Mobile-based Online Laundry Service Ordering Application

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ABSTRACT
Technology is currently growing rapidly in almost all parts of the world, all circles almost use it. The use of internet is very essential in everyday life as people cannot escape from it. The internet is funtioned today by some people to provide information as a communication tool. Beside that, people also utilize the internet as a media for online laundry service providers. This website has been successfully created to make it easier for consumers who have little time because they are busy with work in terms of washing consumer clothes[1]. More specifically, customers will return to use this service when the clothes they wear are dirty. In the current digital era, the application of technology to a laundry business has also been implemented. Many startups are running the laundry business, but as technology advances, it is hoped that new innovations will emerge[2]. Therefore, research was conducted to design a laundry service ordering application so that it is able to display information from laundry service providers and provide convenience in the service process for consumers and laundry service providers[3]. The research methods used include literature study and application design using Android, MySQL, and Google Maps API. This research has produced a laundry process application on Android and the web. This application can record every item of clothing that enters and leaves the laundry and this laundry process application also makes it easier for laundry entrepreneurs and laundry service users to carry out transactions. Therefore, this Android Based Laundry Application was created[4].

General Terms
Android, Kotlin, Java, PHP,CodeIgniter

Keywords
Mobile Application, Laundry, Ordering

1. INTRODUCTION
The laundry service ordering application is an integrated application as a solution in providing time efficiency and work effectiveness in the process of ordering laundry services. Indonesia is a large country with a population of approximately 170 million people[5]. Whatever our type of work and social status, wherever we live, whatever our age, we are all consumers. Even though the needs and desires of each consumer are different, all consumers do the same thing, namely consuming goods and services[6]. The similarity of the activities carried out carries the implication that all consumers have the same interests[7]. Laundry services are one of the service businesses that is currently being discussed a lot following the culinary business trends that are currently popular. Because the service business is quite a tempting opportunity, many people are opening laundry services[8]. City residents are increasingly busy, making this laundry service business increasingly popular. Because most people who use laundry services are office workers and students who live in boarding houses, who because they are busy don't have time to wash their own clothes[9]. Laundry service providers that offer clothes washing services including washing only services, dry cleaning services, and dry cleaning and ironing services[10]. Ordering laundry services should be a great opportunity for laundry service providers to attract more consumers considering that consumers themselves will find it easier to provide laundry services because of their busy lives[11]. Consumers also certainly prefer to have their clothes delivered and picked up rather than coming to the laundry themselves. In modern times like today, especially in the field of information technology, can see drastic developments starting from hardware and software, for example the development of smartphones that use the Android operating system, which has recently become a widely used operating system because of the various features it provides. can be displayed to meet the needs and appeal of its users.

2. RESEARCH METHOD
The way the system works can be visualized in architecture diagram in Fig 1.

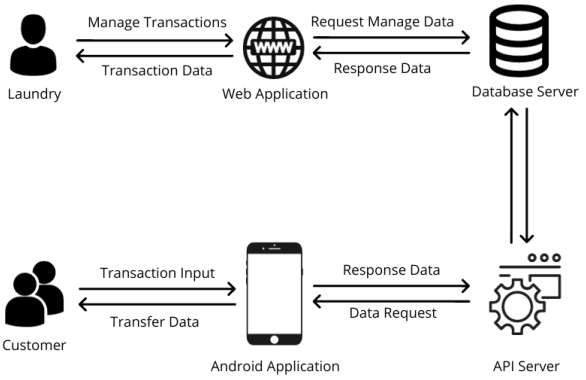

Fig 1 : Architecture Diagram

The following is a picture of the improvement plan for the system currently running, using a mobile-based Laundry Ordering Application system. Starting from the customer inputting order data into the Application, then continuing through the API server and Database server. Next, the order will go to the Web Application which is controlled by the admin/laundry service provider.

2.1 Data Collection Procedure
The data collection method is obtained directly from the research object. The data collection stages used are :

Table 1. Obtained Data

Cuci Kiloan		
No	Data	Information
1.	Regular Iron Wash (Wash and Fold) (1x24 hours)	Rp6.000,-/kg
2.	Regular Iron Wash (Wash and Fold) (2x24 hours)	Rp4.000,-/kg
3	Premium Iron Wash (Wash, Iron and Fold) (1x24 hours)	Rp9.000,-/kg
4	Premium Iron Wash (Wash, Iron and Fold) (2x24 hours)	Rp6.000,-/kg
5	Small Bed Cover (max 1.5 m)	Rp8.000,-
6	Big Bed Cover (max 2.5 m)	Rp14.000,-
7	Towel	Rp6.000,-
8	Jacket	Rp15.000,-
9	Prayer mat	Rp8.000,-
10	Suit	Rp25.000,-
11	Blouse	Rp25.000,-
12	Jeans	Rp10.000,-

The data above was obtained after going through the processes below

2.1.1 Questionnaires

Questionnaires were conducted with laundry consumers and asked questions about their experiences as consumers or users of laundry services.

2.1.2 Interview

Interview conducted at Abiwara laundry with the laundry. Interviews were conducted with Abiwara Laundry employees. The interview lasted 30 minutes with 11 questions regarding laundry services.

2.1.3 Observation

Observations were carried out to find out and observe directly the conditions and transaction systems at the location of the laundry service provider.

2.2 System Design Logic

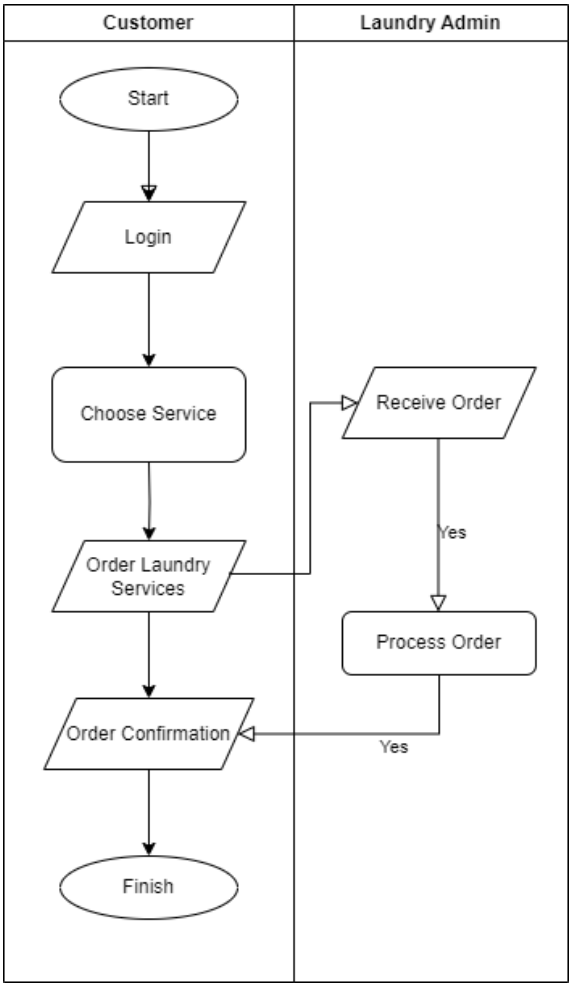

Fig 2 : Flowchart Diagram

Flowchart Diagram is a system flow diagram. Consumers can log in and see a list of laundry services available through the application. If the consumer matches the service chosen, the consumer can order that service. Service providers can receive orders and immediately process the order and send the order to the consumer. The consumer confirms the order sent by the admin.

2.3 Physical Design

The relationship between tables is depicted with lines that are interconnected between each table. The line is the relationship between the primary key and foreign key of the table.

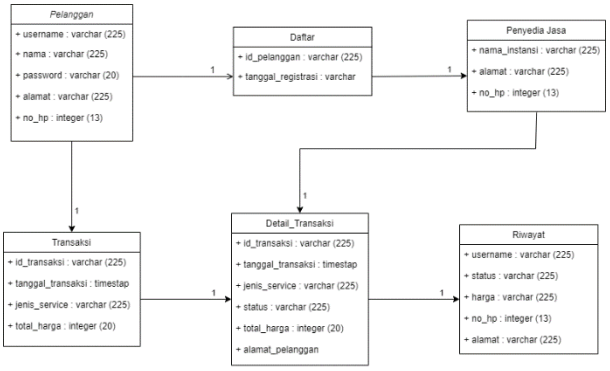

Fig 3 : Relations Table

2.4 Interface Design

The wireframe in this application was designed using the Balsamiq Wireframe application so that the application creation process is easier and well planned

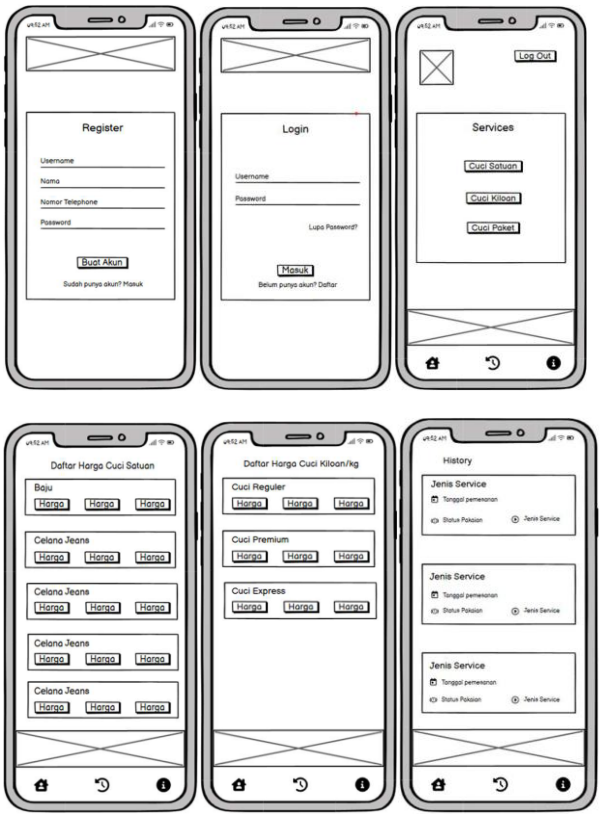

Fig 4 : Mobile Application Wireframes

3. RESULT AND DISCUSSION

3.1 Assumptions

Application users are people who can operate smartphones. People can place orders and check the status of clothes being washed through the application. Users who place an order will receive a notification containing the rate and time for picking up the clothes. Meanwhile, the laundry admin can find out laundry service order data via the website application.

3.2 Hypothesis

This hypothesis is based on assumptions obtained from previous research. The hypothesis of this research is "A Mobile-based Online Laundry Service Ordering Application can make it easier for laundry service providers and people near the laundry who don't have time or are reluctant to take the time to come to the laundry directly."

3.3 Feature

This application has two main users, namely laundry service providers and customers. Therefore, this application has several useful features to facilitate laundry transactions.

Table 2 List of Feature

No	Actor	Feature
1.	Customer	User Login Page, User Register Page, Home Page, Service Page, Order History, Wash Kilos, Wash Pieces.
2.	Laundry Service Admin	Admin Login Page, Profile Laundry, Incoming transactions, complete transactions, User Data Menu, Monthly Income Recap.

3.4 Run an Experiment

After the wireframe design has been successfully created, the next step is coding. The applications used by customers use the Kotlin and Java programming languages, while the web laundry admin uses the PHP programming language and uses the CodeIgniter framework. Through this endpoint, users can perform certain actions such as creating, reading, updating, or deleting (CRUD) data.

3.5 Implementation

The resulting implementation is an application based on the results of the system analysis and design that was carried out in the previous chapter. In the sub-chapter, product results are presented in terms of user interface and application of architectural patterns. The product results in this research are in the form of an Online Laundry Service Ordering application. The following are the results of applying the research.

3.5.1 Customer Login Page and Register Page

The Login and Registration page will look like in the picture. Customers are required to register first to be able to use the application. After that, customers and service providers log in by entering their username and password.

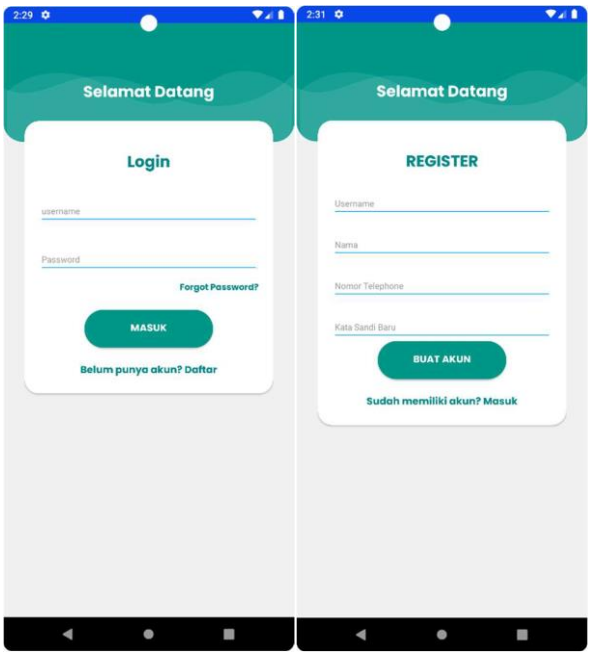

Fig 5 : Login Page and Register Page Customer

3.5.2 Home Page and Profil Page Customer

On the home page there are three service options, namely Unit Wash, Kilo Wash, and Package Wash. There is also an information/profile menu and order history.

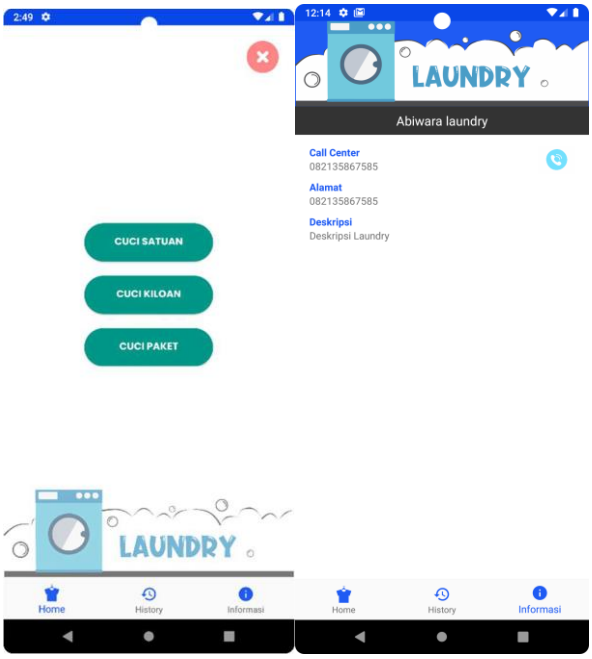

Fig 6 : Home Page and Profile Page Customer

3.5.3 Wash Kilos Page and Wash Pieces Page

On this page, customers can choose which service they will use, from the speed of the washing process to the types of clothes they want to wash..

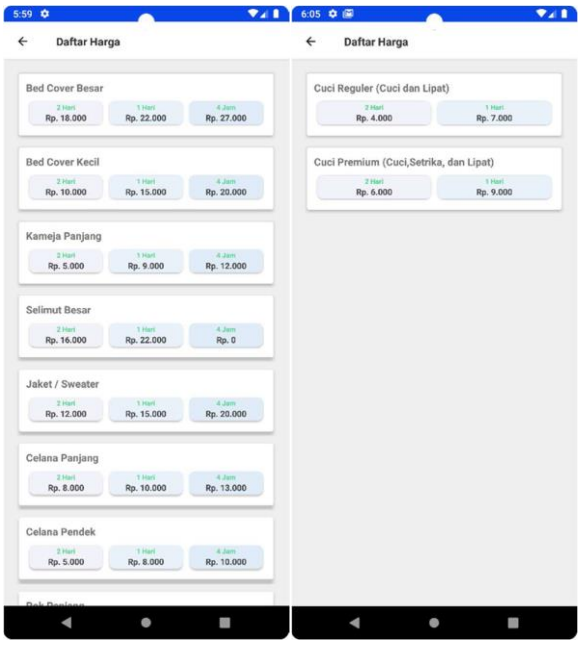

Fig 7 : Wash Kilos and Wash Pieces

3.5.4 History Page and Final Order Page

This page functions to see orders that have been made, are being processed, and to see the status of the goods, whether they have been washed or are still in the washing process. Meanwhile, the final order page functions to determine the customer's position for later pick-up or delivery of clothes.

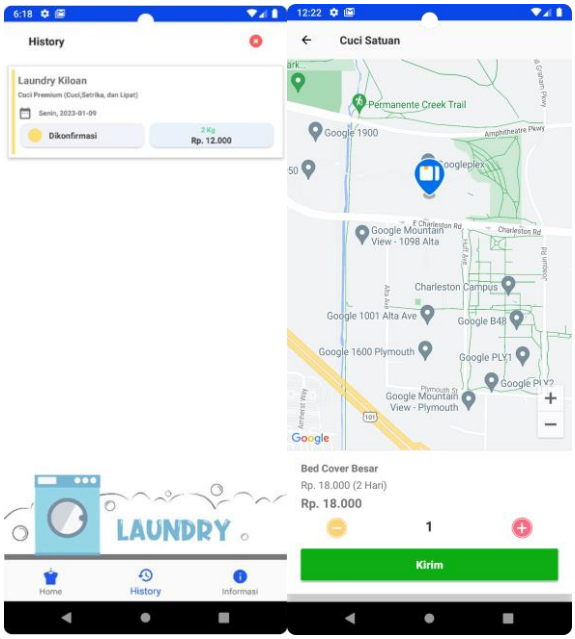

Fig 8 : History Page and Final Order Page

3.5.5 Login Admin

Admin must log in first to monitor service orders and washing status.

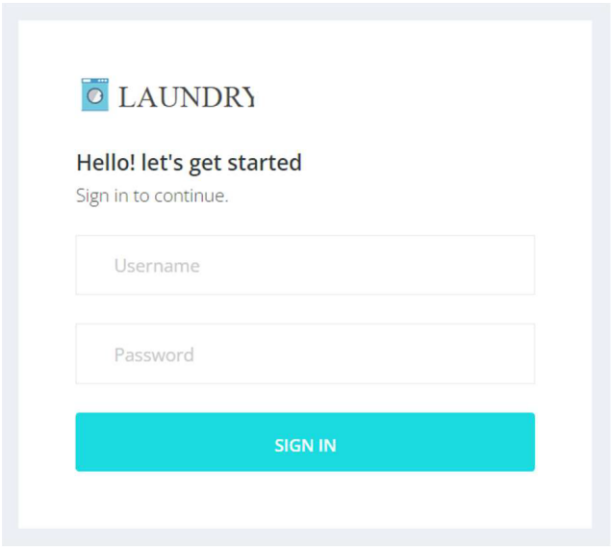

Fig 9 : Login Admin Page

3.5.6 Laundry Profile

Serves as information to customers regarding the address and name of the laundry.

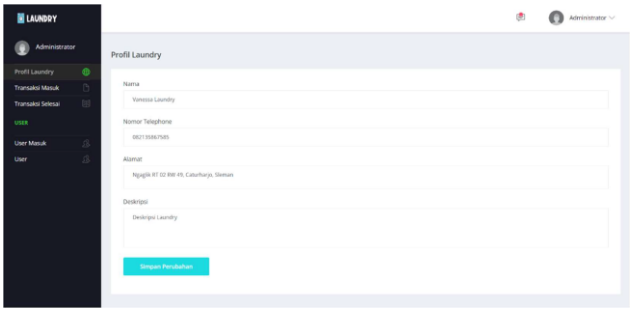

Fig 10 : Laundry Profile Page

3.5.7 Incoming Transactions

A page that functions to monitor incoming orders from customers.

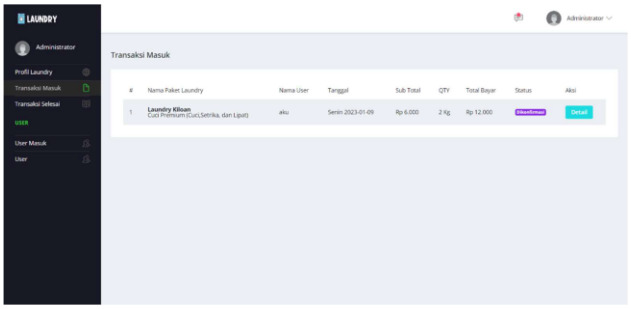

Fig 11 : Incoming Transactions Page

3.5.8 Complete Transactions

This page is used to view transactions that have been completed and have gone through the delivery process.

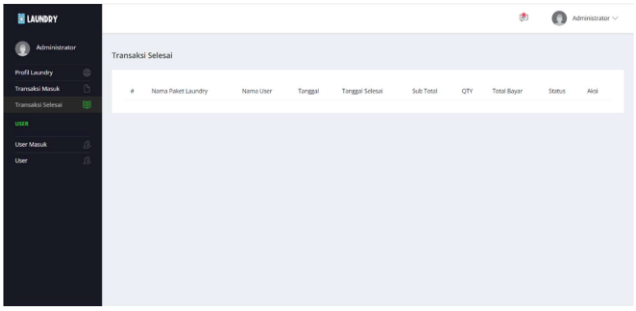

Fig 12 : Complete Transaction Page

3.5.9 User Data Page

Admins can see how many customers have registered on their application and can see their personal data.

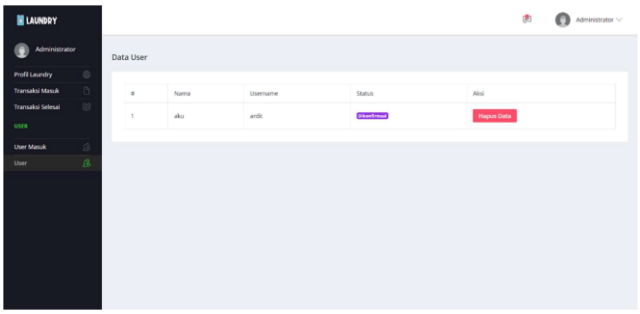

Fig 13 : User Data Page

3.5.10 Income Recap

Monitor income as a whole, can be set in a day, a month, or a year.

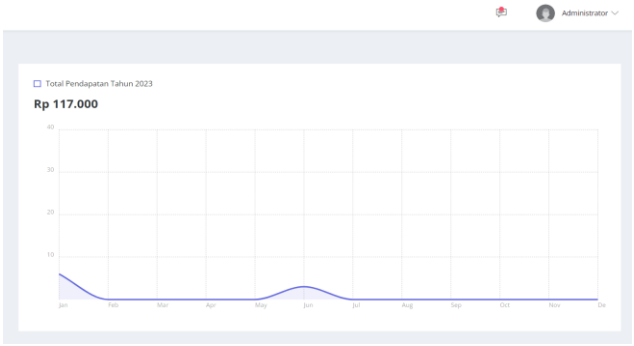

Fig 14 : Income Recap Page

3.6 Discussion of Result

The next stage is the testing stage, testing is carried out to look for weaknesses and defects in the application function. In this research, Black Box testing was used for testing.

Table 3 Black Box Testing Mobile Apps

Testing	Expected Realization	Testing Result	Conclusion
Registration	Customer can create a new account	Can login to the main feature after successfully registering and entering the registered email and password.	Accepted
Make an Order	Customer can make an order.	Customer can make an order Wash Kilos or Wash Pieces and can set locations for pick-up and drop-off.	Accepted
Check Order History	Can check the order history and laundry status.	Laundry history and clothes status are displayed.	Accepted
Cancel order	Order can be canceled.	Orders can be canceled before being confirmed by the laundry.	Accepted

Table 4 Black Box Testing Website Apps

Testing	Expected Realization	Testing Result	Conclusion
Registration	Laundry Admin can create a new account	Can login to the main feature after successfully registering and entering the registered email and password.	Accepted
Manage registered customer data	Can confirm, update, and delete registration customer.	The admin can confirm and delete the data of customers who register.	Accepted
Update clothes status	Can confirm and update the clothes	The admin can press the button of update status	Accepted

	washing process	laundry.	
View Location	Can see the pick-up and drop-off locations for clothes	The admin Can see the pick-up and drop-off locations for clothes	Accepted

4. CONCLUSION

Based on the results of research conducted on the Mobile-based Laundry Service Ordering Application, it can be concluded that this application system has been able to answer the problems that existed before this application was created. In addition, the concept of a mobile application for customers with a web application for admins is able to display real data changes. time.

This research has not focused on the concept of service. So further research needs to be done to develop a good payment system. Apart from that, implementing an ordering system and detecting new locations can improve the previous system design. Based on the results of black box testing, the application is accepted. It can be concluded that users can use the application well and understand the design applied to the application. It is hoped that in the future the application can be developed with more features, one of which is payment.

5. REFERENCES

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