

# Design and Build Web Based Boarding House Management Application

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**Abstract**— Boarding house management applications can help boarding house businesses in recording boarding house administration such as rent payment records, boarding house expenses, rent bills and room availability that are all integrated. Integration of boarding house administration records can make it easier for boarding house owners to manage boarding house income and expenses and also in controlling fraud cases by boarding house keepers. Several boarding house businesses have problems that can be answered by implementing a custom boarding house management application according to the wishes of the boarding house owner. To answer these problems, this study was conducted on a boarding house business by creating a custom web-based boarding house management application and then conducting interviews to find out whether the problems were successfully answered. The results of post-implementation interviews show that this boarding house management application can facilitate managing boarding house income, controlling fraud cases caused by manual administrative recording and monitoring the rental period and availability of boarding rooms.

**Keywords**— application, boarding house, custom-made, management, website

## I. INTRODUCTION

Some boarding houses still use a manual administration recording system [1], [2], [3]. Hijau Baru and Hijau Kuning boarding houses, which are located in Semarang, are some of the boarding house businesses that

still use a manual administration recording system. The manual administration recording system, such as rental data, vacant rooms, boarding house income and expenditure transactions, has not been integrated, which can cause delays in obtaining boarding house administration data [4]. The owner of Hijau Baru and Hijau Kuning boarding houses often complained about delays in reporting income and expenses from boarding house keepers. Late reports also caused fraud cases by boarding house keepers because boarding house owners could not carry out routine report checks [5]. In order to avoid unwanted losses from manual administrative recording, an integrated digital system is required [6]. This research attempts to develop an integrated digital system in the form of a boarding house management application for Kos Hijau Baru and Hijau Kuning boarding houses. Thus, the research problem formulation is constructed as follows: how to design a website-based boarding house management application that can make it easier to manage boarding house income, how to overcome fraud cases in boarding house businesses, and how to design a website-based boarding house management application that can make it easier to monitor rental periods and room availability.

The development of this boarding house management application uses several technologies. Framework Laravel is used to ease the development of the application [7] that uses the PHP programming language [8]. Laravel implements MVC to organize back-end development code management into a structured way by separating display logic,

routing, and queries to the database [9]. Application data is stored in a database managed using MySQL. MySQL is one of the well-known RDMS commonly used to manage website-based application databases. [10]. The user interface structure is built using HTML. HTML uses “markups” to annotate the display elements of the website such as <head>, <title>, <body>, <footer>, <img>, etc. [11], usually combined with CSS [12] and Javascript [13]. To make it easier to write CSS and Javascript, Tailwind CSS and Vue.js are used. Tailwind CSS makes it easy to write CSS inside the class attribute of HTML elements using the utilities package so that CSS writing does not have to be done separately outside of the targeted HTML file. [14]. Vue.js makes it easy to build User Interface components of varying levels of complexity by wrapping HTML and CSS [15]. In order to not take too long to develop the application, there are ready-to-use templates and user interface components available on the internet. The component library that will be used in developing this application is Tailwind UI [16].

## II. METHOD

### 2.1 Primary and Secondary Data Sources

Primary data sources were obtained from the results of initial interviews with boarding house owner to obtain business problems and then post-application implementation interviews to obtain conclusions regarding the impact of the application in answering problems.

Secondary data sources were obtained from books and research journals on the internet.

### 2.2 Data Collection Methods

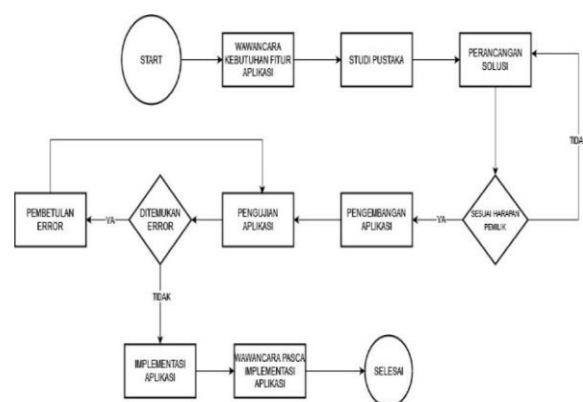
The first data collection method is to conduct an initial interview with the boarding house owner to obtain the business problems and needs of the boarding house owner and then conduct an application implementation interview to obtain conclusions regarding the impact of the application, whether the application answers the problems or not.

The second data collection method is to conduct a literature study of journals, research, and official websites that can be used as inspiration in solving problems.

### 2.3 Application Development and Research Methodology

The application research and development methodology follow the SDLC [17] Waterfall concept which fundamentally includes the Communication, Planning, Modeling, Construction and Deployment phases [18]. From the SDLC Waterfall concept, researchers describe the flow of application research and development into a flowchart that will be used as a guide for application research and development.

The following is a flowchart of the research and development of the application in question.



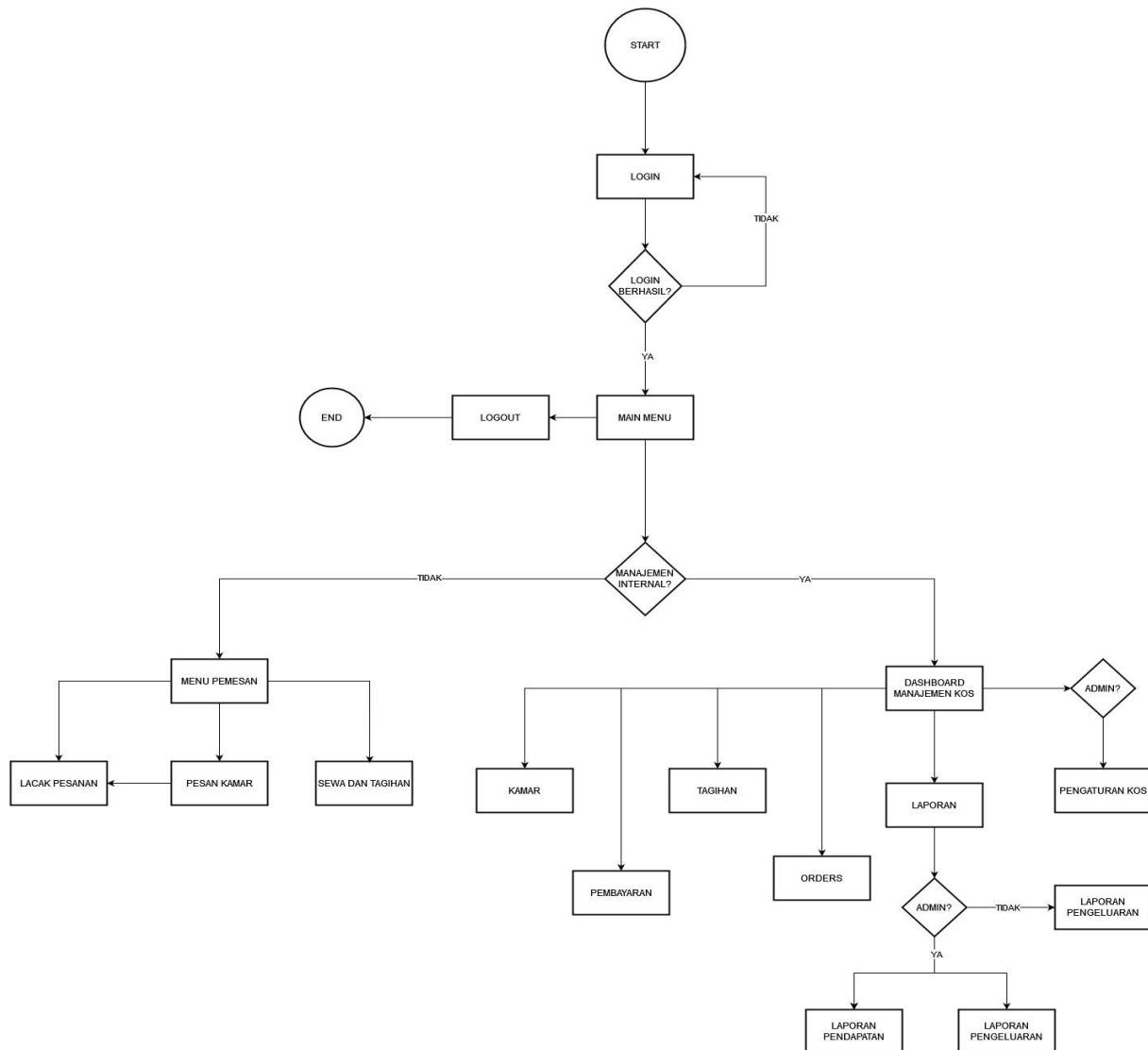
**Figure 1 Flowchart of Research and Application Development Methods**

## III. RESULTS AND DISCUSSION

### 3.1 Application Flow

Figure 2 below is a flowchart showing the overall application flow. The application flow is created based on the results of interviews with boarding house owner and also the results of the approved proposed solution design. By looking at the flowchart of the application flow, the application is divided into two parts, namely the part for booking and the part for internal boarding house management. In the internal boarding house management section, there is a division of admin and non-admin roles. The admin in question is the owner of the boarding houses

and user who is given authorization by the owner. Non-admin are the boarding house keepers. This application flow is used as a reference in developing the application.



**Figure 2 Flowchart of Application**

### 3.2 Application Development

After the application flow is created, application development is carried out. Application development consists of database design, user interface development and application testing.

#### 3.2.1 Database Design

The database is designed to store application data. The application then

processes the data to be displayed to the user. The database design is the result of defining structured relationships between tables. Structured relationships between tables make it easier to write optimal queries. The database structure is created based on the data that needs to be stored in the boarding house business flow. Figure 3 below is a visualization of the database structure design.

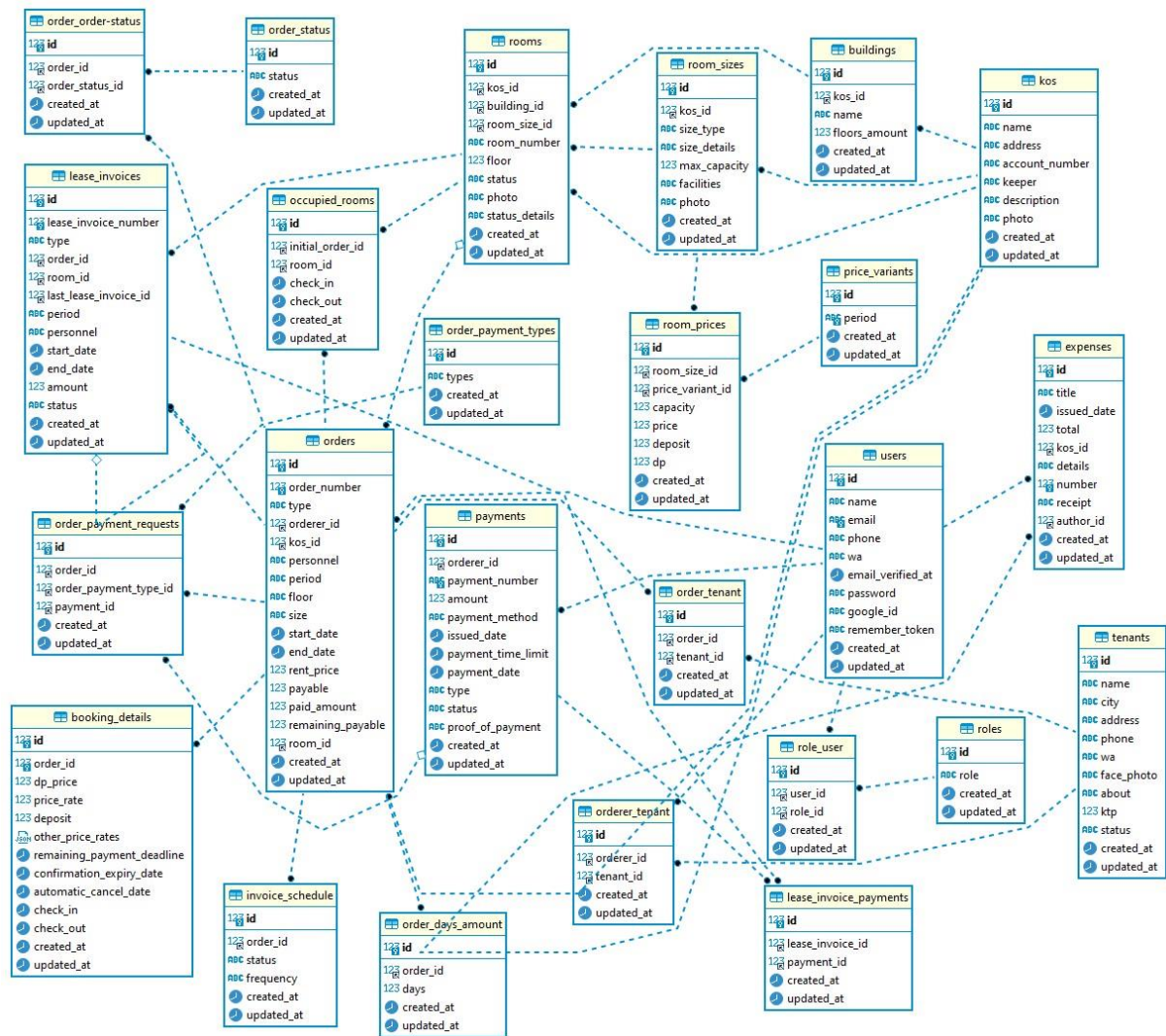


Figure 3 Visualization of Database Structure

### 3.2.2 User Interface

The application user interface is divided into two parts. The first part is a page for the public that is used to book rooms online. Visitors must log in with a Google account to be able to book a room. Then after logging in, the orderer can track the status of the room booking and the rooms that have been successfully rented.

The second part is the internal management user interface in the form of a dashboard with access rights for each boarding house owner and boarding house keeper. The owner can access the Kos Hijau Baru or Kos Hijau Kuning pages. While the boarding house keepers can only access the boarding house pages that are their respective responsibilities.

Figure 4 is an example of a user interface of booking tracking page that shows paid bookings. The orderer can book rooms and view the status of their bookings by accessing other menus.

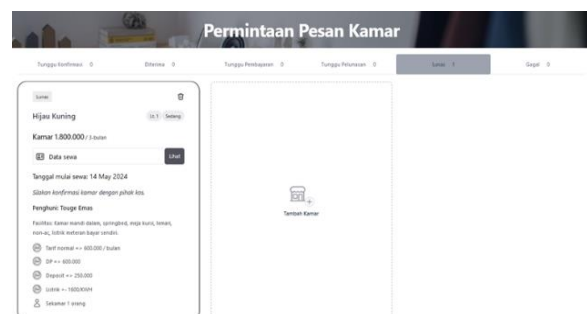


Figure 4 Track Order User Interface

Figure 5 is an example of the boarding house internal management dashboard, orders menu. The boarding house internal management dashboard can be accessed by the admin and boarding house keepers with their respective authorizations. The orders menu is used to manage all boarding house room orders.

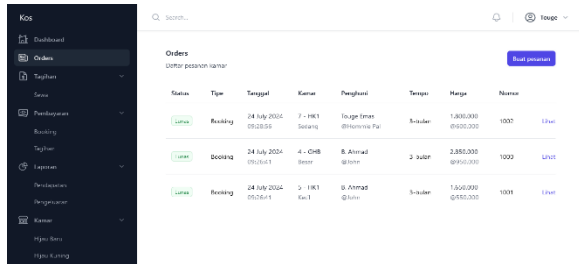


Figure 5 Dashboard Orders User Interface

Figure 6 shows the boarding house rental bill dashboard page. This page can be used by the admin and boarding house keepers to manage room rental bills.

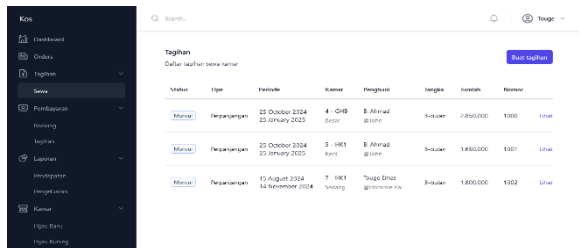


Figure 6 Billing Dashboard User Interface

Figure 7 shows the dashboard page for booking payments and boarding house rental bills. This page is used by the admin and boarding house keepers to manage booking payments and boarding house rental bills.

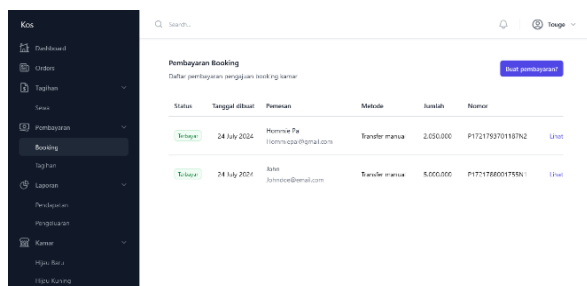


Figure 7 Payment User Interface

Figure 8 shows the boarding room dashboard page. This page can be used by the admin and boarding house keeper to manage the boarding room.

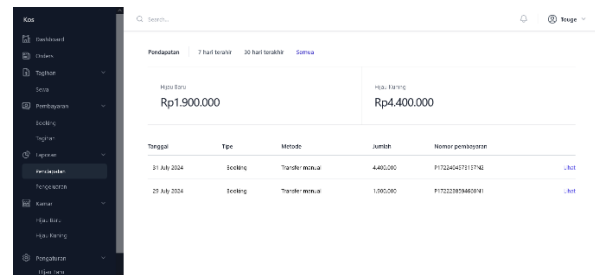


Figure 8 Rooms Dashboard User Interface

Figure 9 shows the boarding house income report dashboard page. This page can only be seen by the boarding house admin.

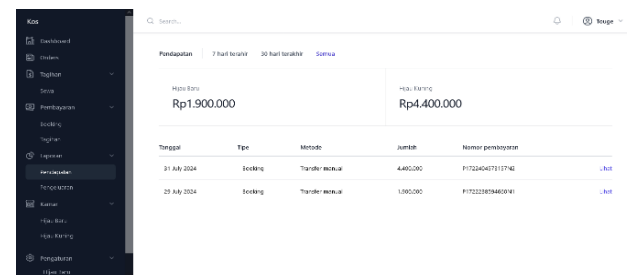


Figure 9 Income Dashboard User Interface

Figure 10 shows the boarding house expense report dashboard page. This page can be used by the boarding house admin and keepers to manage boarding house expenses.

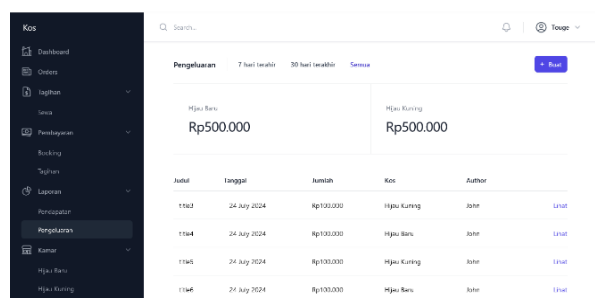


Figure 10 Expenses Dashboard User Interface

### 3.2.3 Application Testing

After the application is developed, the next step is to test the application. The test is carried out before the implementation stage in the real boarding house business. The test is carried out by testing each feature of the application created. Table 1 is a table of the results of the application feature test.

**Tabel 1 Application Feature Test Results**

|   | Fitur                                      | Type of Test                                | Test Result         |
|---|--------------------------------------------|---------------------------------------------|---------------------|
| 1 | Login                                      | Orderers log in with Google account         | Works correctly     |
|   |                                            | Admin and keepers login with custom account | Works correctly     |
| 2 | Online room booking by the orderer         | Choose room                                 | Works correctly     |
|   |                                            | Fill in rental data                         | Works correctly     |
|   |                                            | Pay booking                                 | Works correctly     |
|   |                                            | Cancel booking                              | Error               |
| 3 | Manage rent and billing by orderer         | View bill                                   | Works correctly     |
|   |                                            | Pay bills                                   | Works correctly     |
| 4 | Manage orders by boarding house management | Create order                                | Works correctly     |
|   |                                            | Accept booking                              | Works correctly     |
|   |                                            | Reject booking                              | Not yet functioning |
|   |                                            | Confirm payment                             | Works correctly     |
|   |                                            | Confirm check-in and room number            | Works correctly     |

|   |                                               |                                         |                     |
|---|-----------------------------------------------|-----------------------------------------|---------------------|
|   |                                               | Confirm check-out date                  | Not yet functioning |
| 5 | Manage bills by boarding house management     | View bills                              | Works correctly     |
|   |                                               | Confirm payment                         | Works correctly     |
|   |                                               | Create bills                            | Works correctly     |
|   |                                               | Delete bills                            | Works correctly     |
| 6 | Manage rooms by boarding house management     | View rooms                              | Works correctly     |
|   |                                               | Edit room rates, room descriptions      | Works correctly     |
|   |                                               | Edit room availability                  | Works correctly     |
|   |                                               | Add room                                | Works correctly     |
|   |                                               | Delete room                             | Works correctly     |
| 7 | Manage income by admin                        | View income report                      | Works correctly     |
| 8 | Manage boarding expenses by admin and keepers | Admin views the boarding expense report | Works correctly     |
|   |                                               | Keepers input expenses                  | Works correctly     |

The test results above show several features that are error and not running yet. By knowing what features need to be fixed, corrections are made first before the deployment stage.

### 3.3 Post Deployment Interview Results

After this application is implemented, problems such as recording boarding house administration, monitoring rent, bills, and summarizing income and expenditure data become easier.

Because this application can be used on smartphone gadgets, boarding house managers become faster and more organized in recording boarding house administration. Previously, they had to record in thick notebooks full of data and notes that were

piled up. Now, rental records and notes can be one in the application.

With the additional feature of online room booking, it can be seen from the boarding house keepers that many orderers choose to complete the room booking process directly from the boarding house manager, not continuing from the application. Many people argue that they do not continue the booking process that has been done through the application because the payment is still manual. So, when the orderer contacts the boarding house manager and confirms the transfer on Whatsapp, the orderer is reluctant to have to upload proof of transfer in the application. As a result, the boarding house keeper continues the booking process by inputting the booking manually.

For the boarding house owner, the additional feature of booking rooms online is considered beneficial because it has a website about the boarding house that helps the boarding house's exposure on the internet. The website can be added to existing Google Profile information so that boarding house information becomes more complete on the internet.

#### IV. CONCLUSION

From the research results, several things can be concluded. The first is that the boarding house management application in the Hijau Baru and Hijau Kuning Boarding Houses business can help boarding house owners manage their income and expenses. The second is that delays in reporting boarding house payment data by boarding house keepers to boarding house owners can be reduced significantly so that fraud cases can be more controlled. Third, boarding house keepers and boarding house owners can monitor the rental period and room availability more easily from the application. And the fourth is that the public page of the website for online boarding house bookings provides boarding house exposure benefits that are more widespread. Although, the online room booking feature has less impact on orderers in terms of completing orders until

the end via the website because the payment method applied by the application is still manual.

From the conclusions above, we can conclude and answer the formulation of the problem that was the questions at the beginning of this study. The first conclusion is that this study has succeeded in designing a website-based boarding house management application that can make it easier to manage boarding house income. The second conclusion is that this study has succeeded in providing an application that helps overcome the possibility of fraud cases in boarding house businesses. The third conclusion is that this study has succeeded in finding a way to design a website-based application that can make it easier to monitor rental periods and room availability.

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