

# Reservation System Development: Android Application for Shoe Washing (Fatig Cleanshoes)

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## ABSTRACT

Fatig Cleanshoes is a business engaged in fashion care, but is usually synonymous with shoe care. For now, customers are increasingly busy with their activities, so they do not have time to do maintenance and deliver their shoes directly to the place. In addition, the lack of information about the customer's shoe care process often makes customers have to go back and forth to make sure the shoe care is complete or in the maintenance process stage. Even though it has been scheduled when making transactions, it is not uncommon for excessive transactions to occur which causes the treatment to be delayed from the specified schedule. So that with these problems, it gave rise to an idea to develop it into an android-based application. Then, to make the application using MySQL (database), Kotlin and PHP (programming language). Therefore, this application is expected to provide solutions to customers and shoe polishers to help the transaction process and better information than before, such as: people can make transactions online, customers can choose to drop off and pick up their own shoes or shoe polishers who do it, customers can see the process on the shoes that are deposited, better data reports for businesses, easier to inform something for customers from businesses.

## General Terms

Shoe Care, Application, Android.

## Keywords

Treatment, Transaction, Android Application, Kotlin, PHP.

## 1. INTRODUCTION

Every human being must have certain needs that must be met. The development of technology today is very helpful for humans in fulfilling their needs. Technological optimization and the automation of operations and maintenance are strategies used to increase efficiency and productivity [1]. The performance of a system should be optimized to provide more benefits.

In this research, a system was created that aims to facilitate reservations at Fatig Cleanshoes. Reservation or booking is not a new concept [2]. Problems that exist in the current system regarding data collection. Business transaction data includes numeric values of the transactions and the date/time when the transactions are recorded, and textual data such as descriptions [3]. This system will later be made into an application that can be run through an android-based smartphone. Software (S/W)-based and hardware (H/W)-based acquisition methods are mainly used to acquire data from Android smartphones [4].

Applications are made using the Kotlin programming language and PHP. the database used is MySQL. Relational databases like MySQL are storing data in organized form [5]. This research identifies how to design and implement a new system to create an android-based reservation application at Fatif

Cleanshoes, where the users are admin and customers. Users are precious, they experience breakdowns and develop needs, wants, and opinions [6]. Customers can make reservations through the application, so that customer data can be directly known by the admin. The reservation service will be successful with one click on the application [7]. Therefore, mobile smartphone applications are critical to support the functions and displays that have been designed [8].

## 2. RESEARCH METHOD

In this research method, it is explained that the system to be created is a shoe washing reservation application. The process of making the system begins with designing an architectural diagram that describes the system.

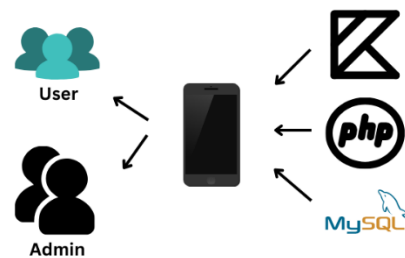


Fig 1: Architecture Diagram

Android-based applications are created using the PHP and Kotlin programming languages, while the database used is MySQL.

### 2.1 Data Collection Procedure

Based on the interview process that has been carried out, it is found that there are still shortcomings in the old system. Lack of security and efficiency of the time needed to collect data on each customer and transaction made. Transactions at the business are less stable. Therefore, any deficiencies received can help researchers to build the applications needed to complete the perceived deficiencies.

### 2.2 System Design Logic

In the current era, software productivity can be effectively improved through object-oriented analysis and design, so as to further improve the quality of software, reduce the time required for development, and adjust the overall complexity of the system [9]. Application system design logic using UML. UML uses visual modeling tools to enable developers to obtain an accurate and complete understanding of the target system through the integrated engineering definition, analysis, design, production, testing and maintenance process of the structural and behavioral characteristics of system requirements [10]. Improving UML diagram data not only increases the amount of data, but also increases the structural complexity between UML diagrams [11]. This design will focus on data flow using DFD

(Data Flow Diagram). Data flow is a scheme that transfers data, strings, numbers, or arrays from one memory space, or department, to another memory space or department, respectively [12].

### 2.2.1 Context Diagram

This system consists of 2 entities, namely admin and customer. The admin entity can receive reservation information made by customers, manage customer data, service data, and reservation data (status and others). The customer entity can receive information on the service data provided, information on reservation status data and shoes and also customers can input the services they want to order which will later be confirmed by the admin.

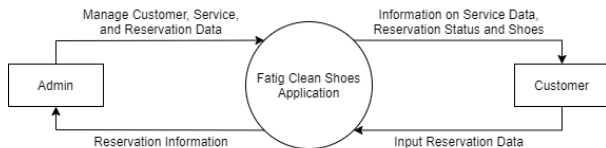


Fig 2: Context Diagram

### 2.2.2 DFD Level 1

From DFD level 1 above, there are 2 entities, namely admin and customer, 4 processes (login, manage master data, manage reservation data, and manage report data) and 6 data stores (admin, customer, reservation, service, review, and transaction). Where these entities must log in first to enter the system, after that the two entities can do their respective tasks in each subsequent process.

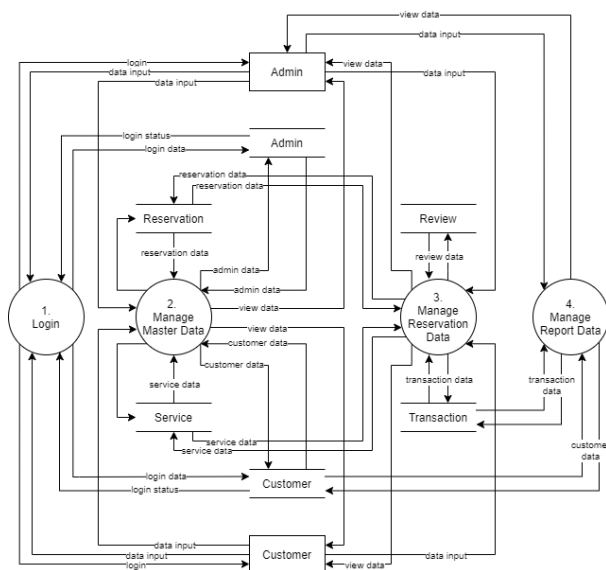


Fig 3: DFD Level 1

### 2.2.3 DFD Level 2 Process 1

From DFD level 2 process 1, there are 2 entities and the same data store, namely: admin and customer, and 1 process, namely login to enter the system.

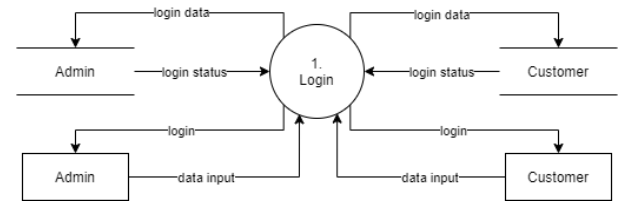


Fig 4: DFD Level 2 Process 1

### 2.2.4 DFD Level 2 Process 2

From DFD level 2 process 2, there are 2 entities namely admin and customer, as well as 5 processes namely treatment, reservation, booking status, admin, and customer, then 4 data stores namely service, reservation, admin, and customer.

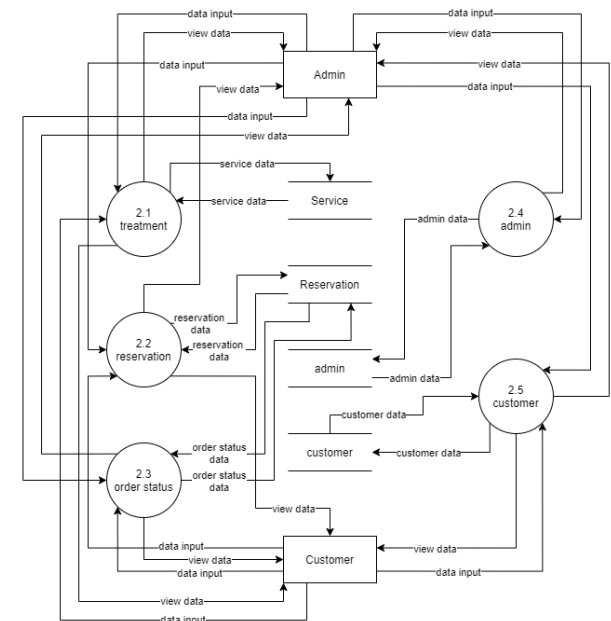


Fig 5: DFD Level 2 Process 2

### 2.2.5 DFD Level 2 Process 3

From DFD level 2 process 3, there are 2 entities namely admin and customer, and 5 processes namely reservation data, services, payments, order status, and reviews as well as 4 data stores namely reservations, services, transactions, and reviews.

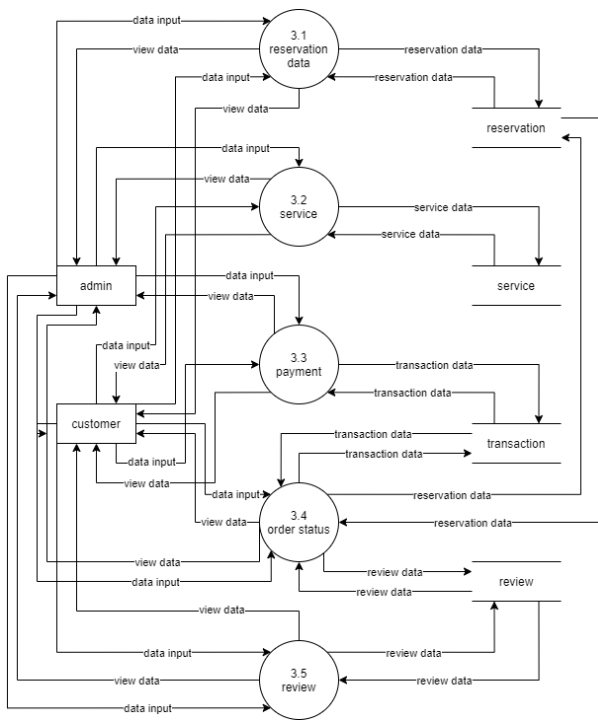


Fig 6: DFD Level 2 Process 3

### 2.2.6 DFD Level 2 Process 4

From DFD level 2 process 4, there is 1 entity, namely the admin, and 4 processes, namely customer data reports, service data reports, reservation data reports and transaction data reports. Where each process has its own data store, such as customer data store for the customer data report process, service data store for the service data report process, reservation data store for the reservation data report process, transaction data store for the transaction process.

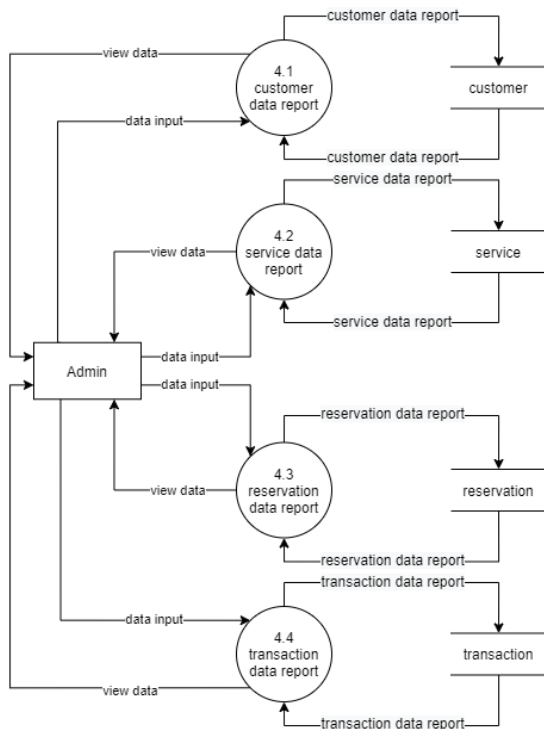


Fig 7: DFD Level 2 Process 4

### 2.2.7 Entity Relationship Diagram

Entity Relationship Diagram (ERD) is an explanation used for the relationship between data in a database system. From this diagram it can be seen the relationship between customers who make reservations and then confirmed by the admin developed in the system. The following is the data relationship of the system that has been developed.

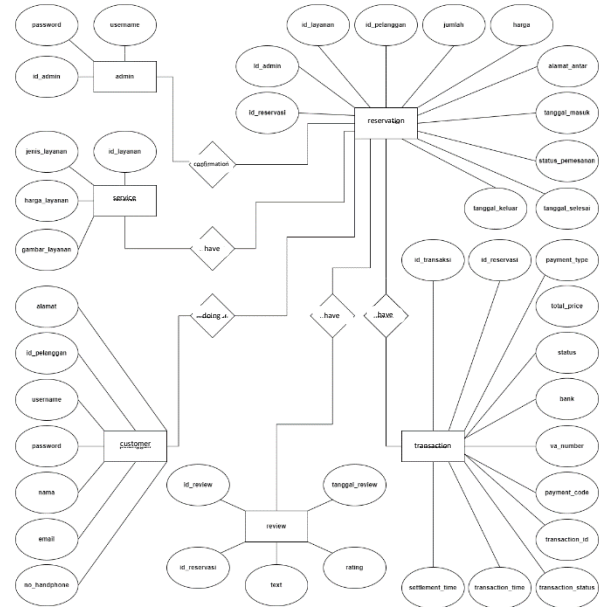


Fig 8: Entity Relationship Diagram

### 2.3 Table Relation

The relation or relationship between one table and another in a database that is connected because of the primary key and foreign key.

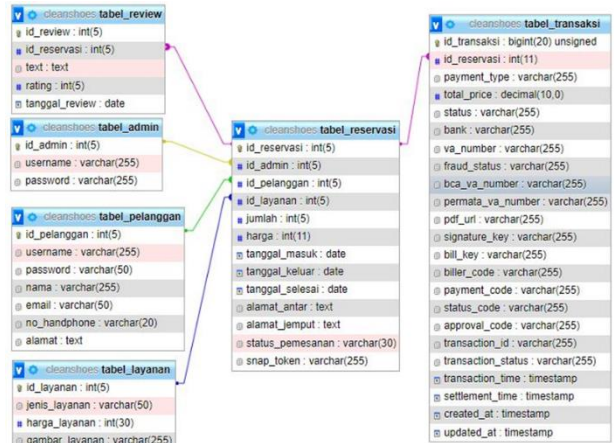


Fig 9: Table Relation

### 2.4 Interface Design

The user interface (UI), under the umbrella of human-computer interaction (HCI), has been researched as one of the essential components of interactive systems [13] and enables users to communicate, interact, and carry out the desired operation easily, quickly, and reliably [14]. A successful UI makes the user experience simple and intuitive, requiring minimal effort on the user's part to achieve the maximum desired result [15].

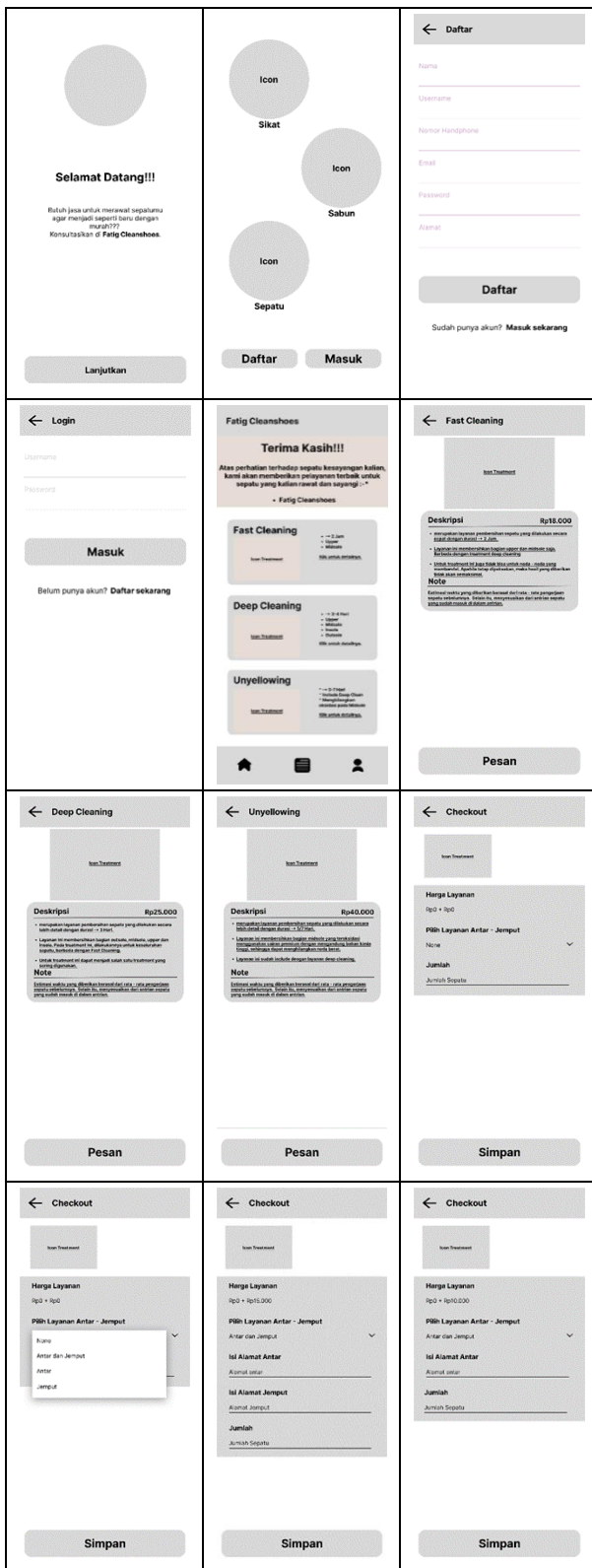


Fig 10: User Interface

### 3. RESULT AND DISCUSSION

#### 3.1 Implementations

In this research, the author makes an android-based shoe washing reservation application with the Fatig Cleanshoes case study. In the stages of making this application, the author first collects the data needed, then makes the application display design (UI) through Figma. After the design is made, then enter the application stage of the application display that has been made using Android Studio with the Kotlin programming language and VSCode with the php programming language. And finally to store data in the database using xampp (MySQL).

##### 3.1.1 Home Page

The home page is the page first seen by customers, which contains a welcome greeting, there is a welcome information display, as well as a continue button to move to the next page display.

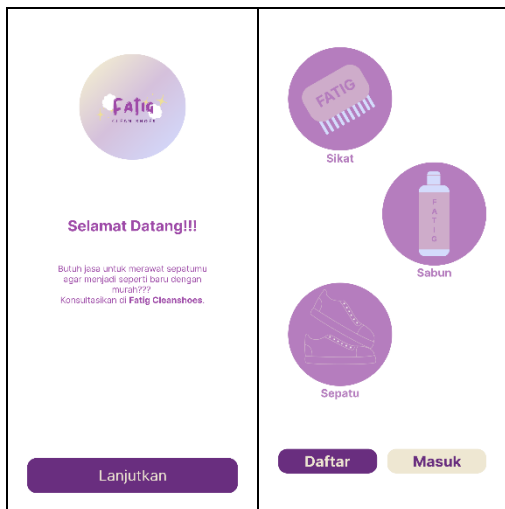


Fig 11: Home Page

The Registration page is the page after we click continue on the home page. On this page there are 2 buttons, namely: login button and register button. If the user already has an account, then the user clicks the login button while for users who do not have an account, then the user clicks the register button.

### 3.1.2 Registration Page & Login Page

On the register - login page there are some data that must be filled in by the user to create an account, which will later be used as access into the application. If the user has filled in the data, then the user can click the register button. In addition, if the user already has an account, the user can click Login Now which will immediately move to the login page.

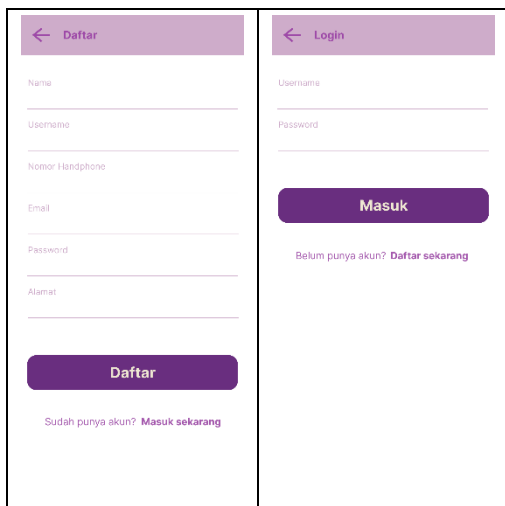


Fig 12: Registration Page & Login Page

This page appears when the user clicks the login button on the list - login page. There is a display containing a username and password that must be filled in by the user and a login button to move to the home page. In addition, if the user does not yet have an account, the user can directly click Register Now which will move to the list page.

### 3.1.3 Home Page

The main display page of the application, where there are 3 main menus, namely: home menu, order history to view order transactions that have been made by users, and profile for users

to view or change profile data. In addition, there are several treatments provided for users, such as: fast cleaning, deep cleaning, and unyellowing.

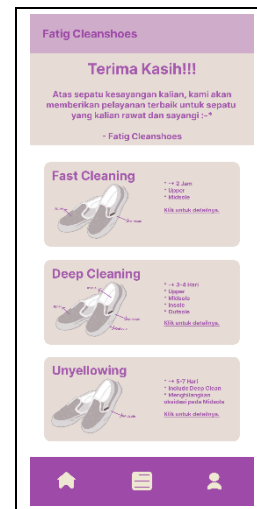


Fig 13: Home Page

### 3.1.4 Treatment Page

The treatment page is the display after the user has selected one of the treatments provided. There is a description display for each type of treatment (Fast Cleaning, Deep Cleaning, and Unyellowing). If the user wants to make a transaction, the user can place an order by clicking the order button.



Fig 14: Treatment Page

### 3.1.5 Checkout Page

The transaction page is the display after the user clicks the message button on the maintenance page. There is a display for maintenance prices + service prices for shuttle or not, here the user can choose the desired service. If the user chooses to shuttle service then, the user must fill in the address that will appear as selected. And finally the user must fill in the number of shoes to be treated, if everything is filled in the user can click the save button. After that it will move to the next display, then click the finish button.



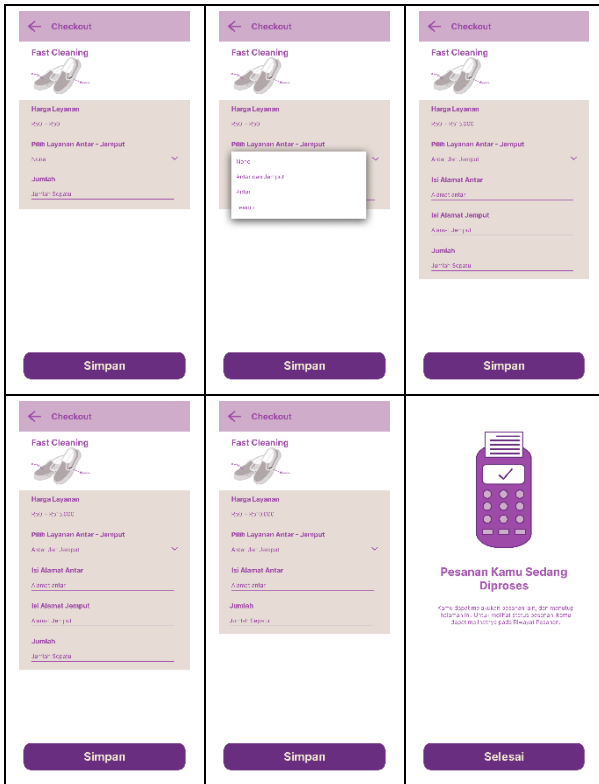


Fig 15: Checkout Page

### 3.1.6 Order History Page

The order history menu page is one of the main displays of the application. When a user has made a transaction, the transaction will be entered into the order history. Here there is a display of the user's order history that has been stored from the start of making a reservation to checking fatig cleanshoes.



Fig 16: Order History

### 3.1.7 Message Detail Page

After making a reservation and entering the order history. Users can click on order details which will have a series of flow stages.

First, the admin must approve the user's order first, the user can know when the status changes to approved. If the status is still

waiting for confirmation, then the user still cannot make a payment.

After the status changes to approved, the user must make a payment to enter the next stage, which is the processing stage. By clicking the pay button and choosing what payment to use. If the user has made a payment, then the user can wait until the status changes to completed.

If the status has changed to finished, it means that the user's shoes are finished and ready to be picked up or delivered to the address listed.

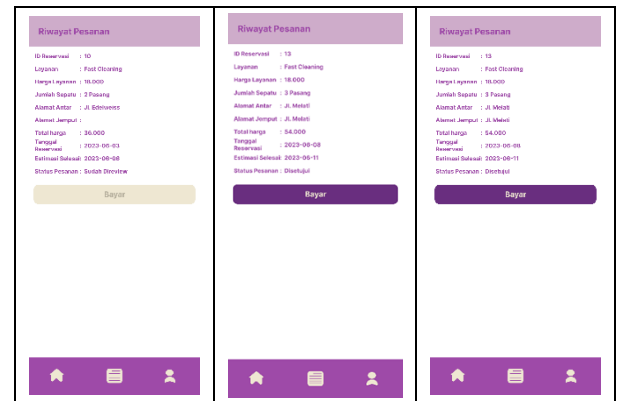


Fig 17: Message Detail Page

For the last stage, users add reviews about how the experience of making a reservation transaction at fatig cleanshoes and service ratings for fatig cleanshoes. If you have reviewed, the status will change to reviewed.

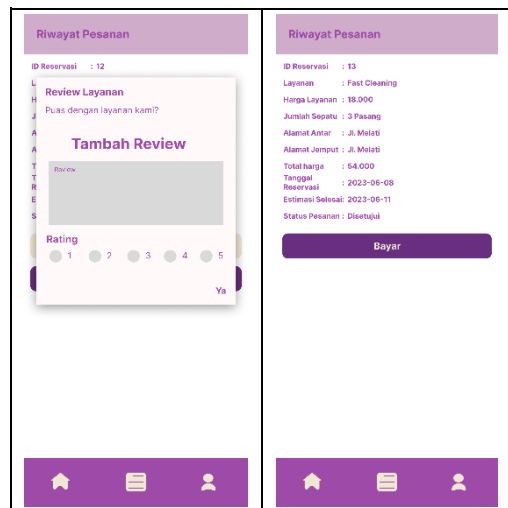


Fig 18: Message Detail Page

### 3.1.8 Profile Page & Change Profile Page

The profile page is one of the main views of the fatig cleanshoes reservation application. On this profile page, users can view and change previously stored user data. There is a display of user account names that have registered and can change profiles by clicking change profile. In addition, on the profile menu there is also a sign out button for users who want to log out of their account.

On the change profile page, if the user wants to change some data on the profile menu, the user can click change profile which will move to the change profile page. After the user changes the data, the user can click the save button which will save the data into the system for further system processes.

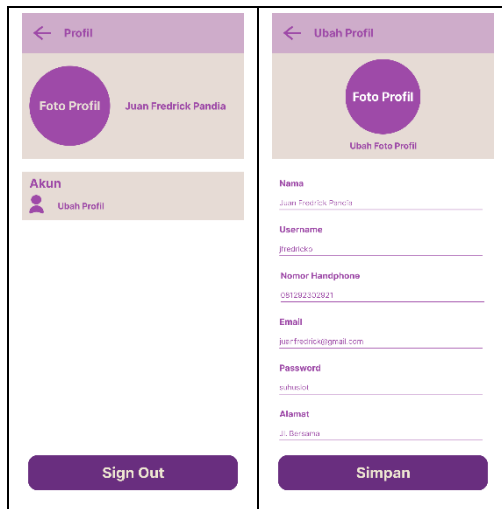


Fig 19: Profile Page & Change Profile Page

### 3.2 Discussion of Result

In this section of the discussion serves as a reference for the author whether this shoe wash reservation application can run well or not. So, the author conducts testing and the test used is the Black box method.

Table 1. Black Box Testing

No	Process	Output	Result
1	Click the continue button on the home page	Move to the list page - sign in	Success
2	Click the register/login button on the register - login page	Move to the page according to the button	Success
3	Sign up for an account	Enter the login page	Success
4	login	Enter the home menu	Success
5	Select the treatment	Moving on to the treatment	Success
6	Make a reservation	Orders that are entered in order history and have their status changed	Success
7	Move to another main menu	Enter the main menu	Success
8	Make payment	Status has changed	Success
9	Make review	Enter the system	Success
10	Change Profile	Data changed	Success
11	Change profile photo	Profile photo has changed	Fail
12	Logout	Move to the list page - sign in	Success

### 4. CONCLUSION

Based on the research that has been carried out by the author from the beginning to the creation of this shoe washing reservation application, there are several conclusions obtained as follows:

1. This application can create an android-based shoe washing reservation application, where users can make transactions without having to spend more energy to the place and reduce misunderstandings that often occur outside the wishes of both parties,
2. This application can help business owners in running their business by managing data properly, because data is quite important for the sustainability of a business, such as: customer data and transaction data.

The application still needs to be developed to meet the needs of users and admins.

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