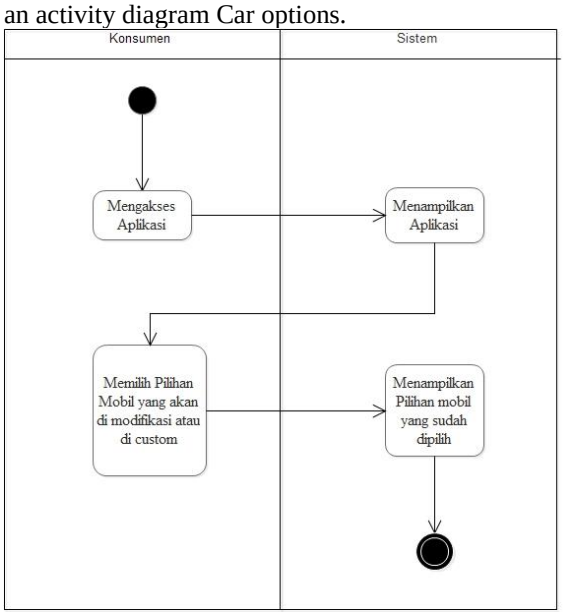


Figure 4.*Activity Diagram* Choosing Car Options

Activity Diagram Modification Spare Part describes how the activities carried out by the user on an activity diagram Parts modification.

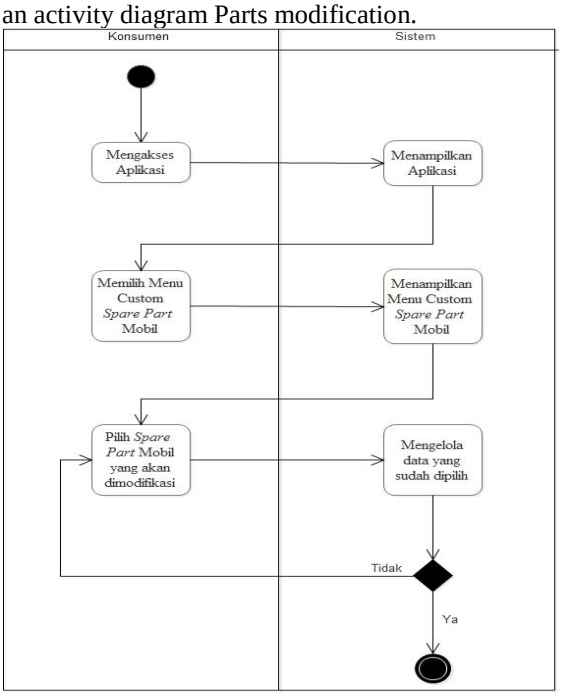


Figure 5.*Activity Diagram* Modification Parts

Activity Diagram Car Data Mengolola describe how the activities carried out by the user on an activity diagram Data Processing Car

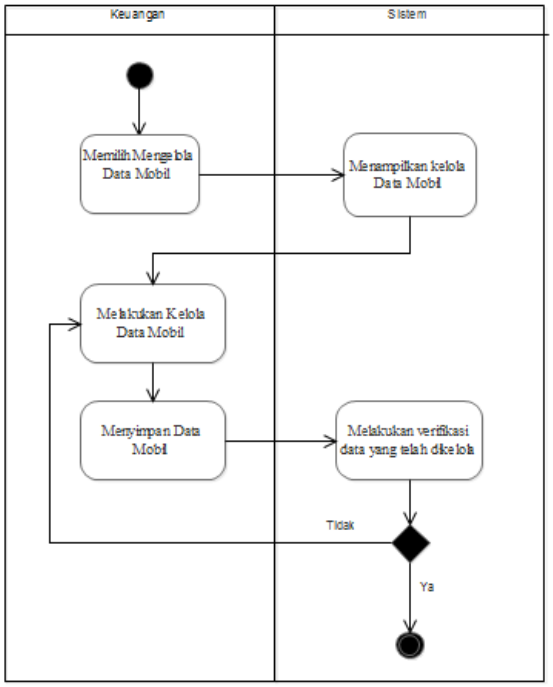


Figure 6. Activity Diagram Managing Data Drives (Backend)

Class diagram is a diagram used to show some of the classes in the application to be built. The class diagram provides an overview of the application and the relationships that exist. The class diagram in this application is as follows below.

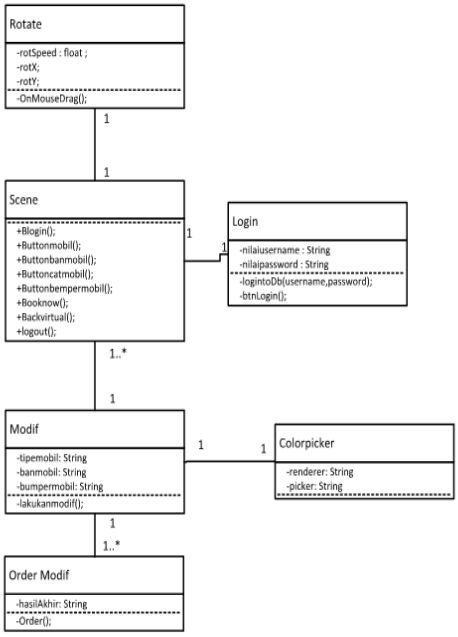


Figure 7. Class Diagram

sequence diagrams Choosing Car options describe how the activities performed by the user in sequence diagrams Choosing Car options.

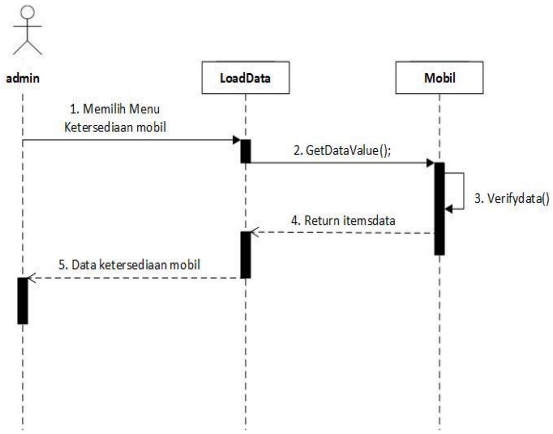


Figure 8, Squence Diagram Choosing Car Options

sequence diagrams Modification Spare Part describes how the activities performed by the user in sequence diagrams Parts modification.

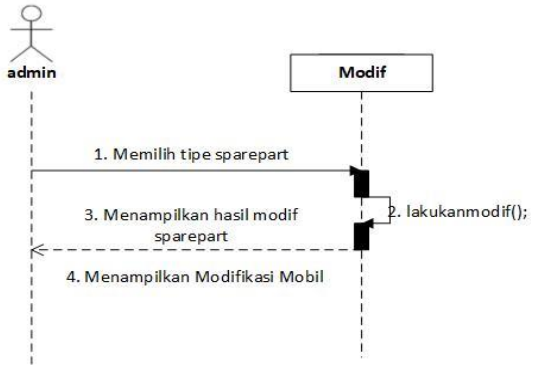


Figure 8, Diagram squence Modification Parts

3.5 Design Display Interface

Interface specification is a form of display of the program will be made for the needs of the user interface. Interface specification consists of the design of the menu display, the display form, display a message, output and semantic networks.

3.4.1 User Interface Design

Here can be seen the design interface to display the Car Menu Car Modification applications using multimedia-based interactive 3D Desktop In Hanjaya Motor Cianjur.

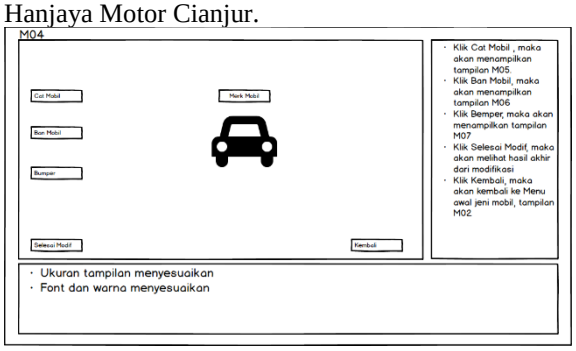


Figure 9. Menu Interface Design Custom Cars

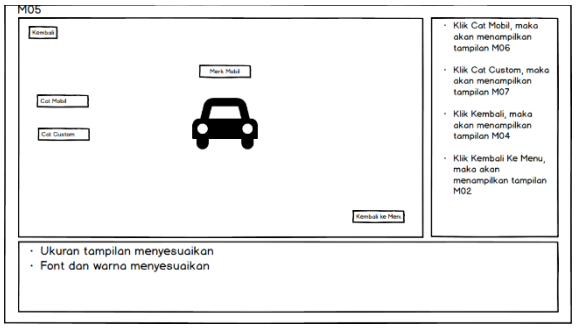


Figure 10. Menu Interface Design Paint

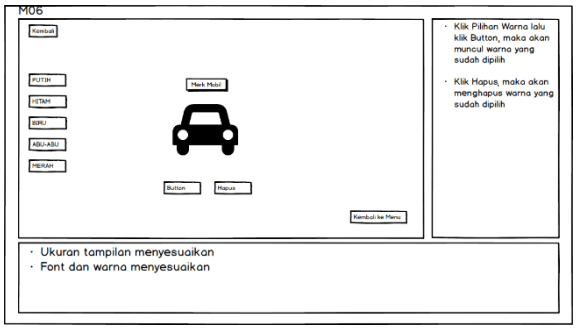


Figure 11. Menu Interface Design Paint

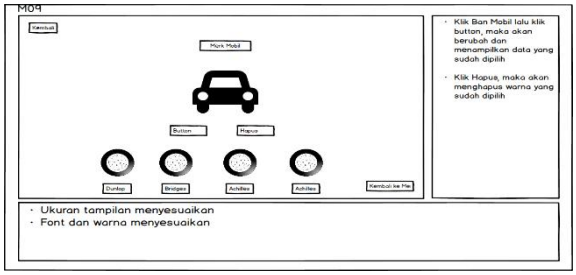


Figure 12. Interface Design Tires

3.4.2 Frontend Interface Implementation

Here is an implementation of the interface of the frontend which can be seen in Figure 17 and Figure 20.

Figure 20. Implementation Interface Driver Status Change

4 COVER

4.1 Conclusion

Based on the results of research, analysis, system design and implementation as well as testing, it could be concluded against the application "Car Modification Application Development Using 3D Interactive Multimedia in Hanjaya Motor Cianjur" is as follows:

1. 3D Car Modification Applications can provide information that is informative and interesting.
2. 3D Car Modification Application can facilitate customers and employees to modify.

BIBLIOGRAPHY

[1] Hanjaya Motor Cianjur (Year 2013), Background Hanjaya Motor Cianjur[on line]. Available:http://hjm-cianjur.blogspot.co.id/2016/01/hanjaya-motor-cianjur.html

[2] AH Sutopo, Interactive Multimedia with Flash, Yogyakarta: Graha Science 2003

[3] AL LAPELANI, Automotive Modification Overview and Sedan (Sport Car) [online]. Available:http://e-journal.uajy.ac.id/3313/3/2TA12420.pdf,

[4] T. Hofstetter, Multimedia Literacy. Third Edition, New York: McGraw- Hill, 2001.

[5] Hamilton Kim, Russell Miles. 2006. "Learning UML" .O'Reilly

[6] Sutarman 2003, "Building Web Applications with PHP and MySQL". Graha Science: Yogyakata.

[7] Retno Hendrowati, Designing Tests Beroriantasi Objects. Yogyakarta: Andi, 2013.

[8] Husaini Usman and Purnomo, 2008. "Understanding the Types of Interview and Interview". PT Earth Literacy: Jakart

[9] Dudung. (2016 Jan14) .XAMPP [Online] .Available: http://www.dosenpendidikan.com/pengertian-komponen-dan-fungsi-xampp-lengkap-dengan-penjelasannya/

[10] Understanding Google Sketchup from http://mufasucad.com/apa-itu-sketchup/

[11] Sanjaya, Ridwan, Easy to Make Games with Unity 3D, Bandung: Gramediana, 2014.

[12] "Description", [Online]. Available:https://id.vessoft.co.id/software/windows/download / notepadpp,

[13] W. Goldstone, Unity 3.x Game Development Essentials - Game Development with C # and javascript, Mumbai: Packt Publishing Ltd., 2011.

[14] Judge Zainal; 2012; "Adobe Photoshop History"; Jakarta: PT. Gramedia Pustaka General.

[15] The definition of 3ds Max From http://ubudbelajarkomputer.blogspot.co.id/2014/11/pengertian-3d-max-dan-keunggulan.html