

# Goods Storage Rental Application (YourStorage) Using the React Native Framework

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**Abstract** – The increase in online business today with quite high transactions means that business actors who sell their merchandise through marketplaces need temporary storage space that does not have a place to store goods. Based on this, the aim of this research is to build a goods storage rental application to make it easier for business actors to rent storage space online with flexible time periods. This type of research is quantitative research where the system development method uses SCRUM and the software architecture used is service-oriented (Microservice). The results of this research are in the form of an Android-based mobile application and as many as 75% of business respondents feel that the “YourStorage” application can help, 68.75% (22) of respondents stated that the application could help in controlling where goods are stored and 71.87% (23) of respondents stated that the application could make it easier to store goods according to the desired size.

**Keywords:** *Microservices: Mobile Application: React Native*

## I. INTRODUCTION

The number of people selling various merchandise on various marketplaces continues to increase. This is influenced by people’s enthusiasm for purchasing primary and secondary needs through the Marketplace. Marketplace is an online shopping system or place that brings many changes to human life (Yustiani & Yunanto, 2017). In a survey conducted a needs survey related to warehouse rental of 120 business actors in Bandung City reaching a figure of 82% with warehouse area in Table I.

**Table I.** Warehouse Area Requirements

Warehouse	
Size	Amount of Requirements
1-250 m <sup>2</sup>	84,3%
251-500 m <sup>2</sup>	7,5%
501-750 m <sup>2</sup>	4,1%
751-1000 m <sup>2</sup>	0,8%
>1000 m <sup>2</sup>	0,8%

(Source: Internal Inventory Data, 2019)

Based on Table I, warehouse sizes of 1-250 m<sup>2</sup> have a lot of demand (Khaâ et. al, 2019). From the warehouse area requirements, it can also be concluded that a warehouse with a size of 1-250 m<sup>2</sup> can be used by business actors who are just starting their business. As a business actor who trades on the Marketplace, having safe storage of goods is important. Business actors should be able to store more goods sold safely, manage them well and control the amount of goods coming in and out. In addition, with the increase in consumer purchases of goods purchased digitally, consumers should be able to store the goods purchased safely and well maintained. However, in reality there are still many business actors who have difficulty storing their merchandise safely and under control.

This is caused by limited storage space owned by business actors and a lack of management knowledge to control their merchandise. Apart from that, consumers also find it difficult to store goods and care for the goods they own. With limited storage space owned by business actors and a lack of knowledge in managing the storage of their merchandise, this will have an impact on the goods, causing the goods they own to be damaged or lost. or not maintained. Based on the problems above, it is necessary to develop a

mobile application to help people around the city of Jakarta store goods temporarily and provide useful features in the goods storage management process for business actors.

Research conducted by Tejesh and Neeraja in 2018, warehouses are generally used to store goods, but the manual procedure stage is difficult for users. A warehouse inventory management system is a necessary approach for every warehouse. A computerized warehousing system provides benefits by reducing excessive effort, creating efficient and stable results when correlated with manual warehouse management (Tejesh & Neeraja, 2018). Creating a mobile application can simplify the warehouse inventory management system because it can be monitored anywhere and at any time. Using mobile services is one way to create more efficient and stable results. according to Wang, Ou and Chen in 2019, the mobile service market is currently very competitive. The characteristics of mobile services are very important in determining consumer evaluations, such as how significantly users will return to use the services provided. Some researchers also emphasize the importance of quality-related characteristics and the need to adapt to the needs of users (Wang et. al, 2019). According to Qu, Wen-Yu, in 2017, smartphone application design received more attention from both industrial companies and academic researchers, application design should not only surprise, but should provide convenience in everyday life. User Experience in an application directly affects the user experience. This influences user interest so that companies are encouraged to improve the performance of the application (Qu et. al, 2017).

React Native is an open-source framework for creating multi-platform applications, such as Android, iOS and Windows platforms “in the development stage”, with JavaScript language according to the official website description “Learn once, write anywhere”. React native frameworks are useful for rendering User Interfaces for platforms, both iOS and Android, and are expected to be compatible with other platforms such as Windows or tvOS in the near future (Wiguna et. al, 2018).

According to (Nekovee et. al, 2020), the microservices approach decomposes large applications into their sub-components (microservices) and deploys them in a network, facilitating more flexible and lightweight systems. This is done because smaller components are easier to process. This approach is common in cloud applications that are decomposed into loosely coupled sub-components, bringing benefits to them in terms of scalability, up-gradation, fault tolerance, and simplified testing. However, there are shortcomings that can occur such as decomposition, orchestration, communications, and integration testing overheads (Waseem et. al, 2020).

Scrum is one of the popular methods of agile software development. According to (Sutherland & Schwaber, 2007), Scrum uses an iterative and incremental approach to optimize predictability and control risk. Scrum involves a group of people who collectively have all the skills and expertise to do the work. Scrum combines four stages for inspection and adaptation, namely Sprint. All these stages were successful because they implemented the empirical

Scrum pillars, namely transparency, inspection, and adaptation. Now Scrum is used by various large and small companies. Scrum has three roles, namely Product owner, Team, and Scrum master, each of which has responsibility for the project it is running.

According to (Noll et. al, 2017), the Scrum Master is responsible for facilitating the development process, ensuring that the team uses various agile values and practices according to the rules. The Scrum Master conducts daily coordination meetings and removes any obstacles the team faces.

According to (Haryana, 2019), the advantage of Scrum is its ability to deal with complexity and problems between technology, markets, and the environment. Scrum has proven to be effective for distributing knowledge on a regular basis. The main principle of Scrum is collaboration between teams flexibly and adaptably. Scrum has a work cycle called a sprint. A sprint is a division of work according to the requirements in the backlog which must be achieved within a predetermined target time and takes place in stages. At the beginning of each sprint, the team chooses the tasks it wants to work on according to predetermined priorities. The team must complete the tasks at the end of the sprint. During the sprint, every day a daily scrum is held, which is a short meeting to detect existing problems and to provide information about project progress between team members.

## II. METHODS

This research method uses quantitative methods to reach conclusions about whether the application created can help business actors to store goods for the desired period of time in storage. The research stages are described in Figure 1.

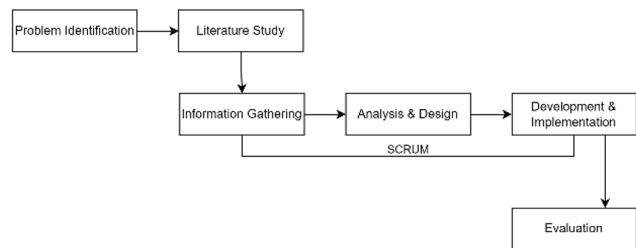


Figure 1. Research Stages

In the first stage (problem identification) the research scope and problem formulation are prepared. In the second stage, literature is studied through journals, the internet and other sources to study the technology, methods and previous research that will be used to create the application. The third to fifth stages are carried out by developing a system using the SCRUM method. At the information gathering stage, questionnaires were distributed to obtain information regarding the required features. Next, the analysis and design stage is creating a User Interface (UI) and continuing with coding and testing. The final stage is evaluation by distributing questionnaires.

### III. RESULTS AND DISCUSSION

To access the system, users must have at least an Android cellphone with version 8.0, 1 GB RAM, connected to an internet connection and 90 MB storage space. For the first time, the user will be directed to the home page (Figure 2), on this page the user can only use the requirements calculation feature. Apart from that, if the user opens the activity page, my warehouse, and account they will be directed to the login menu to log in first before using this feature. On this home page there is also a banner to display the promos provided and there is also a button with the words enter to open the login page. On this home page there is also a banner to display the promos provided and there is also a button with the words enter to open the login page.

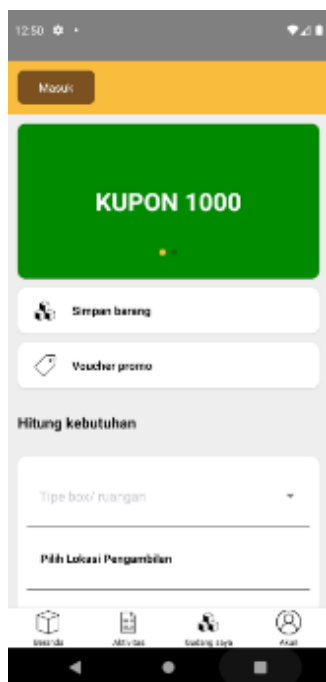


Figure 2. Guest Home Page

In Figure 3 (homepage) there is a feature for calculating goods storage needs. This feature does not require users to log in to be able to simulate price calculations for storing goods. When the user clicks the 'check price' button, a modal will appear describing the price of the storage location. Before the user gets the results of the price calculation, the user will need to fill in the type of box/room which has options including box and room. If the user selects a box, one more data field will appear that needs to be filled in, namely the type of box, the type of box itself is a small box, regular box, large box, custom box. If the user selects a custom box, new fields will appear again to fill in the length, width and height for the custom box itself. If the user chooses something other than a custom box, the field for that size will not appear. Next, the user will select a location, then the user will open a page to select a location. After that, the user will choose a storage location in East Jakarta, North Jakarta, South Jakarta, Central Jakarta, West Jakarta. Next, the user will choose how long the item will be stored. After that, the user will press the check price button and then a modal will appear displaying the price, type of box/room selected, storage area and time period.

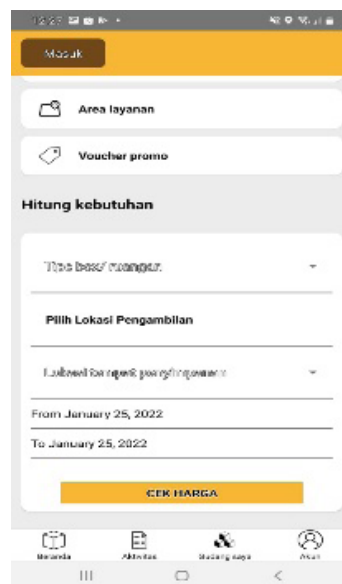


Figure 3. Calculate Requirements Page

Users who already have an account can fill in the correct e-mail and password then click the login button (Figure 4). After that, the user is directed to the user's home page. Users who don't have an account can click 'create an account' and be immediately directed to the login page.

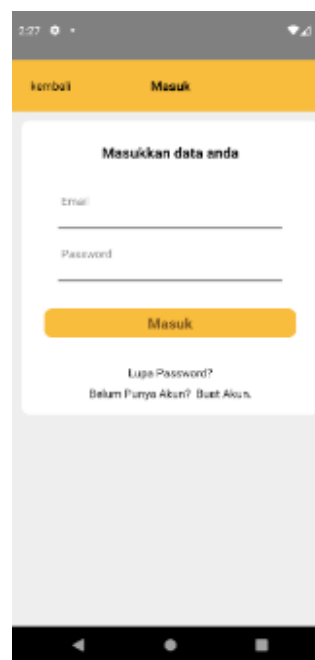


Figure 4. Login page

Users can use all the features in the application after successfully logging in. Apart from that, users can see how many points they have at the top right and if pressed it will open the history page for those points, apart from that there is also the account name at the top left. Then on this page there is also a promo banner in the Yourstorage application. On this page there is also a needs calculation feature that can be used to find out estimated storage price calculations (Figure 5).

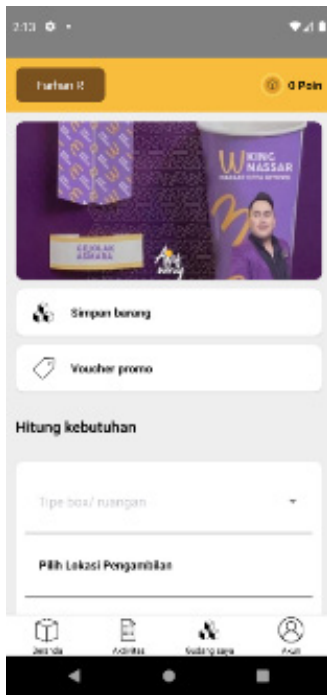


Figure 5. User Home Page

Figure 6 shows all storage or delivery transaction activities carried out by users. Users can see how far the progress of the activity has been by looking at the existing charts and chart descriptions. The charts and descriptions provided will move according to the processes currently running on the system and user. On this page, users can also click the details button to view the details of the activity. Apart from that, on this page there is a history button where users can see the history of transactions that have been used, such as storing or sending goods, whether successful or unsuccessful.



Figure 6. Activity Page

Figure 7 shows details of one of the activities carried out by the user. On this page, users can see in detail the activities they carry out and can see the progress of these activities. These activities include payment confirmation, goods being prepared, goods being shipped, and orders

being completed. This progress status will run according to the process currently being run by the system.



Figure 7. Activity Details Page

Figure 8 shows the save goods form, the user must fill in the existing data completely. Then the user must agree to the terms and conditions in order to click the create account button. After that, the user can click the confirmation button and be directed to the payment page. The data that needs to be filled in by the user is the type of box/room, number of items to be stored, period of time for storing the items, select pickup location, storage location, description of the items, and also a checklist to agree with the terms and conditions.

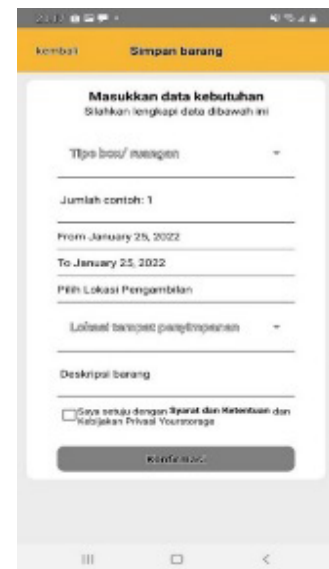


Figure 8. Save Items page

Figure 9 appears when the user clicks the send button on the storage details page. On this page the user must determine the delivery address point and agree to the terms and conditions in order to send the goods. After that, users can click the confirmation button and be directed to the payment page.





Figure 9. Goods Delivery Page

Figure 10 shows the storage/delivery details that will be paid by the user so that the user can ensure that the goods they store or send are correct, and also displays details such as storage category, storage type, storage type, amount of storage, time period, item description, location. warehouse. On this page the user chooses a payment method and if the user has a promo voucher then it can be used for a payment discount. Apart from that, users can also see transaction fees and the points they will get after the transaction.



Figure 10. Payment Page

Figure 11 displays the storage/delivery details that will be paid by the user so that users can ensure that the goods they store or send are correct, such as storage category, storage type, storage type, storage amount, time period, description of goods, warehouse location. Then, users can also see transaction fees and the points they will get after the transaction. If the user chooses the virtual account payment method, then this page displays the virtual account number and the user must pay it before 5 minutes or the transaction will automatically fail. And also has a back to home button to return to the home page.

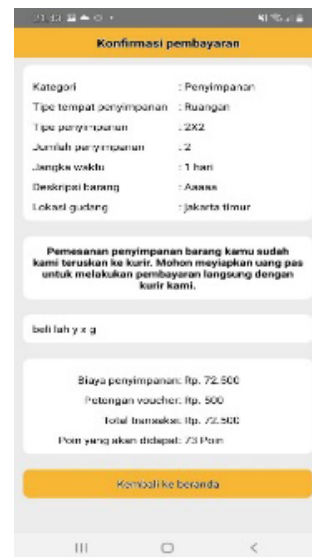


Figure 11. Payment Confirmation Page

Figure 12 displays the storage areas for items that users have and displays the storage areas for items based on storage type. If the user wants to see where the room is stored, the user can click the room navigation tab. Then, users can see the type of storage of goods, the amount of storage of goods and the grace period for storing goods. Apart from that, users can click the details button to view item storage details and be directed to the storage details page. And it also has an added button below to store items. If the user presses the button it will open a form page for storing items.

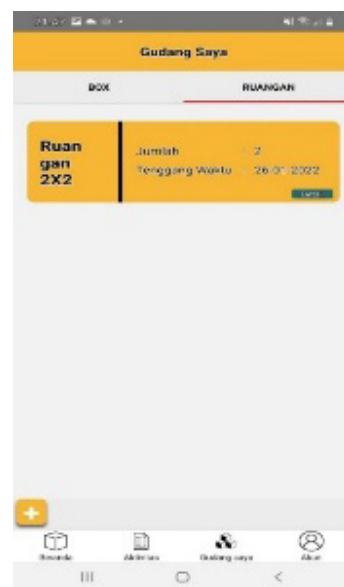


Figure 12. My Warehouse Page

Figure 13 shows details of one of the goods storage areas. On this page, users can see in detail the storage location for goods that the user has, such as storage type, storage type, quantity, time period, description, warehouse location. and there is also a send button which will open the delivery location selection page.

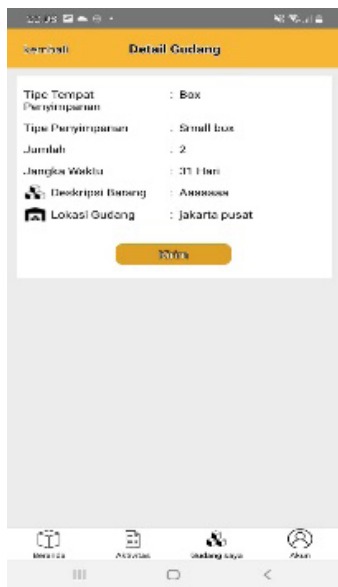


Figure 13. Warehouse Details Page

Figure 14 shows the storage/delivery details that will be paid by the user so that the user can ensure that the goods they store or send are correct, such as category, storage type, storage type, storage amount, time period, description of goods, warehouse location. Then, users can also see transaction fees and the points they will get after the transaction. If the user chooses the virtual account payment method, then this page displays the virtual account number and the user must pay it before 5 minutes or the transaction will automatically fail.

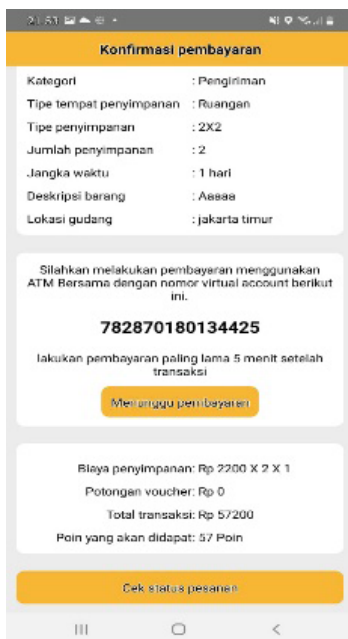


Figure 14. Payment Confirmation Details Page

User evaluation was carried out by distributing questionnaires to 32 business respondents. The questionnaire consists of questions about the ease of controlling and determining the time period for storage. The results of the questionnaire showed that 68.75% (22) of respondents stated that the application could help in controlling where goods are stored, 75% (24) of respondents stated that this application made it easier to store goods for a certain period of time, and 71.87% (23) respondents stated that the

application can make it easier to store items according to the desired size, shown in Table II.

Table II. Evaluation User

Question	32 Respondent	
	Yes	No
Applications can help in controlling storage locations	22 (68,75%)	10 (31,25%)
The application can make it easier to store items at a certain time and control the storage location	24 (75%)	8 (25%)
The application can make it easier to store items according to the required size	23 (71,87%)	9 (28,13%)

## IV. CONCLUSION

Conclusions obtained from this research:

- Based on the evaluation results, as many as 71.87% of respondents from business actors felt that the Yourstorage application could make it easier for business people to store goods according to the size they desired. Yourstorage application,
- Based on the evaluation results, as many as 68.75% of business respondents felt that the yourstorage application could help control where goods are stored
- Based on the evaluation results, as many as 75% of respondents felt that the yourstorage application could help business people to store goods according to the time period they desired.

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