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Research Article

Web-based Hall Reservation Information System at the Ministry of Religious Affairs in Kapuas Regency

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Abstract.

The Ministry of Religious Affairs Office in Kapuas Regency is a government agency responsible for managing religious affairs. The office has a hall that can be used for events or activities organized by internal office units or external organizations. Currently, the reservation process for this agency relies on a notebook to record reservation data. This manual process is time-consuming and prone to errors, necessitating an information system to manage hall reservation data. The hall reservation information system is designed to streamline the reservation management process and provide real-time access to reservation data. The system was developed using the SDLC method with the waterfall model. The planned system design was implemented as a website, built using the PHP programming language with the Laravel framework and MySQL database. The results of the study indicate that the developed information system effectively addresses the existing issues in the hall reservation process at the Ministry of Religious Affairs Office in Kapuas Regency.

Keywords: information system, reservation, hall, laravel

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1. INTRODUCTION

The Kapuas Regency Office of the Ministry of Religious Affairs is a government institution tasked with overseeing religious governance. It comprises several divisions, including Administration, Islamic Education, Hajj and Umrah Management, Diniyah Education and Islamic Boarding Schools, Islamic Community Guidance, Christian Community Guidance, and Hindu Community Guidance. The office also features a hall available for events or activities organized by its internal units or external organizations.

Currently, the process of reserving the hall is done manually by recording schedules in a logbook. This approach is susceptible to errors, such as overlapping bookings or scheduling conflicts. To resolve these issues, an online information system is needed

to streamline hall reservation management. This system aims to enable employees to reserve the hall efficiently while reducing the likelihood of errors.

This research focuses on developing an Online Hall Reservation Information System accessible via a website. The system will provide real-time updates on the hall's usage schedule. The objectives include creating and implementing the system at the Kapuas Regency Office of the Ministry of Religious Affairs. The research also aims to improve hall reservation management, serve as a reference for students and researchers exploring similar topics, and offer the researcher a chance to enhance their web development expertise.

2. METHODOLOGY/MATERIALS

The research utilizes the waterfall methodology for system development. This approach follows a systematic and linear process in software development, making it suitable for projects where the system requirements are well-defined and unlikely to undergo significant changes during development. According to Pressman (2012), the waterfall stages consist of requirements analysis, design, implementation, testing, and maintenance.

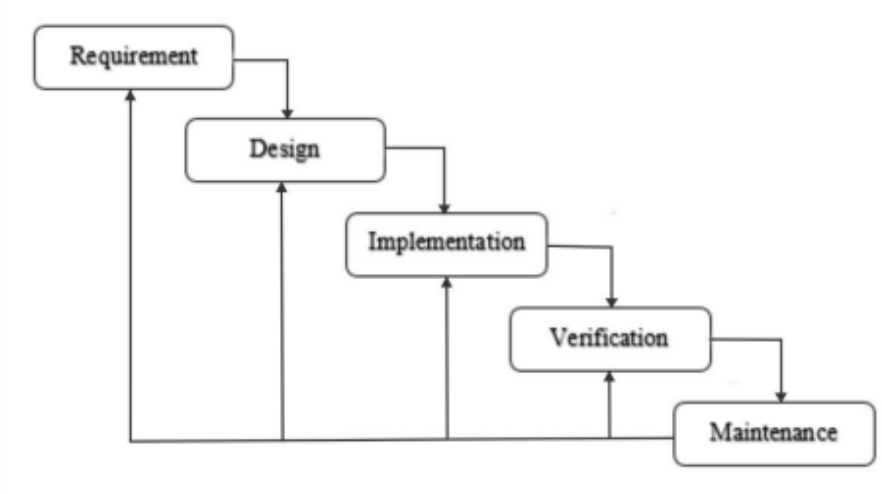

Figure 1: Research method.

The stages in this research are:

1. Requirements

During the requirement phase, system needs are thoroughly gathered and analyzed to identify the objectives and specifications of the system to be developed. This process may involve several approaches, including interviews, on-site observations, and reviews

of similar systems. In this study, the requirement phase is carried out using the PIECES analysis method, along with system requirement analysis and feasibility analysis.

2. Design

Following the analysis of system requirements, the subsequent step involves developing the system design. This process is categorized into two components: functional design and technical design. The functional design outlines how the system will function from the user's perspective, while the technical design concentrates on the system's technical implementation, including hardware specification.

3. Implementation

During the implementation phase, the system design is converted into functional program code. This study employs the PHP programming language with the Laravel framework and uses MySQL as the database.

4. Verification

After the implementation phase is completed, the system will be tested to ensure it operates according to the requirements. Testing is conducted to identify any errors or bugs that may exist in the developed system. In this study, the Black Box Testing method is used to evaluate the system's functionality.

5. Maintenance

Maintenance is carried out to ensure that the developed system can be used effectively by users. However, in this research, maintenance was not conducted due to time constraints.

3. RESULTS AND DISCUSSIONS

A. Requirements

During this phase, an analysis of the old system's deficiencies and the identification of the new system's requirements were conducted. The PIECES framework was employed to assess the old system, with performance being identified as the most significant area of concern. PIECES analysis (Performance, Information, Economics, Control, Efficiency, and Services) is a method that can be used to plan and analyze the development of information systems. The following is a PIECES analysis for the development of a hall reservation information system at the Kapuas Religious Affairs Office.

1. Performance

2. Information

Table 1: Performance Analysis.

Old System	Proposed System
1. The reservation process tends to be slow (around 20-25 minutes). 2. The reservation process must be carried out in an office.	1. The reservation process is quite fast (around 5-10 minutes). 2. Users can make reservations outside of the office.

Table 2: Information Analysis.

Old System	Proposed System
Users must first ask the room management staff for information about room availability	Users can view the room reservation schedule in real time on the system

3. Economic

Table 3: Economics Analysis.

Old System	Proposed System
With the old system, reservations were recorded in a notebook, which added to the costs	With the new system, all reservation records are kept in the system

4. Control

Table 4: Control Analysis.

Old System	Proposed System
In the old system, the recording of reservation schedules and reports was still done using notebooks, which posed a risk of the books being damaged or lost	With the new system, reservation schedules will be recorded in the system's database

5. Efficiency

Table 5: Efficiency Analysis.

Old System	Proposed System
In the old system, if a user wanted to make a reservation, they had to go to the office or contact the room management staff to check the availability of the room	With the new system, users can directly make reservations and view the available room schedule within the system

6. Services

Table 6: Servies Analysis.

Old System	Proposed System
Both users and the room management staff had to go to the office to make a reservation or simply to check room availability	Users and the room management staff can make reservations outside of the office, making the service more convenient and efficient

Functional requirements analysis provides an overview of how the room reservation system should operate, focusing on the services provided to the management staff (admin) and users.

Admin can:

1. Manage user data
2. Manage room data
3. Manage booking data
4. Manage payment data

Users can:

1. Manage user data
2. Manage booking data
3. Manage payment data

Feasibility analysis for the Hall Reservation Information System covers technical, operational, economic, and legal feasibility. The system that is developed can be implemented with available technology, simplifies the reservation process and data management, and offers economic benefits gained from improved service quality. Additionally, the use of legal open-source software ensures legal compliance. Therefore, this system is feasible to develop as it can provide benefits to the Ministry of Religious Affairs Office of Kapuas Regency.

B. Design

Logical design is usually presented in the form of data flow diagrams (DFD) and entity-relationship diagrams (ERD). The system design will provide a complete picture of how data flows, how related entities interact, and how the system is physically built and implemented. The DFD of the information system can be seen in Figure 2.

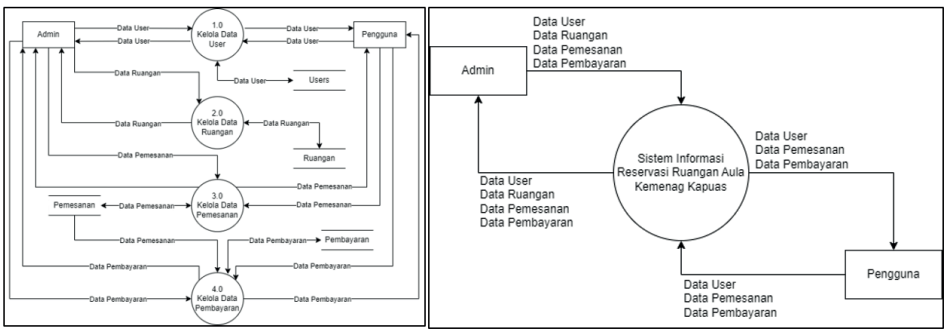

Figure 2: Data flow diagram Information System.

An Entity-Relationship Diagram (ERD) is a graphical representation of the data structure within a system. ERDs are used to model the relationships between entities in a database. The ERD of the company profile information system can be seen in Fig. 3.

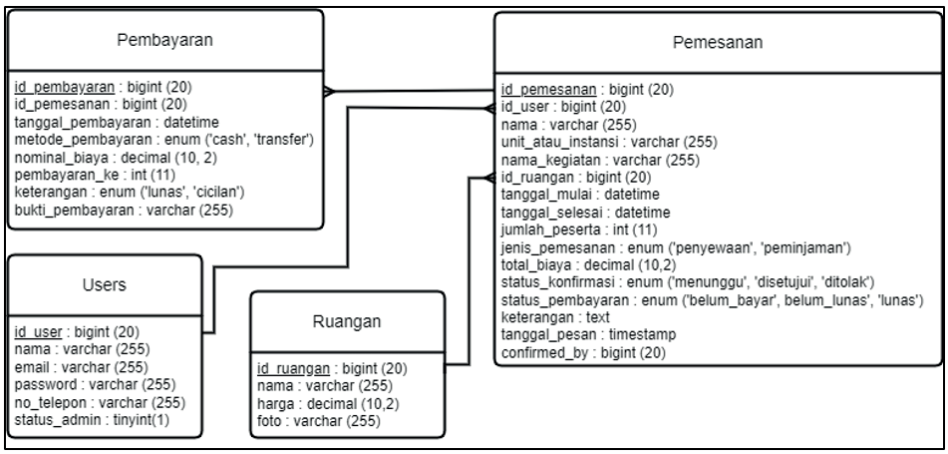

Figure 3: Entity Relationship Diagram.

C. Implementation

The Hall Reservation Information System for the Ministry of Religious Affairs Office of Kapuas Regency has been hosted and can be accessed through www.aula-kemenagkps.my.id.

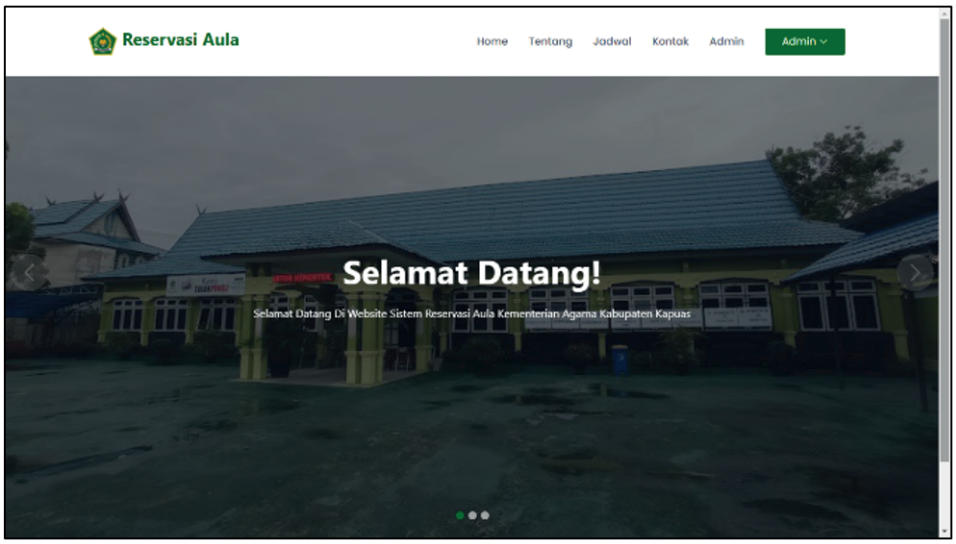

Figure 4: Home Page.

D. Verification

The verification phase is a critical process aimed at ensuring that the developed system functions according to user needs. The verification method to be used is Black Box testing. Black Box testing is a software testing method that evaluates the

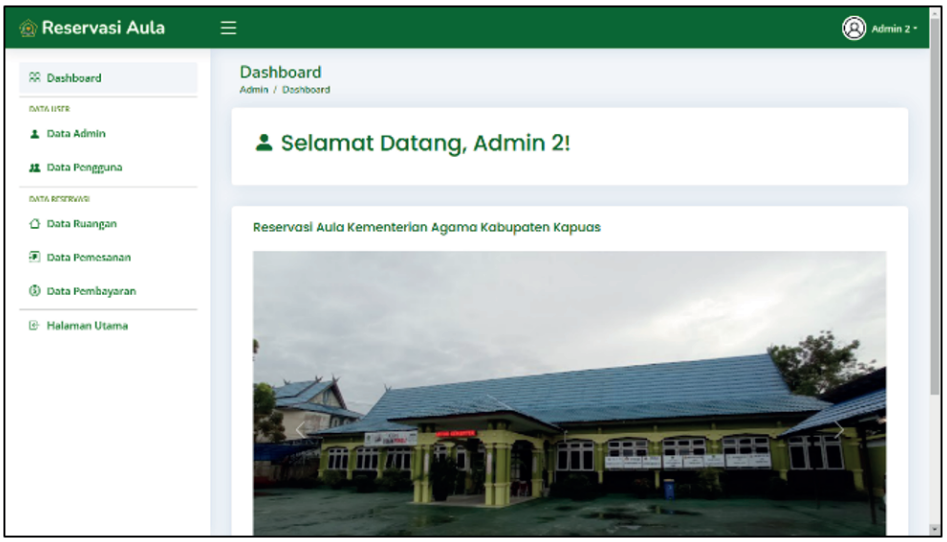

Figure 5: Administrator Page.

functionality and external behavior of an application without considering the internal structure or program code.

E. Maintenance

The system information maintenance phase is an ongoing process aimed at ensuring that the system continues to function properly and securely after implementation. Some of the things that can be done in maintaining a system that has been created are:

a) Data backup

b) Data restoration.

4. CONCLUSION

The analysis found that there were problems with the hall reservation process at the Ministry of Religious Affairs Office of Kapuas Regency, primarily caused by the manual recording system that still used notebooks, which was prone to errors and time-consuming. Based on the analysis of the problems, an information system has been designed to meet the needs of the hall reservation at the Ministry of Religious Affairs Office of Kapuas Regency. The designed system was then implemented into a website using the PHP programming language with the Laravel framework and MySQL database. This implementation includes the development of the user interface, database configuration, and system testing to ensure that the functionality works as expected. The results of the implementation show that this new information system is able to overcome

the existing problems for the hall reservation process at the Ministry of Religious Affairs Office of Kapuas Regency.

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