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Order Vehicle Washing Online System Design Based on Android System

Hendi Sama[1], Zulkarnain[2], Surya Tjahjadi[3], Bayu Syahputra[4], Mangapul Siahaan[5], Muhamad Dody Firmansyah[6], Deli[7], Hendi Che[8]
1,2,3,4,5,6,7,8 Information System, Computer Science Faculty, Universitas Internasional Batam, Baloi-Sei Ladi, Jl. Gajah Mada, Tiban Indah, Kec. Sekupang, Kota Batam, Kepulauan Riau, 29426
E-mail: hendi@uib.ac.id[1], zulkarnain.lec@uib.ac.id[2], surya.tjahjadi@uib.ac.id[3], bayu@uib.ac.id[4], mangapul.siahan@uib.ac.id[5], dody.firmansyah@uib.ac.id[6], deli@uib.ac.id7, 1431055.hendi@uib.edu[8]

Abstract
This study aims to design an android-based online vehicle washing order application on mobile that aims to increase ease in placing orders. The application is designed using the sublime code editor using the react native framework. The backend part of this application is designed using the basic PHP language and uses the laravel framework to speed up and simplify development. The medium used to connect between the application and the system is using a JSON-based web service. This research and design produce an android-based mobile system. The results of this design shorten the user's time in placing orders and produce a user satisfaction level of 77.5%.
Keywords: order, *mobile*, *information system*, android, *react native*, JSON

Abstrak
Penelitian ini bertujuan untuk merancang sebuah aplikasi order pencucian kendaraan online berbasis android pada mobile yang bertujuan untuk meningkatkan kemudahan dalam melakukan order. Aplikasi dirancang menggunakan code editor sublime dengan menggunakan framework react native. Bagian backend dari aplikasi ini dirancang menggunakan bahasa dasar PHP dan menggunakan framework laravel untuk mempercepat dan mempermudah pengembangan. Medium yang digunakan untuk menghubungkan antara aplikasi dan sistem adalah menggunakan web servis yang berbasis JSON. Penelitian dan perancangan ini menghasilkan sebuah sistem mobile yang berbasis android. Hasil dari perancangan ini mempersingkat waktu pengguna dalam melakukan order dan menghasilkan tingkat kepuasan user 77,5%.
***Kata Kunci**: order, mobile, sistem informasi, android, react native, JSON*

I. INTRODUCTION

The development of information and communication technology today has become an important role in business processes in the world of work. By utilizing internet and smartphone technology, a job can be done anytime and anywhere. Smartphones have now become a primary need for people's lives. In addition to being easy to carry anywhere, with various applications that smartphones have, they can help complete human work from simple to complex such as time alerts or population census visualization.

The operating system on smartphones has various choices, one of the most famous and popular operating systems is Android. Android

is one of the platforms for smartphone devices. One of the advantages of Android is that its license is open source and free, so it is free to be developed because there are no royalty fees or distributed in any form (Lengkong, Sinsuw, and Lumenta, 2015).

Android has become the most widely used operating system today. From data released by IDC (International Data Corporation) in the 3rd quarter of 2012, Android has controlled 75% of the mobile operating system market share (Wahyutama, Samopa, and Suryotrisongko, 2013). In addition, Android is easy to operate and affordable and easy to develop according to needs, so that the Android operating system is the right choice as an information system utilization for small and medium businesses to help manage data and increase the effectiveness of a job.

Based on the description of the background that has been discussed, there are several problems formulated by the author, namely 1) How to design an application that can help in making online vehicle washing orders? 2) How to design a vehicle washing order application based on mobile android with the SDLC method? The purpose of implementing this design is 1) Designing an application that can help in making online vehicle washing orders; 2) Designing an application based on mobile android; and 3) Knowing the level of user satisfaction.

II. TABLES

The definition of information can also be said as the result of processing data obtained to be made into a form that is more useful and more meaningful for the recipient that describes real events (events) that are used for decision making (Prianti and Iriani, 2013). Information is data that is processed into a meaning so that the recipient can know it and can be used as a decision to be made (Alannita, 2014).

Information system shows the use of technology on computers in organizations or companies that can provide information for parties who need it and users (Alannita, 2014), a system that has processed the data provided and provided information in such a way that the processed data can be useful for the recipient (Herliana and Rasyid, 2016).

System Development Life Cycle (SDLC) is the stages of work carried out by system analysts and programmers in building information systems. SDLC is also a tool for project management that can be used to plan, decide and control the information system development process (Novita and Sari, 2015). SDLC is the process of developing a software system using models and methodologies that people use to develop existing software systems (based on best practices or proven methods) (Dzulhaq, Tullah, and Nugraha, 2017).

Flowchart is a sequence of work steps in a process that is described using symbols that are arranged systematically (Iswandy, 2015). (Surjawan and Susanto, 2015) said that flowchart is a collection of symbol images used to describe a sequence of processes from a system or direction that occurs in a logically structured computer program.

There are five types of flowcharts: system flowchart is a chart that shows the overall flow of work. This chart explains the procedures in the system. Document flowchart is a form flowchart that shows the flow of reports and forms including copies. Schematic flowchart is a flowchart that is like a system flowchart, namely by describing the procedures in the system. What distinguishes it is that the schematic flowchart not only uses symbols but also uses images in the form of computer equipment used. Program flowchart is a chart that explains in detail the steps of the program process. Process flowchart is a chart that is widely used in industrial engineering. Process flowcharts can show activities and savings used in a procedure and show the distance between one activity and another and the time required by an activity.

Types of flowcharts are divided into two, namely: program flowchart is a flowchart that describes its symbols with a careful process between one instruction and another in a computer program that is logical in nature; system flowchart is a flowchart that describes its symbols with a careful sequence of procedures in a computerized system and is physical.

Entity Relationship Diagram or ERD is a network model that describes a data structure stored from a system in an abstract manner (Yehendra and Yulianto, 2015). Unified Modeling Language (UML) is a family of graphical notations supported by a single meta-model, which helps describe and design software systems (Indra and George, 2017).

UML (Unified Modeling Language) is an object-oriented paradigm. Modeling has a role to

simplify complex problems in such a way that it is easier to learn and understand (Maimunah, Supriyanti, and Hendrian, 2017). The following are some types of UML that are often used. Using a case diagram is something meaningful to describe, detail, and collect system behavior requirements. Use case diagrams are used to explain what activities can be done by users/users of the running system (Novita and Sari, 2015).

Activity diagram is a depiction of a series of flows of activities, which are used to describe activities formed in an operation so that they can also be used for other activities. This diagram may be said to be like a flowchart because of the way it models a workflow from one activity to another (Indra and George, 2017). Sequence diagram is an interaction of objects arranged at a certain time/event sequence in a process, can be described with a sequence diagram (Novita and Sari, 2015).

An application is software in the form of software that contains a unit of commands or programs created by the person who created the program to carry out or do a job that is ordered to complete it (Afandi and Saputra, 2013). An application is a program developed to meet the needs of users in carrying out certain jobs (Maimunah, Supriyanti, and Hendrian, 2017).

Internet which is an abbreviation of international network, an international network where computers around the world are interconnected to connect between one computer and another, with various models, various operating systems, various types of networks, a protocol is used (a system that regulates the relationship between one computer and another computer) namely TCP/IP, an abbreviation of Transmission Control Protocol/Internet Protocol (Listianto, Fauzi, Irviani, and Kasmi, 2017).

Literally means a smartphone, namely a mobile phone that has capabilities like a PC (personal computer) although limited (Arifin and Sutariyani, 2014). A smartphone is a multifunctional cellphone that combines several functions of a PDA (Personal Digital Assistant), such as a personal scheduler, calendar and phone book. A smartphone is equipped with the ability to access the internet, check e-mail, play online games to write and edit spreadsheet documents such as Microsoft Word and Excel files like a minicomputer (Doni, 2017).

Android is an operating system or OS developed for mobile devices such as smart phones commonly called or known as smartphones and tablets. Android is well positioned to meet market needs through mobile technology. Android is an open-source platform that allows developers to work on it. Each Android application uses available libraries and has an embedded lightweight database called SQLite (B.G.V. Gautham, A.Arun, M.Hemanth Raj, D.Rajeswari, 2015). Android is an operating system on a mobile phone that is open and based on the Linux operating system. Android can be used by anyone who wants to use it on their device (Maimunah, Supriyanti, and Hendrian, 2017).

Web Service is a technology that changes the capabilities of the internet by adding transactional web capabilities, namely the ability of the web to communicate with each other in a program-to-program pattern. The focus of the web has so far been dominated by program-to-user communication with business-to-customer interactions, while the transactional web will be dominated by program-to-program with business-to-business interactions (Sudirman, 2016).

Application programming interfaces are well-defined mechanisms developed to connect existing resources such as application servers, middleware layers, or databases. APIs allow developers to use services from existing entities to obtain value owned by those entities, for example to access customer information will require API intermediary to the customer database (Kridalukmana, 2015).

JSON (JavaScript Object Notation) is a simple data exchange format that is very easy for humans to read and write and very easy for machines to parse and generate (Wahyutama, Samopa, and Suryotrisongko, 2013). JSON (JavaScript Object Notation) is a lightweight data exchange format, easy to read and write by humans, and easy to translate and generate by computers. This format is based on part of the JavaScript programming language, ECMA-262 Standard 3rd Edition December 1999 (Sudirman, 2016).

JavaScript is a simple programming language because this language cannot be used to create applications or applets. With JavaScript we can easily create an interactive web page. JavaScript programs are written in HTML files (*.htm *.html) (Nandari and Sukadi, 2014). Laravel is a framework that has a programming basis from PHP (Hypertext Preprocessing) with MVC

(Model-View-Controller) planning which is used to create a web application (Subiyanto and Sukamta, 2017).

III. IMPLEMENTATION

User logging in using email and password. Where the user will enter the email and password that has been registered in the server database to be able to continue using the application. The authentication process will be carried out on the server based on the email and password entered by the user. If authentication is successful, it will continue to the home page. Users only need to have a Facebook application on their smartphone to log in. Users only need to press the login with Facebook button on the application, later the application system will display the Facebook application that has been logged in and ask the user to press the continue button to use the Facebook account. After pressing the continuation button, the system will check the data in the database, if there is account data that matches the Facebook ID, it will continue to the home page. But if there is no account data that matches the user's Facebook ID, it will continue to the account registration page.

Users must have a Google account that has been registered on their smartphone to log in. Users only need to press the login with Google button on the application, later the application system will display a list of Google accounts that have been registered on the user's smartphone. After the user selects their Google account, the system will check the data in the database, if there is account data that matches Google ID, it will continue to the home page. But if there is no account data that matches the user's Google ID, it will continue to the account registration page.

After the user presses the top-up button, the system will display the top-up page where the user is required to select the amount they want to top up. After the user has finished selecting the amount they want to top up, the system will save the data on the amount to be topped up into the database and continue to the payment confirmation page. On the payment confirmation page, the user must make a payment to the bank they choose with the nominal amount written on the application screen and enter the name of the person making the transfer. After that, the payment confirmation is complete, and you only need to wait for the admin to check whether the nominal amount transferred is correct and has been entered or not. The following is a flowchart of the orders contained in the application. On the home page, there is a list of merchants in the selected city. To place an order, the user is required to select a merchant on the list; after selecting a merchant, it will then be continued to the product list page from the selected merchant. After the user has finished selecting the product they want to order, they will continue onto the order page to place an order for the product we choose. After placing an order, it will be continued to the order payment page. On that page, the user is required to select the type of payment available and fill in the address in the column provided.

After the user has finished selecting and filling in the data, the user must press the order button to place an order, and the system will save the data filled in by the user into the database. In the storage process, the system will check the user's choice to make a payment, if the user chooses to pay using virtual money in the application and it turns out that the user's virtual money is not enough to make a payment according to the nominal written, the order will be canceled and will remain on the order payment page. If the user has enough virtual money or is equivalent to the nominal written, the order will be successful. Likewise, if the user chooses to pay for the order with cash, the order will be successful and will continue to the order details page.

After the user presses the top-up button, the system will display the top-up page where the user is required to select the amount they want to top up. After the user has finished selecting the amount they want to top up, the system will save the data on the amount to be topped up into the database and continue to the payment confirmation page. On the payment confirmation page, the user must make a payment to the bank they choose with the nominal amount written on the application screen and enter the name of the person making the transfer.

After that, the payment confirmation is complete, and you only need to wait for the admin to check whether the nominal amount transferred is correct and has been entered or not. On the home page, there is a list of merchants in the selected city. To place an order, the user is required to select a merchant on the list; after selecting a merchant, it will then be continued to the product list page from the selected merchant. After the user has finished selecting the product

they want to order, they will continue to the order page to place an order for the product we choose.

After placing an order, it will be continued to the order payment page. On that page, the user is required to select the type of payment available and fill in the address in the column provided. After the user has finished selecting and filling in the data, the user must press the order button to place an order, and the system will save the data filled in by the user into the database. In the storage process, the system will check the user's choice to make a payment, if the user chooses to pay using virtual money in the application and it turns out that the user's virtual money is not enough to make a payment according to the nominal written, the order will be canceled and will remain on the order payment page.

If the user has enough virtual money or is equivalent to the nominal written, the order will be successful. Likewise, if the user chooses to pay for the order with cash, the order will be successful and will continue to the order details page. The following is an entity relationship diagram (ERD) that explains the relationship between tables and data types in each column of the table to be designed.

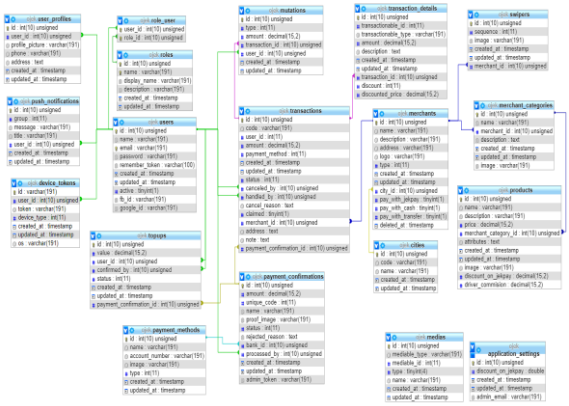

Figure 1. SDLC Method

Based on the application that has been made by the author. Then the author will conduct testing and conclude it. The results show application has passed all the tests and user satisfaction from 30 interviewed users has presented that the results of this design shorten the user's time in placing orders and produce a user satisfaction level of 77.5%.

IV. CONCLUSION

Based on the discussion and design results that have been implemented for the Android-based online vehicle washing order application, the following conclusions can be drawn:

1. The output of the Android-based online vehicle washing order application design is to help users make orders more easily. This shows that the application design is ready and in accordance with the expectations and desires of the researcher.
2. The design of this Android-based vehicle washing order application was successfully designed using the SDLC (System Development Life Cycle) method.
3. The resulting application design is an Android-based mobile application that is able to easily place orders.
4. In the design of this Android-based online vehicle washing order application, an application that can be used to place orders can be easily assisted by users.
5. The results show the application has passed all the tests and user satisfaction from 30 interviewed users has presented that the results of this design shorten the user's time in placing orders and produce a user satisfaction level of 77.5%

Here are some suggestions that can be used as a guide in developing this application, including:

1. If the vendor collaborates with a bank, the payment top-up feature can be done without waiting for the admin to confirm.
2. It is necessary to socialize JekWash employees about the Android-based application.

It is expected that the developers of this application can carry out routine maintenance such as the version of the React Native framework plugin, FBSDK, FCM, React-Navigation, etc. used so that the system remains stable.

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