

Implementation of Android-Based Tailoring Service Ordering Application with Geolocation Integration

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Abstract – Basic needs are an aspect that cannot be separated from human life, and one of the important aspects of these basic needs is clothing which not only functions to protect the body but also plays a role in the world of fashion. To meet these fashion needs, tailoring services have a key role in providing clothes that suit consumer desires. While this need is important, customers often rely on conventional methods, such as word-of-mouth recommendations or seeking out a familiar tailor. Some tailors may have a sign in front of their house, but it is often difficult for potential customers to find and connect with them. Therefore, this research aims to implement a tailor service ordering application that is integrated with geolocation features and can make things easier for tailors and consumers. This application development uses the Java programming language and Android Studio as the framework and Firebase as the database. The result of this research is an application that allows customers to order tailor services via smartphone anywhere and anytime.

Keywords – *Android Studio, Firebase, Geolocation, Java, Tailor*

I. INTRODUCTION

Clothing or clothing needs are one of the main aspects of human life [1]. In the past, clothing was used primarily as a means of protection for the body. However, over time, clothing has transformed, and one of its important roles today is to provide comfort in various situations, such as when dealing with important moments in life. In the history of technological development, humans have developed various tools to produce clothing, ranging from simple sewing machines to sophisticated modern sewing machines [2].

The increasingly rapid development of technology has brought convenience to various aspects of people's lives. One way is through an online goods and services ordering application [3]. With the help of smartphones, people can now order a variety of products and services without having to leave the comfort of their homes.

The tailoring business sector is very popular among the public, attracting the interest of many individuals to start a business in this sector, especially because of its promising profit potential [4]. Sewing courses are also increasingly in demand, with many people taking them to develop skills that can later be used in setting up their own tailoring business [5].

Even though many people have opened tailoring services, many consumers still face difficulties when ordering this service directly at the tailoring business location [6]. This process is considered quite complicated because consumers must measure their body size and choose their clothing materials. In addition, difficulties arise if consumers cannot meet with the tailor due to schedule inconsistencies. This condition can reduce efficiency because consumers are forced to come repeatedly to the tailoring service.

Apart from that, another additional problem is the schedule conflict that often arises between the schedule submitted by the customer and the tailor's schedule.

Sometimes, the schedule agreed upon by both parties does not always match the initial agreement, resulting in a situation where the customer must return without success and wait another day.

To overcome several challenges mentioned above, this research aims to develop a mobile application designed with a feature for ordering tailoring services using geolocation integration [7]. The app will allow users to book tailoring services and confirm their location and order details easily. Within the framework of this research, we will design and analyze this mobile application system as an innovative solution for the needs of ordering tailoring services.

Previous research has focused on developing various applications and platforms for ordering tailoring services. Reference [8], introduces an application that allows consumers to create and view their orders while providing the ability to enter tailor data. Reference [9] notes the development of a platform in the form of a website for ordering tailoring services online. The analysis process in this research adopts the prototyping method, which involves creating a prototype model for testing before creating the final product. The platform involves three types of users, each having a unique role. Admin is responsible for confirming payments made by buyers, while buyers can easily order tailoring services online. Tailors themselves have access to add and update their tailoring services through the website.

II. RESEARCH METHODOLOGY

Previously, the result of this research was the development of an application that allows users to order sewing services via mobile smartphones. During the development of this application, Location Based Service (LBS) was integrated as the main method [10]. The application structure and design can be illustrated in detail in Figure 1.



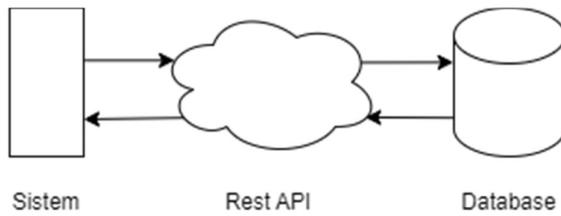


Fig1. Application Architecture

In Figure 1, this application uses the REST API to access the database. RESTful API is an interface used to interact with web databases. This interface allows users to easily access the database from various applications [11]. Sometimes a RESTful API is also called a gateway because it acts as an intermediary between the system and the database.

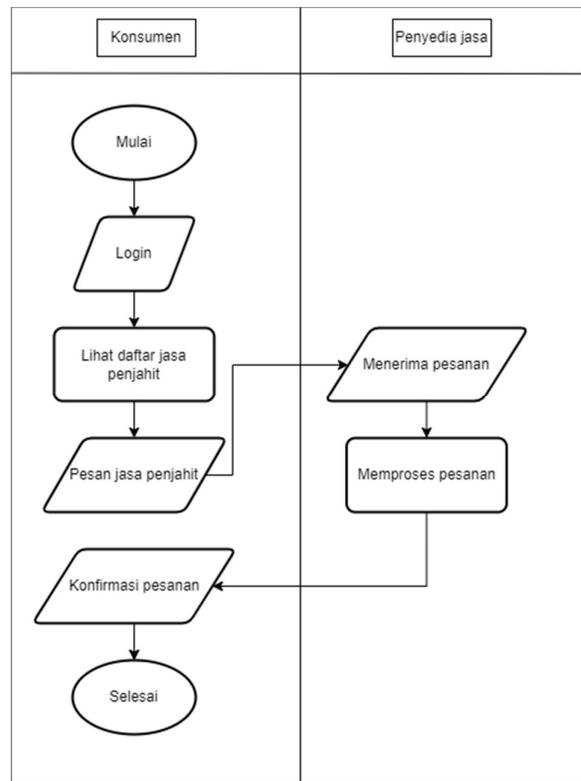


Figure 2 above illustrates the application flow, which

Fig 1. Application Flow

can be seen in the illustration. In this application, users can log in and access the catalog of available tailoring services. After finding the service they want, users can place an order directly. The order will be received by the service provider, who will immediately process it and send it to the user. The user is also asked to confirm the order that has been received from the service provider.

III. RESULTS AND DISCUSSION

In the initial stages of developing this application, the design was prepared using the popular online graphic design application Figma. Figma is a highly flexible and internet-accessible design tool that allows designers to create various types of designs including web designs, mobile applications, desktop applications, as well as presentations. The decision to use Figma as the main design tool was influenced by its ease of use and the availability of online access which makes it easy to create attractive designs [3].



Fig 3. Log in Page Design

Figure 3 shows the interface of the login page, including a login form with fields for filling in the username and password. Next to it is also a button that takes the user to the registration page.



Fig 2. Registration Page Design



The registration page shown in Figure 4 contains various information to be filled in by the user. It contains a form that asks the user to enter their email, username, and password. In addition, the user is asked to identify their role as a customer or a tailoring service provider.



Fig 5. Home Page Design

In Figure 5, the home page contains various information about the customization services available for consumer orders. On this page, users will find various navigation buttons that allow them to move to different sections, including buttons that lead to relevant information pages.

The next process involves the application coding stage. For application development, Android Studio is used as an integrated development environment (IDE) specifically designed by Google and JetBrains to create Android applications [12]. Android Studio is currently capable of supporting two programming languages used in application development: Java and Kotlin. In this research, application development was carried out using the Java programming language.

The database system used in this project is Firebase which is an application development solution designed by Google [13]. Firebase offers various related features, including the use of a non-SQL database capable of storing various data types such as strings, integers, and booleans [14]. Firebase is often used in the development of Android-based applications. The output of this non-SQL database is usually in JSON or XML format, which can then be processed by the application as needed [15].

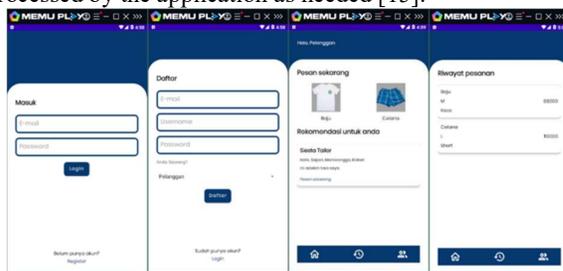


Fig 6. Application Page View

In the figure above, you can see the visualization of the developed application. The first image (from left to right) shows the initial interface of the application which serves as the login page. On this page, the user has the option to switch to the registration view if they do not yet have an account. The second image shows the registration view that allows users to create a new account on the application.

When the user successfully accesses the app, the third image displays the customer information panel that contains information about the services available in the app. Here customers can place an order by pressing a button according to their choice, such as clothes or pants.

Finally, the fourth image displays the order history page which shows a complete list of orders that the user has placed along with the status of each order.

Table 1. Testing Table

No.	Testing Scenario	What to expect	Conclusions
1.	Fill in the login form and click the login button	The system denies login access	Successful
2.	Clear the "username" field on the login form	The system redirects to the login form with "username cannot be empty" and the login fails.	Successful
3.	Clear the "password" field on the login form	The system redirects to the login form with "password cannot be empty" and the login fails.	Successful
4.	Fill in the username and password incorrectly	The system will redirect to the login form with "invalid username and password" and the login failed.	Successful
5.	Fill in the username with "customer"	The system will redirect to the customer's homepage	Successful
6.	Mengisi username dengan "penjahit"	Fill in the username with "tailor"	Successful

Based on the test results in Table 1 above, there are no problems when users log in to the application. However, if



the user enters the wrong username or password, the system will issue a warning. After the user enters the correct login details, they will be directed directly to the dashboard based on their user role.

IV. CONCLUSION

Based on the results of the research conducted, it is evident that Android applications have great potential to improve location-based on-demand ordering services. Using location-based services and advanced integration into Android programming, the app can effectively identify the location of customers ordering tailoring services. This helps the service provider or tailor deliver the order more easily and quickly.

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