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Design and Construction of a Website-Based Library Information System at Battuta University

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ABSTRACT

This research aims to design and develop a website-based library information system at Battuta University to address existing operational challenges. Currently, the university library still relies on traditional, manual systems for its daily operations. This conventional approach significantly hampers the overall service processes, slows down administrative workflows, and reduces the efficiency of data management. With the rapid development of modern information technology, a website-based library system is expected to drastically increase operational efficiency and enhance user accessibility for both students and staff. The research method employed in this study involves a comprehensive data collection process through direct observations and structured interviews. Furthermore, the system development applies PHP and JavaScript programming languages to build a robust, user-friendly platform. The research results successfully demonstrate that this newly developed system is fully capable of automating the tedious processes of borrowing and returning books, while simultaneously increasing seamless access to online library collections. In conclusion, the implementation of a web-based library system at Battuta University is highly effective in improving library services, optimizing data accuracy, and maximizing institutional efficiency.

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1. INTRODUCTION

Battuta Library, as a learning resource center, faces challenges in meeting the increasingly complex information needs of students and lecturers. The rapid development of information technology has transformed the way people access and manage information. This has also had a significant impact on libraries, which are now required to transform into more dynamic and responsive digital learning resource centers. Battuta University, as a higher education institution committed to the advancement of knowledge, needs a library information system capable of supporting academic activities more effectively.

Currently, the Battuta University library still relies on a manual data management system that is prone to errors and inefficient. The process of searching for information, borrowing, and returning books is often time-consuming and cumbersome for both librarians and users. Furthermore, limited physical space also hinders the development of a more comprehensive library collection.

Libraries are important centers of information and knowledge for the community. With the rapid development of information technology, many libraries have adopted website-based information systems to improve their services and operational efficiency [1].

This website-based library information system offers various benefits, including increased accessibility: It allows users to access library information and services online, without being limited by time and location. Operational efficiency: The system can help libraries manage business processes, such as collection management, borrowing, returning, and searching for books more efficiently. Service enhancement: The website-based library information system can provide additional services, such as book reservations, photocopying, and access to digital collections. Data integration: The system enables the integration of library data and information into a single platform, thus facilitating management and decision-making. Increased visibility: The existence of a website-based library information system can increase the library's visibility and profile among the public.

The development of a website-based library information system also aligns with the digitalization trend in various sectors, including education. This is increasingly relevant given the changing learning and working patterns that increasingly rely on digital technology, especially after the COVID-19 pandemic [2].

Considering this background, the development of a website-based library information system is a crucial step in modernizing library services, improving operational efficiency, and meeting user needs in the digital era [3]. However, developing a website-based library information system requires thorough design to ensure the system's performance and user needs.

Therefore, the title "Design and Construction of a Website-Based Library Information System at Batutta University" is relevant for discussing the design, development, and implementation process of a web-based library information system. This thesis aims to provide a deeper understanding of the design and development methodology for website-based library information systems, as well as identify potential benefits for libraries and users.

2. METHOD

This research method is research and development (R&D). It uses a qualitative approach and utilizes the Scrum development model. Scrum is a software development method that follows an agile approach that focuses on flexibility, iteration, and team collaboration to efficiently produce high-quality programs. Research and development (R&D) is a research method used to produce a specific product and test its effectiveness[4].

2.1. Research Stages

Needs Analysis: VThis stage can be obtained through various methods, including surveys, observations, discussions, interviews, and so on. The information obtained is then processed and analyzed to obtain complete data or information specifying user needs for the system to be developed.

System Design: At this stage, the interface design for the library information system consists of designing the interface menus, which consist of screen displays used for interaction between librarians and the library information system.

Implementation: This stage involves the coding process or actual implementation of the system based on the previously determined design. Developers use a programming language to produce a system that meets the design specifications.

Testing: The system that has been created and meets the required functions will be tested using the basis path testing technique for unit testing. Integration testing between system functions was then conducted, followed by system testing to ensure proper implementation.

2.2. Data Collection Methods:

The data collection methods used included: (1) **Observation:** Observations were conducted by directly visiting the Battuta University library to observe circulation service activities. (2) **Interviews:** Interviews were conducted through face-to-face meetings and direct question and answer sessions with library staff and librarians to gather information about issues encountered in borrowing and managing library data. (3) **Documentation Study:** The documentation study was conducted by collecting data and examining several library documents, such as accounting data, loan transactions, book data, member data, guest/visitor data, and library service procedure documents.

3. RESULTS AND DISCUSSION

3.1. Login Page

The Main Page displays the registration and login pages.

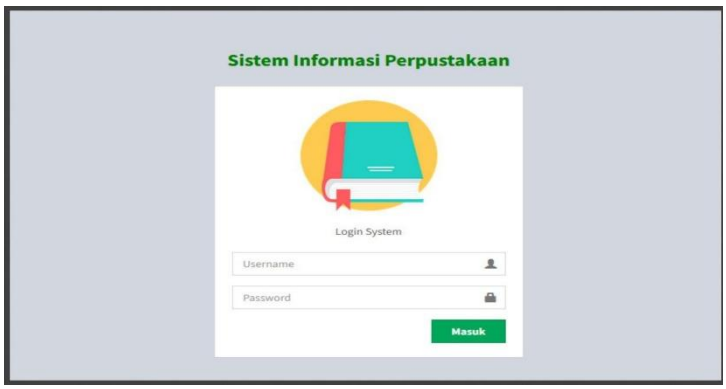

Figure 1. Main Page

According to Figure 1 above, the main page of the website displays the registration page to access the website. If you are already registered, you can log in through the website to access the login screen.

3.2. Admin Page

The admin page represents the dashboard application design. The admin page is shown in Figure 2 below:

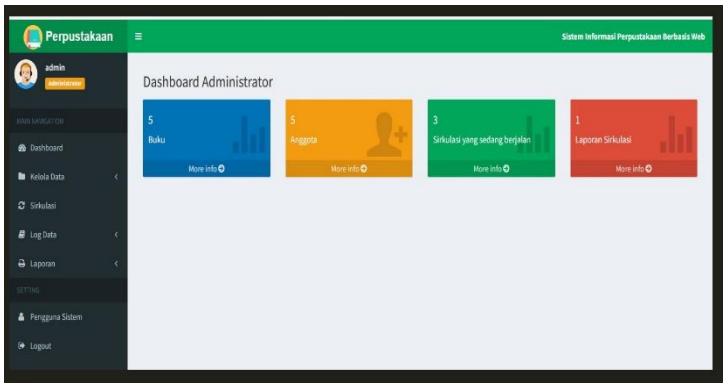

Figure 2. Admin Page

Figure 2 above shows the admin page, which has submenus for dashboard, data management, circulation, data log, reports, account identity, and logout.

3.3. Book Data Management Page

The data management page functions as a place to search for book data. This is shown in Figure 3 below:

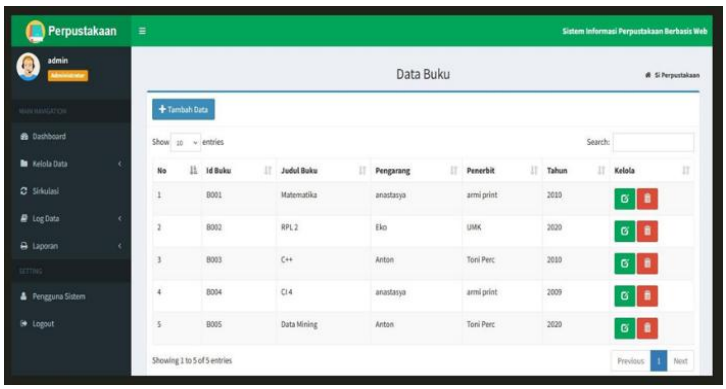

Figure 3. Data Management Page

Figure 3 above shows the data management page, which contains submenus for information on the year of publication of the book and the number of records.

3.4. Member Data Page

The member data page menu displays the function of recording identity. This is shown in Figure 4 below:

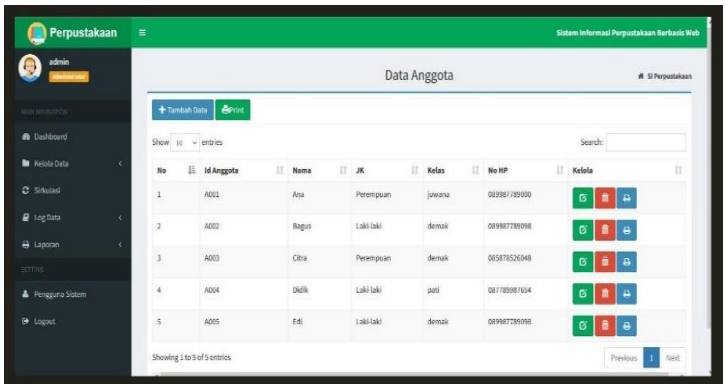

Figure 4. Member Data Page

Based on Figure 4 above, the member data page contains the names and personal information of visitors or librarians who wish to borrow books.

3.5. Book Circulation Page

The book circulation page menu displays the function of recording when books are borrowed. The book circulation page displays data on books borrowed, including the date, loan number, due date, and fines.

3.6. Book Borrowing History Page

The book borrowing history page menu displays the function of recording the time, date, and title of the book. This is shown in Figure 5 below:

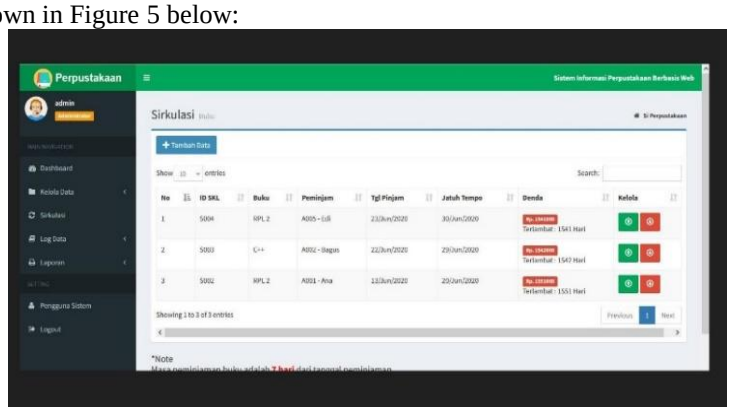

Figure 5. Book Borrowing History Page

Based on Figure 5 above, the book borrowing history page displays data on books borrowed, the date, loan number, and title. Implementation is the act of implementing or realizing an idea, plan, or system into real life. The implementation of the software interface is carried out based on the design. The implementation is shown using screenshots of the website pages used as research tools and materials, as detailed in the previous chapter. Implementation is the realization of previously designed and implemented plans. Technology implementation uses new software within a system. This application was built using PHP and JavaScript as its programming languages. By utilizing these technologies, the application can be run in a web browser.

4. CONCLUSION

A conclusion is a statement that summarizes the key points of a text, discussion, or research. It is a final summary that provides an overview and presents the essence of the information previously presented. Therefore, it can be concluded that: A web-based library information system can provide various benefits, such as increased accessibility: This system allows users to access library information and services online, without being limited by time and location. Operational efficiency: The system can assist libraries in managing business processes, such as collection management, borrowing, returning, and searching for books more efficiently. The application is designed using the PHP and JavaScript programming languages, and the MySQL database. With this website application, lecturers, students, and librarians can simplify learning and search for necessary books

with 24-hour web access. System development using a website makes the system development and maintenance processes easier and more structured.

Suggestions are recommendations or advice given to an individual or group to improve a situation or achieve a specific goal. After testing the website, the author offers the following suggestions: Any information provided or published should utilize a well-designed system to ensure the information/data reaches the users who need it quickly. Lecturers, students, and librarians at Battuta University can use this website to streamline their reading experience at the Battuta University library.

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