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Web-Based Information System for Cargo Storage at Mentawai Fast Port

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Abstrak

The increasing number of passengers at Mentawai Fast often leads to issues in baggage management, especially due to the manual system still in use. This research aims to design and implement a web-based custody information system to improve the efficiency, accuracy, and safety of luggage storage at Mentawai Fast Port. The system was developed using the SDLC method, designed with UML tools, and implemented with PHP and MySQL. The result is a web-based application that facilitates luggage tracking and reporting, thereby enhancing passenger convenience.

A. Introduction Luggage storage services at the port are essential for ensuring the comfort of passengers, especially for those traveling alone or during waiting times. The current practice at Mentawai Fast still relies on manual recording using paper, which often causes issues such as misplacement or confusion during item retrieval. A digital solution is required to streamline the process and provide accurate and accessible records.

This research proposes the development of a web-based luggage custody system aimed at ensuring the safe handling of passenger belongings while improving operational efficiency. The manual system has proven to be inefficient, time-consuming, and prone to errors. Therefore, this research contributes to the modernization of port services through an integrated information system.

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A. Introduction

The port's luggage storage information system can help passengers keep their luggage safe for a while. Moreover, if you travel alone and have to wait for a while in the port, it is impossible to carry your luggage. Apart from being inconvenient and taking up space, some places are too difficult or even impossible to reach with luggage. For example, restaurants, places of worship and restrooms. Instead of carrying the luggage around, it would be better to put it in a safe place.

The problem that MV. Mentawai Fast is that customers are still often confused when handing over goods because passengers' baggage is not fully recorded and paper is still used, which is recorded manually, so a system for handing over goods on MV. Mentawai Fast web-based to identify and record in more detail the items entrusted by the customer.

The need for this luggage storage system to maintain the comfort for the passengers who want to travel where the luggage is safe and also not interfere with the activities of the passengers during the trip this luggage storage information system is very helpful for every passenger who will travel.

In the company studied, reports on the storage of goods are still recorded manually or by hand. This is still an obstacle, as many sheets of paper and pens are needed to create them. In view of these problems, a web-based inventory information system is needed. Hopefully, if the system for recording inventory reports is computerized, it will be easier for companies to obtain the desired information effectively and accurately (Khozin Yuliana, 2019).

From the above table it can be seen that the dates for goods on the MV. Mentawai Fast in January 2023. where the departure days are Monday, Wednesday, Friday and Sunday departures that are carried out by the Mentawai Fast ship, so it can be seen the day and the number of entrusted goods carried out on average per month is about 56 entrusted goods per departure.

B. Research Methods

SDLC (Software Development Life Cycle) is the process of developing or modifying a software system using models and methods that have already been used to develop software systems (based on best practices).

Research Method The system development follows the Software Development Life Cycle (SDLC) approach. UML (Unified Modeling Language) is used for system design, including:

1. Use Case Diagram: Represents system interactions from the user perspective.
2. Class Diagram: Describes the structure and relationships of system classes.
3. Sequence Diagram: Shows the sequence of operations.
4. Activity Diagram: Illustrates business process workflows.

UML (Unified Modeling Language)

UML (Unified Modeling Language) is a language for visualization, specification, creation of software systems and documentation. UML provides precise, unambiguous and complete models. In particular, UML specifies important steps in the development of analysis, design and implementation decisions in software systems (A H Nugroho, 2020).

1. use case diagram

A use case diagram is a description of the function of a system from the user's perspective. Use case diagrams describe typical interactions between users of a system and the system itself through a story of how a system is used (Rosa and Shalahuddin, 2018: 63).

2. class diagram

A class is a description of groups of objects with the same properties, behavior and relationships. Thus, the class diagram can provide a global view of a system. This is reflected in the classes present and their relationships to each other. A system usually has several class diagrams.

3. sequence diagram

Sequence diagrams describe interactions between objects in and around the system (including users, displays, etc.) in terms of messages described over time.

4 activity diagram

Activity diagrams are in many cases a technique for describing procedural logic, business processes and workflows.

a. Running system processes

Process analysis is an activity for analyzing work sequences that occur in the running system. The results of the analysis activities are presented in the form of a real picture of the sequence of activities related to data processing.

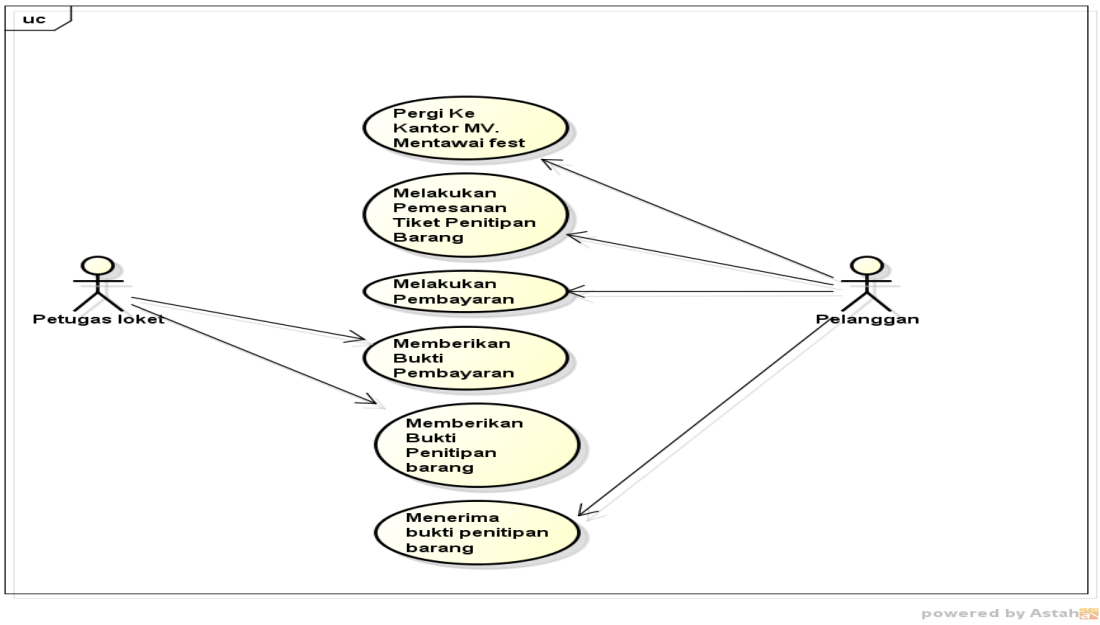

Figure 1 Diagram of the running use case

The above picture shows the current workflow of the system, where customers go to the booking counter of mentawai vest, order a ticket for luggage storage, and make a payment determined by mentawai vest, after which the officer can present a proof of payment to the customer, and the customer receives a proof of payment for luggage storage.

b. System design

Use case of the proposed system on MV.Mentawai Fast

The construction of this system will make it easier for consumers to make their purchases quickly and efficiently.

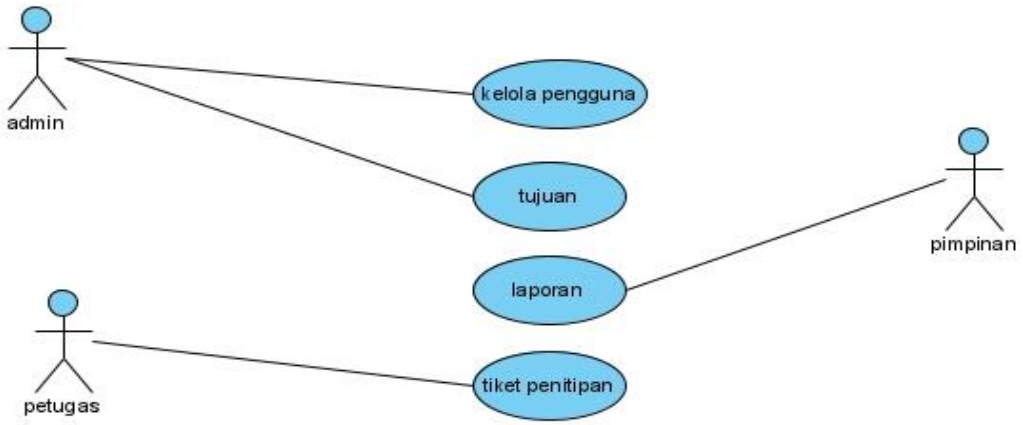

Figure 2 Proposed use case

Class diagram

For clarification, the class diagram for the design of the ticket booking website:

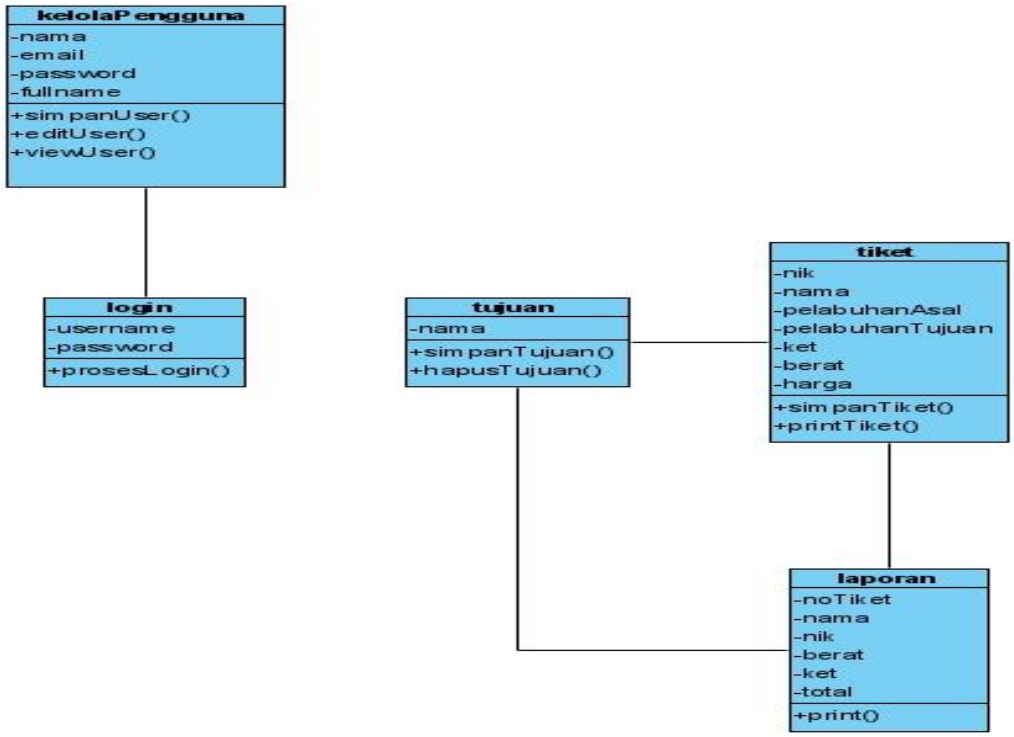

Figure 3 Class diagram of booking depository receipts

Sequence diagram

This diagram is an overview of the sequence diagram that is executed in the system:

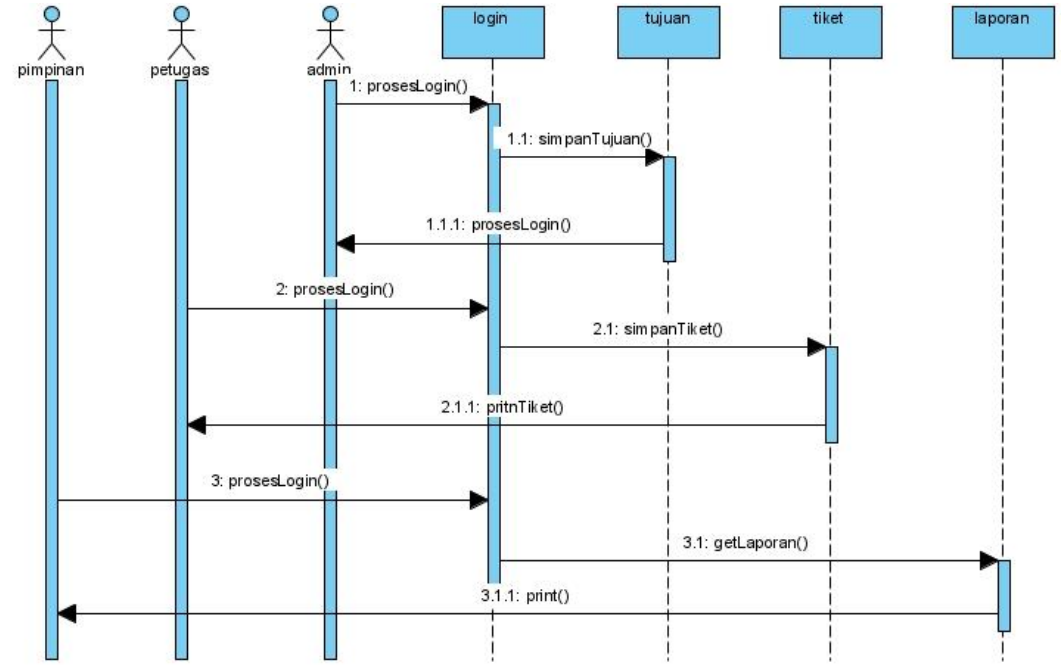

Figure 4 Sequence diagram for Admin

Activity diagram

This diagram is a description of the activity diagram for the admin on the website design on the ticketing of goods storage.

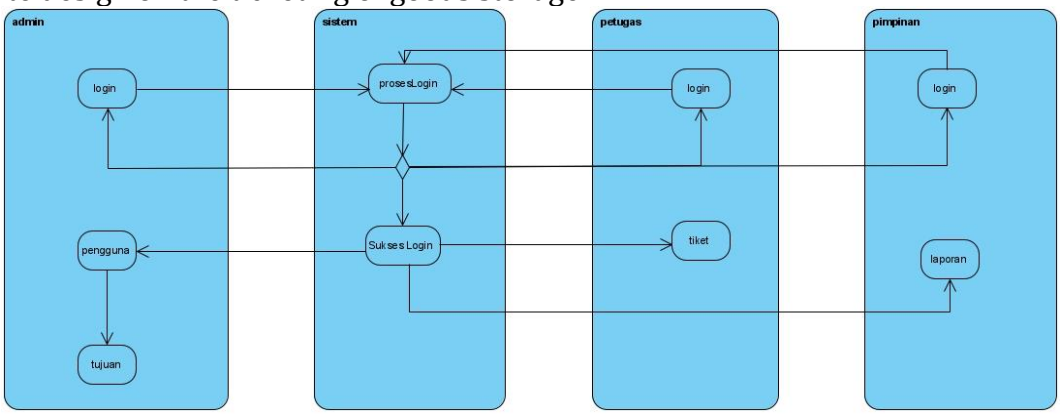

Figure 5 Diargam activity

Database Design

ERD is an entity relationship diagram used to model the relationships between entities or objects in a database-based system or application. ERDs are part of database analysis and design and help in showing the logical structure of the database.

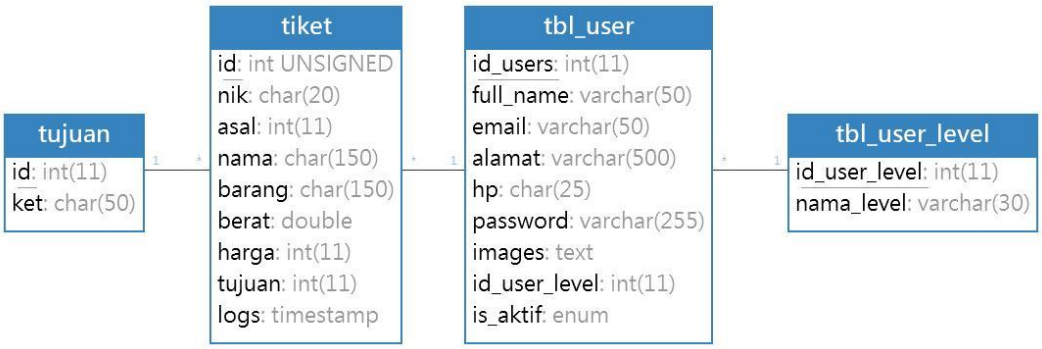

Figure 6 ERD

Database design includes entity-relationship diagrams (ERD) modeling the structure of tables such as tbl_user, tbl_user_level, and tiket which store user and ticket information.

C. Results and Discussion

System Implementation

Based on the information system analysis and design that has been achieved, it is necessary to implement the system as a test of the system that has been created. System implementation is the stage of implementing the system that will be carried out if the system is approved, including the program that has been made at the system design stage so that it is ready to operate. Web-based Custody Information System at MV (Mentawai Fast) Port.

Interface Implementation

Interface implementation is a stage in meeting user needs, in interacting with the system (web).

1. **Login Page**

Secured access for admin, officers, and leaders.

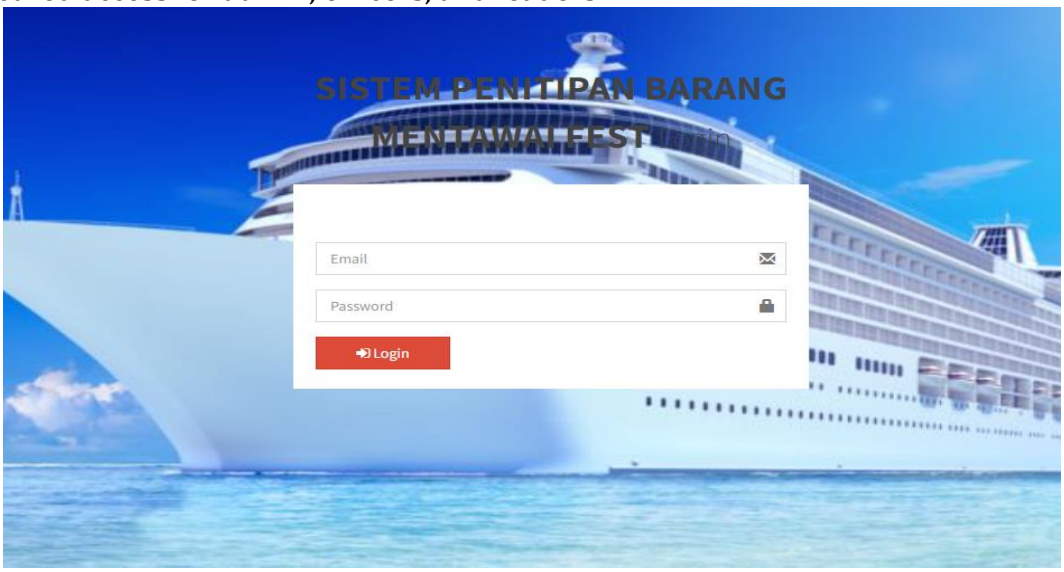

Figure 7 Login page

2. **User management page**

CRUD operations for users with different roles.

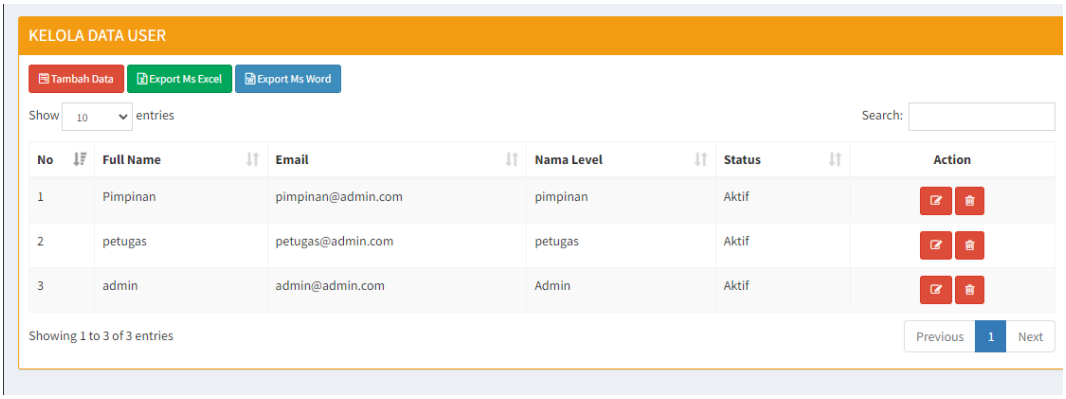

Figure 8 User management data page

3. Goal Page

Manage port destinations.

Figure 9 Destination Page

4. Report Page

Generate luggage transaction reports by date, destination, and weight.

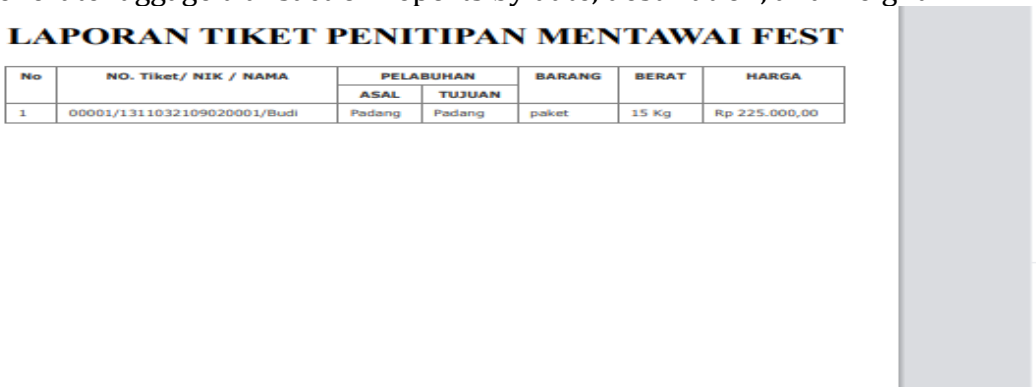

Figure 10 Report data page

Functional testing is done using the black box method. The black box method is a system test that aims to find errors or deficiencies in the Web-Based Custody Information System at MV (Mentawai Fast) Port. In this functional testing is still limited to testing the details of the application designed, the functions that exist in the application, and the suitability of the function flow with the desired process.

Based on the results of testing using the black box method on the Web-Based MF (Mentawai Fast) Port Custody Information System, the tests on the details of the application designed, the functions in the application, and the suitability of the function flow with the process are valid.

D. Conclusion

1. The system facilitates luggage storage at Mentawai Fast Port through a web-based platform.
2. It ensures more accurate and efficient recording of transactions.
3. The system can generate detailed reports, supporting operational decisions.

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