Boat Ticket Booking Information System at Mahakam Ulu Wharf

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Abstract— The background of this research is the Mahakam Ulu pier which provides traditional ship transportation services, while the problem that often occurs to prospective passengers is being left behind by ships because most of the prospective passengers do not get information about the departure schedule of the ship that the prospective passenger wants to go to. Therefore the purpose of designing a website-based ship ticket booking information system application at the Mahakam Ulu pier is to make it easier to order tickets online and make it easier for prospective passengers to get information about ship departure schedules, find out information about boat ticket prices, and find out what facilities are available. Provided on board, and also to make it easier for admins to manage ticket data. The development of the system used in this study is the waterfall method, to implement this ship ticket booking information system, supporting components are needed so that it can work properly. This component uses the Laravel framework programming and MySQL database. Based on the results of the black box test and the respondent's questionnaire, the web-based ship ticket booking system has been running well and can be used by customers and also the Mahakam Ulu jetty admin.

Keywords— System Information, Ship, Booking, Laravel, Website

I. Introduction

Mahakam Ulu Pier located in Karang Asam Ulu, Samarinda City, East Kalimantan, provides traditional boat transportation that has destinations to Mahakam Ulu namely Melak, Long Iram, and Long Bagun. However, there is still a lack of information about ship departure schedules and boat ticket bookings (Aini & Wicaksono, 2019). To get information about ship departure schedules and boat ticket bookings, the public and prospective passengers must come to Mahakam Ulu Pier or contact via Whatsapp, telephone, and SMS (Kurniawan et al, 2019). The lack of facilities provided by the ship makes it a point of selling tickets, while prospective passengers must order tickets the day before the ship's departure to get tickets, this is because the ship's departure schedule is on time at 07.00 in the morning (Labib & Berti, 2019; Saputra et al, 2021)

With the existence of a Web-Based Ship Ticket Booking Information System at Mahakam Ulu Pier, it can make it easier for the public and prospective passengers to order tickets online, find out information about ship departure schedules, find out what facilities are provided on board, and find out ship ticket prices. In addition, the information provided to prospective passengers who will travel using traditional ship transportation is information for each destination of the prospective passenger, it can also make it easier for the admin to manage data and check tickets for prospective ship passengers, so a Web-Based Ship Ticket Booking Information System is needed at the Mahakam Pier. Ulu takes a system that is fast, precise, and accurate.

To overcome these problems, the formulation of the problem posed for this thesis is, How to design and build a Web-Based Ship Ticket Booking Information System application at Mahakam Ulu Pier and How to find out information on ship departure schedules and boat ticket prices.

Considering the problems covered in the extensive research, due to the limitations of the problems, the authors have limitations in research, namely making boat ticket booking websites only for the East Kalimantan region and developing this system using the waterfall method.

The purpose of this research is to design and build a Web-Based Boat Ticket Booking Information System at Mahakam Ulu Pier accurately so that it can help make it easier to find out information on ship departure schedules and find out what facilities are on board. Facilitate prospective passengers in booking ship tickets.

II. Literature Review

A. Study of Literature

Some of the literature as a guide and reference in this study:

1. Research conducted by Miftahul Rizky, Yani Sugiyani, and Harsiti entitled "Seaship E-Ticket Ordering Information System at PT. Bandar Bakau Jaya. This study aims to facilitate ticket sales and find out the ship schedule information desired by prospective passengers without having to come directly to the place, as well as a means to improve employee performance so that the ticket ordering process can be computerized and can be accessed online. The design of a ticket ordering information system is carried out to make it easier for employees so that they can serve prospective passengers appropriately and optimally, and can provide information regarding ship departure schedules. This research is designed web-based using PHP framework and MySQL database, carried out using the waterfall method (Rizky et al., 2018).

2. Research conducted by Muhammad Yusuf, Danuri, and Jaroji entitled "Android-Based Bengkalis Ro-Ro Ticket Sales Application". In this research, this application was made using the Scan QR Code system which was carried out when leaving. This application is made using the Java programming language, MySql database storage media, and the Android Studio editor. The purpose of this application is expected to be able to help the public to more easily access and buy tickets according to their departure schedule. The results of the trial use of the application at Ro-Ro Bengkalis, users can easily buy tickets at any time without having to go through long queues (Yusuf et al., 2019)

3. Research conducted by Setya Handayani & Mochammad Rizki Romdoni entitled "Ship Ticket E-Booking Application in Tanjungpinang and Kijang Regions Based on Android and Web". In this study, an agency requires good information management to serve the needs of society/customers. Management of submitted information such as departure schedules and ticket prices from a ship that will depart to various destinations in the Riau Archipelago region from the origin of Tanjungpinang and Kijang (Tanjungpinang - Senayang, Kijang - Letung, etc.) is still conventional where the delivery of such information has not been effective and efficient because it is still manual as well as ordering tickets which takes quite a long time and not a moment because of the large number of potential passengers ordering tickets, especially during religious holidays and year-end holidays. To overcome this problem, it is necessary to create a computerized application (Handayani and Mochammad Rizki Romdoni, 2019).

B. System Information

Information systems can be interpreted as a set of elements that work together either manually or computer-based in carrying out data processing in the form of collecting, storing, processing data to produce meaningful and useful information for decision-making processes at various levels of management (Kristiawan and Sukadi 2017). According to (Abdulloh, 2017) an information system is a man-made system that generally consists of a set of computer-based and manual components created to collect, store and manage data and provide output information to users. An information system is a system that is interrelated and integrated and aims to provide information to support the operations, management, and decision-making functions within an organization. Based on this definition, it can be concluded that an information system is data that is collected, grouped, and processed in such a way that it becomes a single unit of information that supports each other and becomes valuable information for those who receive it.

C. Website

Website terminology is a collection of website pages, which are usually summarized in a domain or subdomain, which is located on the World Wide Web (WWW) on the Internet. A web page is a document written in HTML (Hyper Text Markup Language) format, which is almost always accessible via HTTP, which is a protocol that conveys information from a website server to be displayed to users via a web browser. All publications from these websites can form a very large information network (Abdullah, 2017; Sugiyarti, 2017).

D. Laravel

Laravel is a PHP framework released under the MIT license, built on the MVC (model view controller) concept. Laravel is an MVP-based website development written in PHP designed to improve software quality by reducing initial development and maintenance costs and to enhance the experience of working with applications by providing expressive, clear, and time-saving syntax (Hermanto, Yusman, and Nagara 2019; Widagdo & Junirianto, 2017).

E. Unified Modelling Language (UML)

The Unified Modeling Language (UML) is a "language" that has become the industry standard for visualizing, designing, and documenting software systems. UML offers a standard for modeling a system. By using UML we can create models for all types of software applications, where these applications can run on any hardware, operating system, and network, and are written in any programming language. But because UML also uses classes and operations in its basic concept, it is more suitable for writing software in object-oriented languages such as C++, Java, C#, or VB.NET. However, UML can still be used for modeling procedural applications in VB or C. Like other languages, UML defines notation and syntax/semantics. UML notation is a special set of forms for describing various software diagrams. Each shape has a specific meaning, and the UML syntax defines how the shapes can be combined (Suhendra, Asworowati, and Ismawati 2020).

III. RESEARCH METHOD

A. Reasearch Prosedure

In designing a web-based ship ticket booking information system This method uses the Waterfall method. The waterfall is a development method software that allows system creation to be carried out online structured and systematic (sequential), the process in the waterfall continues to flow down (like a waterfall) according to the existing development cycle. Here a picture of the waterfall can be seen in Picture 1.
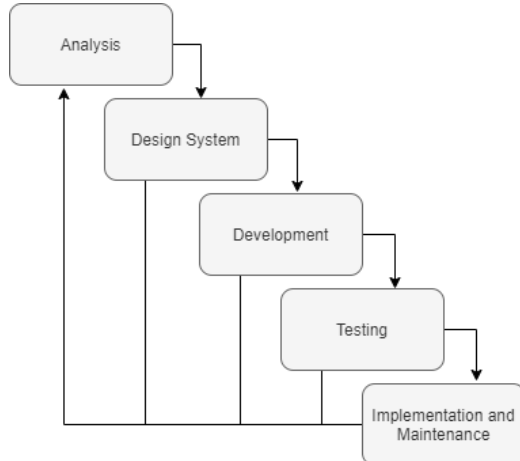
Picture 1. System Development Cycle with Waterfall Method

Information:
1. Analysis
   Analysis is the process of collecting data relating to the system to be made. This data collection can be done through interviews, literature studies, observation, or direct research.
2. Design System
   At this stage, do the design for the display needs on the website for ordering ship tickets that are needed according to the previous plan.
3. Development
   The next step is the stage of making a ship ticket booking information system application using certain programming language codes. The application writing process refers to the documents previously made.
4. Testing
   The next stage is testing the ship ticket booking information system that has previously been made according to a predetermined design.
5. Implementation and Maintenance
   The last stage is the implementation of a ship ticket booking system that is ready to use and the maintenance of the system so that it runs well.

B. Analysis System

System analysis is a technique or method for solving problems by describing the system into the components that make up it to find out how the performance of these components can interact with each other to achieve system goals.

1. Use Case Diagram
   Use case diagrams are used to find out what functions are in a system and who has the right to use the functions in the system created. Picture 2 is an image of the Information System Use Case Mahakam Ulu Jetty Ship Ticket Booking.
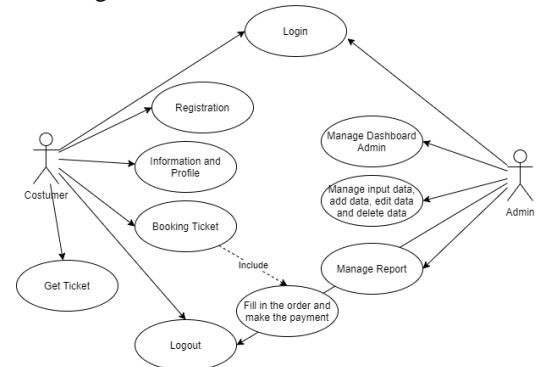

Picture 2. Use Case Diagram

2. Activity Diagram
   Activity diagrams describe the workflow or activity of a system or business process or menu in the software.
   a. Activity Diagram Dashboard
      Picture 3 explains how the customer process starts to enter the website then the system displays the main page of the website then the customer opens the information page and the system displays the information page then the customer opens the ship profile page again the system will display the ship profile page and the customer, if you want to continue open the ticket message page the system, will display the ticket message page.
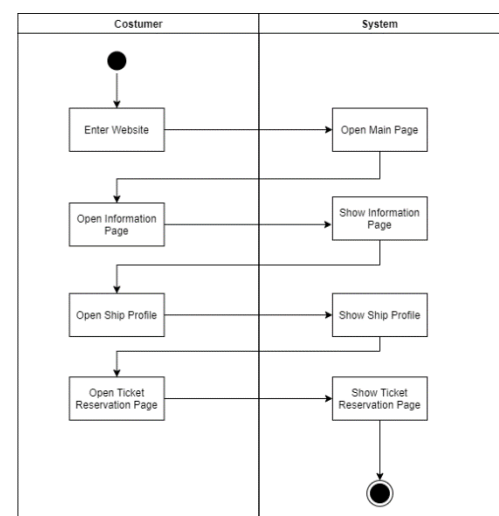

Picture 3. Activity Diagram Dashboard

b. Activity Diagram Login Costumer
Picture 4 explains how customers log in to enter the system. First, the customer enters the website page after that the customer enters the login page so that the page changes to the login page on the system. Customers can enter the appropriate username and password that was previously registered. After that, the system will validate the username and password are correct or wrong if it is wrong then the page returns to the login page if it is correct then the home page appears.
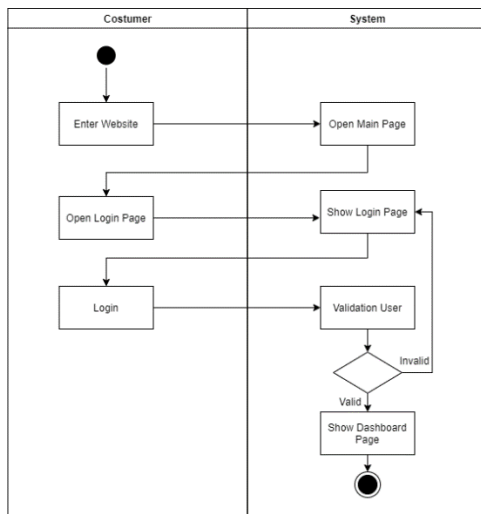

Picture 4. Activity Diagram Login Costumer

c. Activity Diagram Ticket Reservation
Picture 5 explains how customers place ship ticket orders. First, the customer can open the ticket order page and the customer can also open the departure schedule by opening the ship's departure schedule page. After that, the customer confirms the ticket order, after that the customer fills in the complete data and the system will store data from the customer's ticket order.
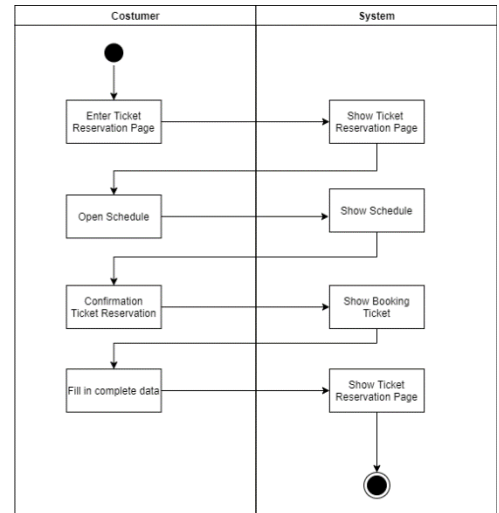
Picture 5. Activity Diagram Ticket Reservation

d. Activity Diagram Print Ticket
Picture 6 is the customer ticket print page while the system will print tickets and the customer will receive a printed ticket.
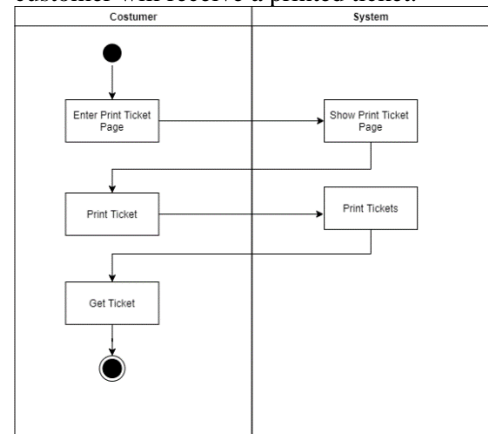

Picture 6. Activity Diagram Print Ticket

e. Activity Diagram Booking
Picture 7 is an Activity Diagram for ordering boat tickets at the Mahakam Ulu Pier on the admin dashboard. First, make sure the admin has logged in first to the admin dashboard, then select the order page menu and the system will display the order page, after that select the change order menu that has been provided, and the system will display the order to be changed. After that, the system will save the data that has been changed in the admin dashboard.
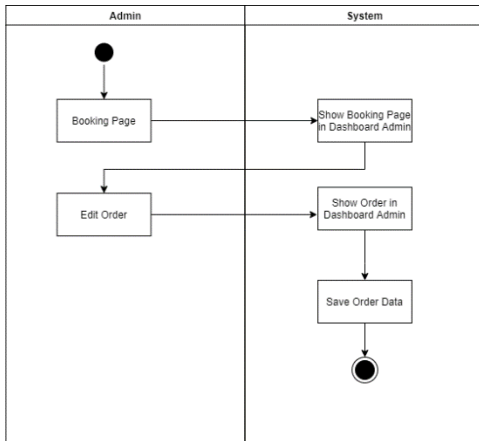
Picture 7. Activity Diagram Booking

f. Activity Diagram Admin Transaction
    Picture 8 is the Admin Transaction Activity Diagram process. First, the admin is confirmed to have logged into the dashboard, after that the admin selects the transaction page that is already available on the admin dashboard. Then the admin selects one of the transaction details to view and the system will display the transaction page on the admin dashboard page.
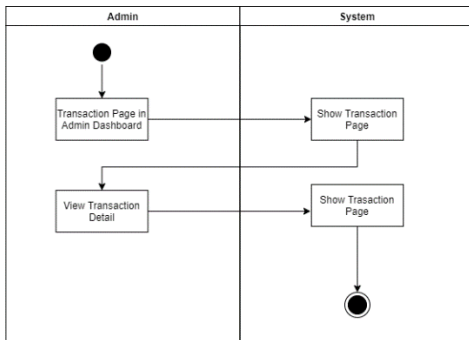
Picture 8. Activity Diagram Admin Transaction

g. Activity Diagram Logout
    Picture 9 is the process of the Activity Diagram logging out or leaving the dashboard. The first step is that the user has logged in. Then the user chooses to log out (exit) and the system will display the login page again.
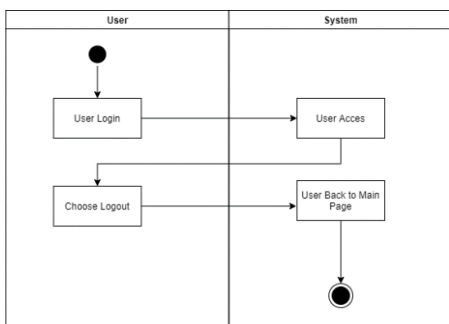
Picture 9. Activity Diagram Logout

3. Sequence Diagram
    Sequence diagrams are used to describe interactions between objects in and around the system in the form of messages that are described over time.
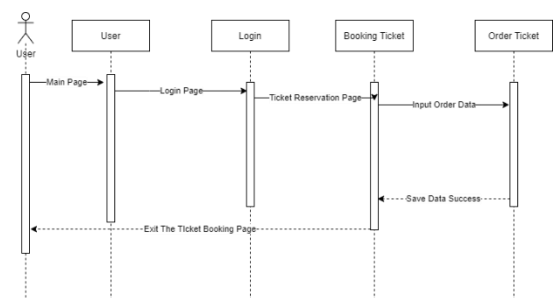   a. Sequence Diagram Login
        In Picture 10 Sequence Diagram the user logs in by filling in the email and password. Then the system validates the account, after which it responds to whether the account is correct or not.
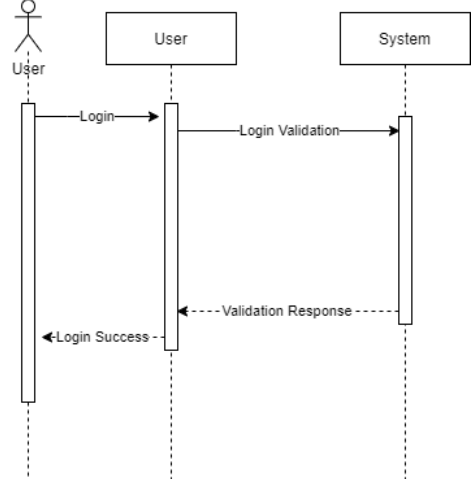
Picture 10. Sequence Diagram Login

   b. Sequence Diagram User Ticket Reservation
        In Picture 11 Sequence Diagram the user will open the website page and then the user logs in to order tickets, after logging in the user enters the ticket ordering page and orders tickets, and the last one inputs ordering data. If the user has inputted data then the user can continue to the next page.

Picture 11. Sequence Diagram User Ticker Reservation

    c. Sequence Diagram Print Ticket
        In Picture 12 Sequence Diagram the user enters the login page and logs in first, then the user continues to print tickets after the user prints the ticket, the system will upload the ticket that has been ordered by the user and after that, the user will receive a ticket.
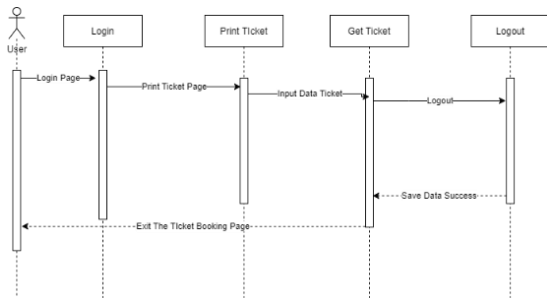
Picture 12. Sequence Diagram Print Ticket

d. Sequence Diagram Admin
In Picture 13, the Admin Sequence Diagram logs in first to access the Admin Dashboard page, then the admin will manage order data and the admin will change the status of ticket orders on the admin dashboard, after changing, deleting, and uploading the admin will log out where the admin has logged in before.
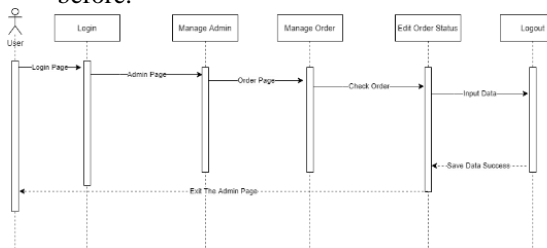
Picture 13. Sequence Diagram Admin

4. Class Diagram
Class diagrams are a type of structure diagram in UML which clearly illustrates the structure and class descriptions, attributes, methods, and relationships of each object. The class diagram on the system can be seen in the Picture 14.
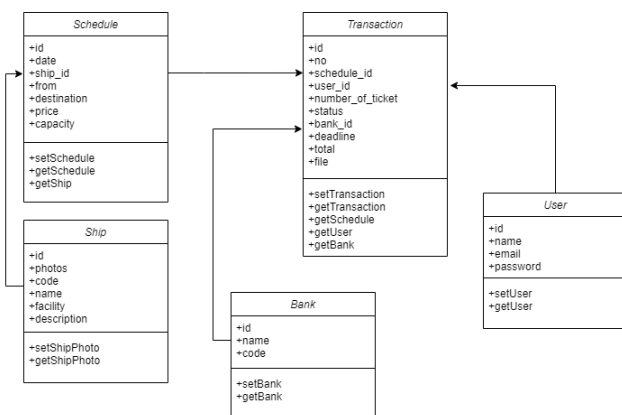

Picture 14. Class Diagram

IV. RESULT AND DISCUSSION

A. *Implementation*
The results of the application of the Web-Based Ship Ticket Booking Information System application at Mahakam Ulu Pier which can be accessed by admins and users are as follows:

1. Main Page
The main page is the page that appears for the first time when visiting the ship ticket booking website, on the main page there are menus such as the homepage menu, ship profile, information, order tickets, and login display. The main web page can be seen in Picture 15.
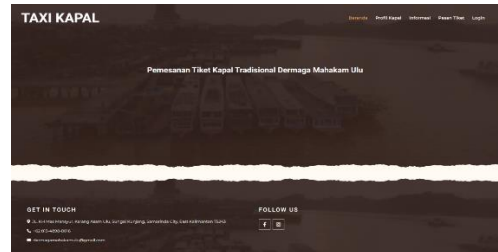

Picture 15. Main Page

2. Admin Page
The following is the result of making a ship ticket booking information system for admin pages that can manage data consisting of dashboards, ships, schedules, customers, transactions, and reports.
a. Login Page
Login page for the admin, before the admin enters the main page the admin must log in by entering the correct email and password if the login is successful the admin will enter the admin dashboard page. The login page can be seen in the Picture 16.
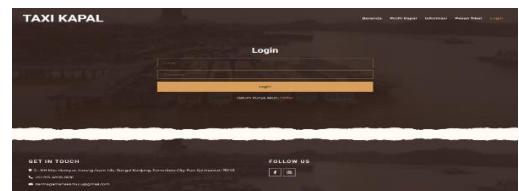
Picture 16. Login Page

b. Dashboard Page
The dashboard page is a display for admins who have logged in before. Dashboard page can be seen in Picture 17.
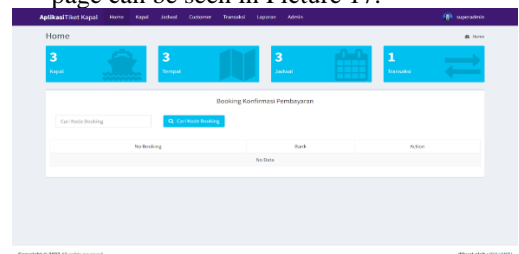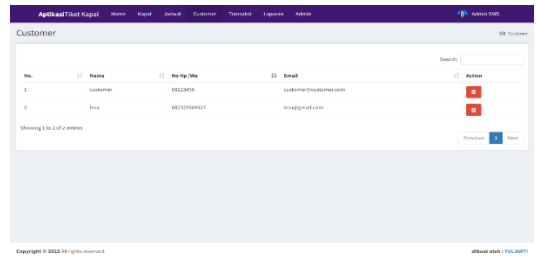

Picture 17. Dashboard Page

c. Ship Page
The ship page displays what is on the ship page and can edit, delete and add ships if the admin wants to make changes to the ship page then the admin opens the ship page. The ship's yard can be seen in Picture 18.
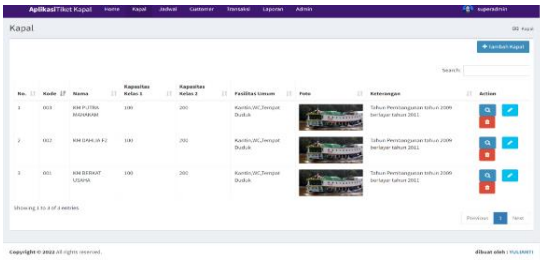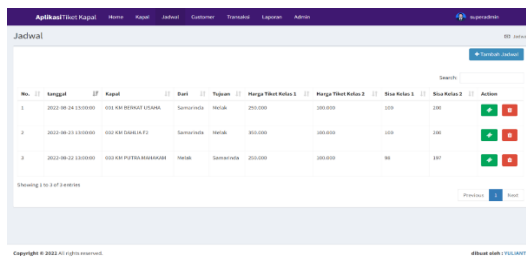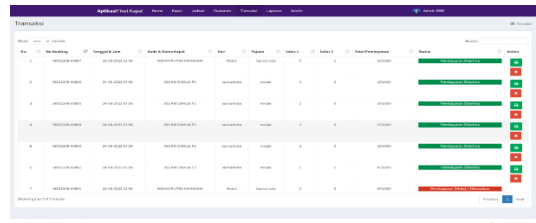
Picture 18. Ship Page

d. Schedule Page

On this schedule page, the admin can add data and you will see how it looks on the schedule page after adding a schedule, on the schedule page the admin can delete data and the admin can also order tickets. The schedule page can be seen in Picture 19.

Picture 19. Schedule Page

e. Order Ticket Admin

The admin ticket order page admin can order tickets for prospective passengers who come directly to the Mahakam Ulu pier and want the ticket ordering data to be filled in by the admin. The admin ticket message page can be seen in Picture 20.

Picture 20. Order Ticket Admin

f. Costumer Page Admin

The customer admin page is where on this page the admin can see users who have registered to log in and order tickets. The customer admin page can be seen in Picture 21.

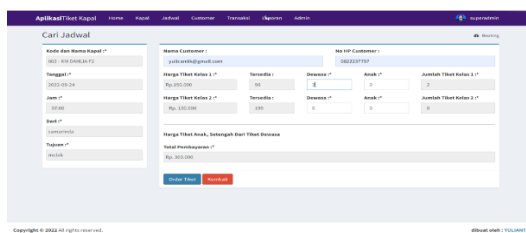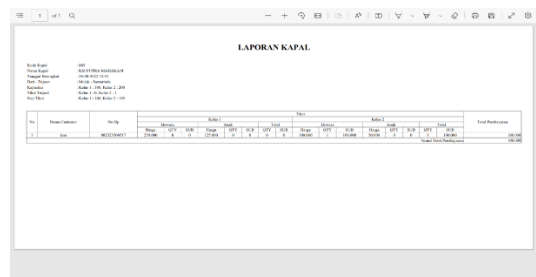Picture 21. Costumer Page Admin

g. Transaction Page Admin

The admin transaction page is a display where the admin sees payment transactions made by the customer and the admin can cancel the payment if the proof of payment does not match the ticket order made by the customer. The admin transaction page can be seen in Picture 22.

Picture 22. Transaction Page Admin

h. Report Page Admin

The admin report page is a page where the admin can find out the number of tickets sold, and the remaining tickets sold, and find out which ships depart according to the departure schedule. The admin report page can be seen in Picture 23.

Picture 23. Report Page Admin

3. User Page

The following is a user page where users order ship tickets.

a. Registration Page

The user registration page is where the user first registers before logging in to the ship ticket booking page. The user registration page can be seen in Picture 23.
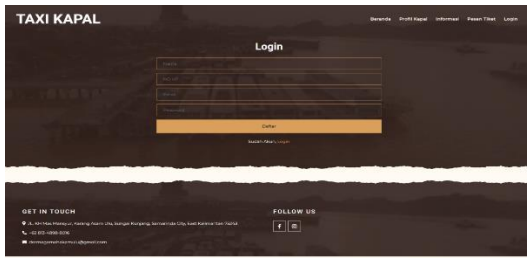
Picture 24. Registration Page

b. Ship Profile Page
Ship profile page where the user can see the profile of the ships on the Mahakam Ulu pier. The ship profile page can be seen in Picture 25.
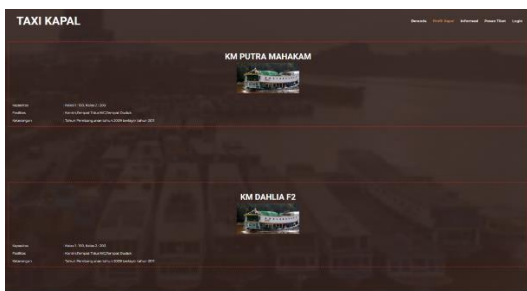
Picture 25. Ship Profile Page

c. Information Page
On this information page, users can view information on departure schedules and find out which ships will depart and their destinations. The information page can be seen in Picture 26.
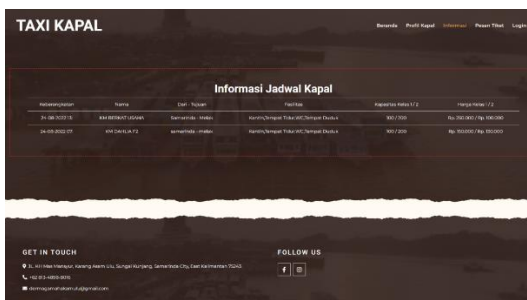
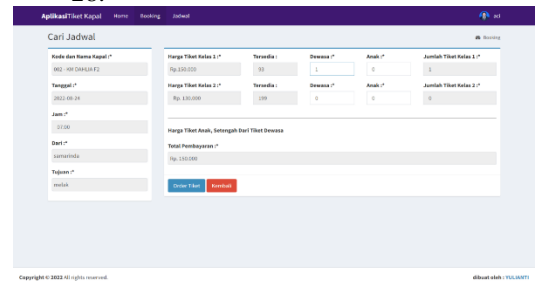Picture 26. Information Page

d. Schedule Order Ticket Page
On this ticket booking schedule page, users can immediately order tickets according to the ship's departure schedule. The ticket order schedule page can be seen in Picture 27.
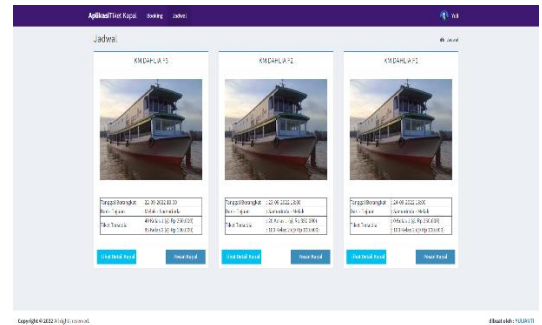
Picture 27. Schedule Order Ticket

e. Order Ship Ticket Page
On this ship ticket booking page, the user fills in the number of ship ticket messages according to the user's wishes. The ship ticket booking page can be seen in Picture 28.

Picture 28. Order Ship Ticket

f. Confirmation Payment Page
Payment confirmation page where users make payment transactions via bank transfer. The payment confirmation page can be seen in Picture 29.
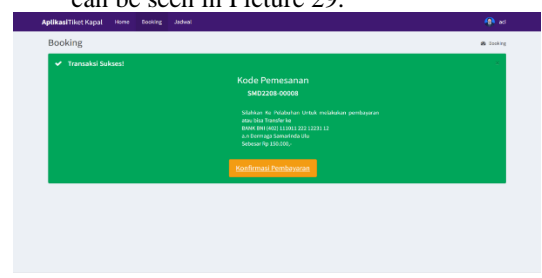
Picture 29. Confirmation Payment

g. Print Ticket Page
Ticket print page where users print tickets that have been ordered. The ticket print page can be seen in the Picture 30.

Picture 30. Print Ticket Page

h. Ticket Page

This ticket page is where users can see tickets that have been printed in the ship ticket booking application. The ticket page can be seen in Picture

Picture 31. Ticket Page

B. Testing

Testing of the Ship Ticket Booking information system is carried out using a black box. Blackbox testing is used to test the running of the system, namely in the form of a login page, and display of the menus on the system that has been made. Table 1 is the results of the black box test on the Web-Based Ship Ticket Booking Information System at the Mahakam Ulu Pier with the results of the system running according to its function, in every action performed on the system.

Table 1. Black Box Test Admin

No	Input	Output	Status
1.	Click Login	Enter username and password	Success
2.	Click Dashboard	Displays available ship data	Success
3.	Click Schedule	Displays the ship's departure schedule	Success
4.	Click Transaction	Displays transaction data	Success
5.	Click Report	Displays the report page	Success

V. CONCLUSION

After designing and building a Web-Based Ship Ticket Booking Information System at Mahakam Ulu Pier, it can be concluded that this application can make it easier for admins to manage ship ticket booking data and manage ship passenger data, as well as make it easier for prospective passengers to order boat tickets online, knowing departure information, find out what facilities are provided on the ship, and find out the price of boat tickets. Testing using black boxes and questionnaires where this test is carried out at the end of making the software to find out whether the software can function properly. Web-Based Boat Ticket Booking Information System at Mahakam Ulu Pier that has been implemented using the Laravel and MySQL Frameworks.

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