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The Design and Implementation of an Online Ticket Reservation Application at PT Maju Terus

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ABSTRAK

Perkembangan teknologi yang semakin maju telah mendorong perusahaan untuk bersaing dalam memanfaatkan sistem informasi untuk mendukung proses bisnis mereka. PT Maju Terus adalah perusahaan yang menyediakan layanan angkutan umum darat yang terletak di Pontianak, Kalimantan Barat. Perusahaan ini belum mengadopsi aplikasi sistem informasi dalam proses bisnisnya. Semua kegiatan reservasi antara perusahaan dan calon penumpang masih mengikuti metode konvensional, di mana calon penumpang harus mengunjungi atau menghubungi perusahaan untuk melakukan reservasi. Pencatatan reservasi oleh perusahaan perlu dilakukan secara terpusat, yang mengarah pada proses reservasi yang tidak efektif dan efisien. Desain aplikasi reservasi tiket online untuk PT Maju Terus akan dikembangkan menggunakan metodologi Rapid Application Development (RAD), dengan memanfaatkan bahasa pemrograman Hypertext Preprocessor (PHP). Unified Modeling Language 2.5 (UML 2.5) akan digunakan dalam desain sistem yang diusulkan ini, termasuk use case, diagram aktivitas, dan diagram kelas. Tujuannya adalah untuk menggambarkan alur dan hak akses yang dimiliki oleh sistem yang diusulkan. Desain aplikasi reservasi tiket online ini bertujuan untuk meningkatkan efektivitas dan efisiensi proses bisnis operasional perusahaan serta meningkatkan kepuasan pelanggan PT Maju Terus.

Kata Kunci: Desain, Aplikasi, Reservasi, E-Ticketing.

ABSTRACT

The increasingly advanced development of technology has prompted companies to compete in leveraging information systems to support their business processes. PT Maju Terus is a company with in-ground public transportation services located in Pontianak, West Kalimantan. The company has yet to adopt information system applications in its business processes. All reservation activities between the company and prospective passengers still follow conventional methods, where prospective passengers must visit or contact the company to make reservations. The recording of reservations by the company needs to be centralized, leading to ineffective and inefficient reservation processes. The online ticket reservation application design for PT Maju Terus will be developed using the Rapid Application Development (RAD) methodology, utilizing the Hypertext Preprocessor (PHP) programming language. The Unified Modeling Language 2.5 (UML 2.5) will be employed in this proposed system design, including use cases, activity diagrams, and class diagrams. The goal is to illustrate the flow and access rights possessed by the proposed system. The design of this online ticket reservation application aims to enhance the effectiveness and efficiency of the company's operational business processes and improve customer satisfaction for PT Maju Terus.

Keyword : Designed, Application, Reservation, E-Ticketing,

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1. INTRODUCTION

The rapid advancement of technology is driving companies across various sectors to compete in implementing information technology in their business operations [1]. Information technology can support companies in various fields, including transportation, education, etc. [2]. PT Maju Terus operates in the transportation sector as a provider of ground public transportation services in Pontianak, West Kalimantan.

Currently, PT Maju Terus still employs conventional methods in conducting its business processes, ranging from scheduling vehicle data to transportation ticket reservations by customers. Customers who wish to book tickets must physically visit the purchasing counter and inquire about ticket availability. Therefore, to provide convenience to service users, PT Maju Terus requires an online ticket reservation application that can display company information and manage reservations, eliminating the need for customers to visit counters to inquire about seat availability.

Based on the existing background, the design of an online ticket reservation application for PT Maju Terus is undertaken. This design aims to assist the company's business operations and enhance customer satisfaction.

2. METHOD

Rapid Application Development (RAD)

Rapid Application Development (RAD) is a system development method characterized by its main feature: a short system development time [3]. In implementing RAD, the user is one of the critical factors in the system development process. The goal is to assist users in becoming more familiar with the built system and to provide suggestions regarding the system being designed [4]. The methodology for designing the online ticket reservation application at PT Maju Terus is shown in the figure below (Figure 1).

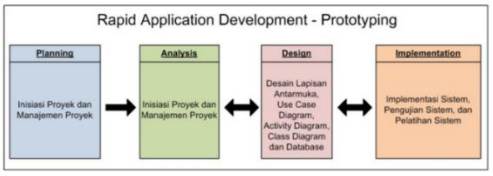

Figure 1. Rapid application development phase

System Design

The proposed system utilizes Unified Modeling Language (UML) modeling, consisting of diagrams used in object-oriented application development, including Use Case Diagrams, Activity Diagrams, and Class Diagrams [5]. The Use Case Diagram represents the interactions between actors in the system and their surrounding environment. The Activity Diagram illustrates the system's activities as a series of actions, from initiating various decisions to concluding actions. Multiple action sequences can be represented simultaneously on an Activity Diagram. The Class Diagram is a structural diagram type in the UML model. This diagram depicts the structure, attributes, classes, relationships, behaviors, and status classes.

Hypertext Preprocessor (PHP)

PHP stands for PHP Hypertext Preprocessor, a script programming language placed on the server and processed on the server. Hypertext Preprocessor is open source. The results are then sent to the client's browser. PHP itself is designed to create dynamic websites [6]. PHP is more focused on the server side, allowing it to perform various tasks such as data collection, creating dynamic website content, and sending or receiving cookies [7].

Unified Modelling Language 2.5

The Unified Modeling Language (UML) offers diagrams that help visualize the system development process, starting from the analysis phase through to

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implementation. The latest version, UML 2.5, incorporates additional techniques for modeling both structural and behavioral aspects. This tool is beneficial for analysts in dynamically representing object relationships within a system [8].

3. RESULTS AND DISCUSSION

In the first stage, an analysis is conducted to create a behavioral modeling. Behavioral modeling aims to explain business processes and interactions within the information system [9]. Behavioral modeling consists of two models: use case and activity diagram. The created use case diagram can be seen in the figure below (Figure 2).

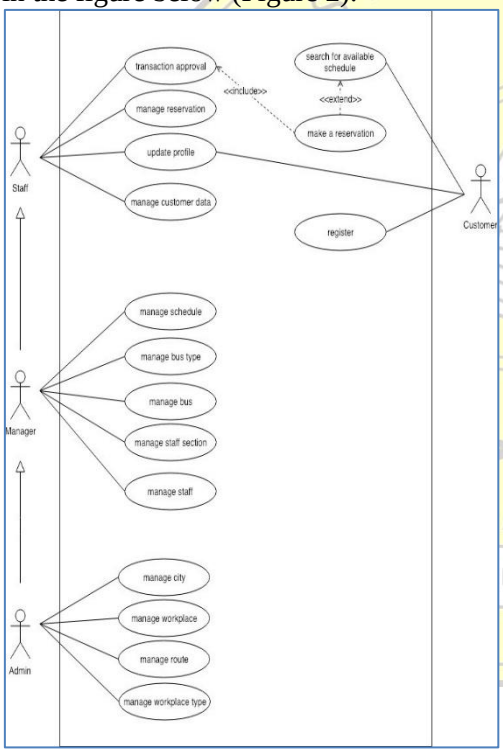

Figure 2: Use Case Diagram of the Online Ticket Reservation Application at PT Maju Terus

Table Relationship Diagram

Table relationship diagrams are utilized to elucidate and depict the connections within databases [10]. Within these diagrams are elements such as a primary key, which uniquely identifies a record within the database, and a foreign key, which delineates the relationship between a data table and other tables.

Figure 3 below shows the Relationship Diagram Table for the Online Ticket Reservation Application at PT Maju Terus.

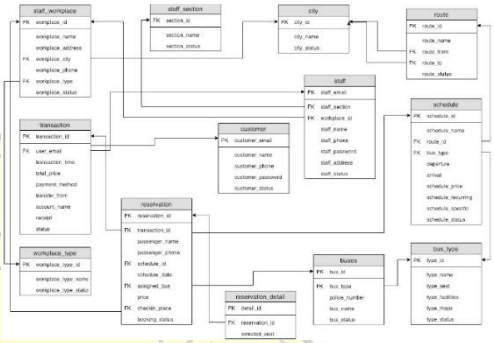

Figure 3. Relationship Diagram Table for Online Ticket Reservation Application at PT Maju Terus

Application Interface Design

The interface design of the online ticket reservation application by PT Maju Terus, which has been developed, can be seen in the points below, namely:

1) Registration Page

Registered customers can use the online ticket reservation application at PT Maju Terus. To register in the customer system, one must undergo the registration process first. On the registration page, customers who wish to register must fill in the requested data such as name, phone number, password, and email that still need to be registered in the system. In Figure 4, we can see the display of the customer registration page.

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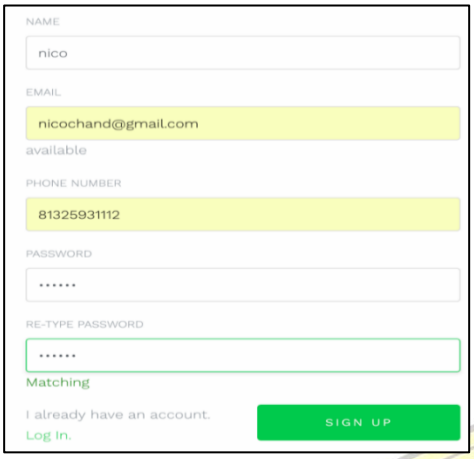

Figure 4. Customer Registration Page

Suppose the entered data is in the required format and the registration is successful. In that case, the system will display a success notification and send a brief email containing the successful registration information.

2) Search Page

On this search page, customers will be asked to fill in the form for the city of origin, destination city, number of passengers, departure date, and return date if the user chooses to purchase round-trip tickets. In Figure 5, you can see the display of the form for ticket search.

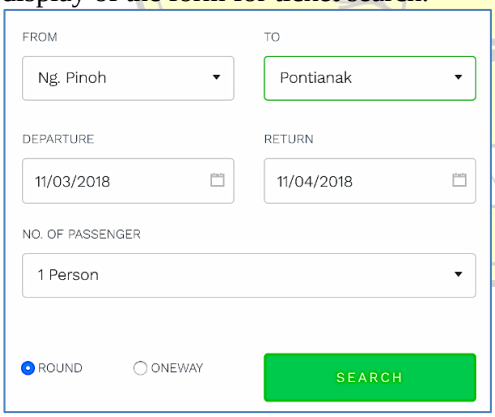

Figure 5. Search Page

Figure 6 shows a display where the system cannot find search results that match the customer's input, as shown in Figure 6.

Figure 6. The Display Page When the Schedule is Unavailable.

3) Seat Selection Page

After the customer selects the desired schedule, they will be directed to the seat selection page. On this page, the customer will be provided with information about the seating layout of the bus for the selected schedule, available seats, reserved seats, and details of the selected schedule. In Figure 7, we can see the display of the seat selection page.

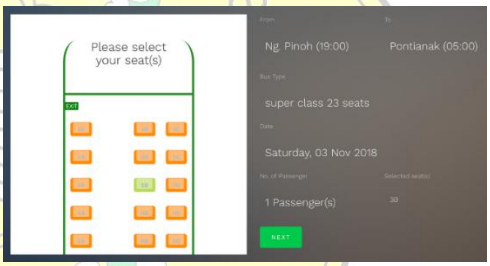

Figure 7. Seat Selection Page

4) Booking Review Page

After the customer selects a seat, they will be directed to the reservation review page. On this page, details of the reservation made by the customer will be displayed. The purpose of this page is to allow the customer to review the reservation before proceeding to the payment stage. In Figure 8, we can see the reservation review page. On this page, a cancel feature aligns with the principle of the eight golden rules of interface design, which permits easy reversal actions, allowing actions to be canceled whenever possible.

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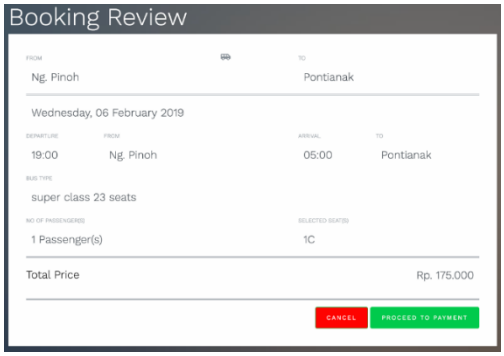

Figure8. The Display Page of the Booking Review

4. IMPLEMENTATION

The interface design of the online ticket reservation application by PT Maju Terus, which has been developed, can be seen in the points below, namely:

The online ticket reservation application at PT Maju Terus is tested using the Black Box testing method. This testing method aims to determine whether the system built can operate as expected and is suitable for use. Several results were obtained in this testing, indicating that all functions and outputs have performed well.

Some implementation photos at PT Maju Terus can be seen in the pictures below (Figures 9, 10, 11, and 12).

Figure 9. The Company Counter at the Sui Mempawah Branch (West Kalimantan)

Figure 10. Figure 10. The Photo of the Super Type Bus Unit

Figure 11. The Interior of the Super Type Bus

Figure 12. The Photo Together with the Speaker Susi (Customer of PT Maju Terus Company)

5. CONCLUSION

This application aims to assist customers of PT Maju Terus in making reservations without the need to contact the company directly. It also helps the company in managing the reservations

that occur within the company. The application has been designed to meet the requests and needs to assist the company and its customers in the reservation process between the parties.

The proposed application has aided PT Maju Terus by providing a platform for customers to make reservations without assistance from the company. The creation of this application also helps the company calculate the commissions earned by each branch counter owned by the company and assists in managing customer information, contributing to the company's value. The built application can generate passenger flow reports based on routes and months, aiding the company in decision-making regarding the fleet to be operated to facilitate and support the mobility of PT Maju Terus's service users.

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