# DESIGN AND CONSTRUCTION OF ONLINE LIBRARY INFORMATION SYSTEM FOR STMIK INDONESIA CAMPUS, BANDA ACEH WEB -BASED

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## Abstract

In the current digital era , the development of information and communication technology has had a significant impact on various aspects of life, including in the world of education. One of the important things in education is access to adequate information sources. Currently, the library system used at the STMIK Indonesia Banda Aceh campus still uses conventional methods with physical libraries , which can cause limited access, delays in obtaining information sources , and limitations in managing and maintaining book collections. STMIK Indonesia Banda Aceh has a library that still uses a manual recording system or bookkeeping in conducting transactions, which will certainly increase the difficulty in processing library data, not to mention errors in book borrowing and returning transactions, as well as other reporting errors . Based on the results of the library website system design at STMIK Indonesia Banda Aceh , the results show that the system can carry out the online loan registration process and fine notifications. The author hopes that in creating this library information system, it can help facilitate staff and all related parties in processing library data effectively and efficiently.

**Keywords** : Web site , Information System , Library, STMIK Indonesia a Banda Aceh.

## INTRODUCTION

In today's digital era, the development of information and communication technology has had a significant impact on various aspects of life, including in the world of education. One of the important things in education is access to adequate information sources. Currently, the library system used at the STMIK Indonesia Banda Aceh campus still uses conventional methods with physical libraries , which can cause limited access, delays in obtaining information sources , and limitations in the management and maintenance of book collections . STMIK Indonesia Banda Aceh as one of the universities in Indonesia realizes the importance of fast and easy access to information for students and teaching staff Astuti and Widiastuti (2019).

According to Zainal Abidin (2017), libraries are an important source of information in supporting the learning and research process. Libraries provide access to various references such as books, scientific journals , and articles that help students and researchers obtain accurate and up-to-date information. Meanwhile, according to Santoso and Anwar (2020), libraries play a crucial role in supporting teaching and learning activities in higher education. Libraries provide the information sources needed by students and lecturers to improve their understanding and knowledge in their fields of study . Libraries , as one of the information providers that have a vital presence in the world of information, are obliged to find the right answers to address these challenges . One way is by building a digital library that can be connected via a computer network ( Hartono , 2019) .

Web-based online libraries are currently increasingly popular, they provide 24/7 access to library collections , facilitate searching, borrowing, and returning books online. The STMIK Indonesia Banda Aceh Library currently processes borrowing and returning books manually, to provide convenience to students and librarians to access electronic sources with fun tools at limited time and opportunity and save energy, it is better for the library to be developed into an online library, with this online library the library system is 80% faster and easier to use. In this era of increasingly sophisticated and rapid information and communication technology. Therefore, libraries must be able to utilize information and communication technology accurately and on time. So that the role of libraries for students can increase Rahman and Abdullah (2018).

There are many ways to create a website, one of which is using HTML. HTML ( Hypertext Markup Language ) 5 is the latest version of the HTML standard used to design and develop web pages . HTML 5 introduces many new features and improvements that allow web developers to create richer and more interactive web experiences. HTML 5 has a simpler and easier to understand syntax , allowing developers to quickly create the structure and content of web pages . Robbins, JN (2013).

Based on previous research, the library application in the study was built using a user- oriented approach to obtain the information needed to ensure the application meets user needs. However , a user- oriented approach can require greater resources in time, money, and labor. User needs and preferences can change over time. A strong user-oriented approach in the early stages of development does not always perfectly anticipate these changes. This can cause the designed product or service to no longer meet changing needs or become obsolete. Meanwhile, in the current study , the approach method uses a structured design equipped with the tools and techniques needed in system development, so that the final result of the developed system has a better defined structure, is clear, and the system is easy to maintain and flexible.

The existence of a web -based online library on campus makes it easier for students and librarians to access it through devices, including computers, desktops, laptops, and smartphones. Based on the description above, the author is interested in raising and researching the following: Design and Construction of a Web- Based Online Library Information System at STMIK Indonesia Banda Aceh Campus .

## LIBRARY REVIEW

### 1. System

A system is a collection or group of subsystems, parts, or components, whether physical or non-physical, that are interconnected and work together harmoniously to achieve a specific goal . Meanwhile, according to Kurnia Cahya and Arni Muarifah Amri (2022), a system is two or more components that are interconnected and interact to form a unified group that achieves a single goal.

Based on the definition above, the author concludes that a system is a group of elements or subsystems arranged according to a predetermined scheme to achieve a specific goal. Systems are essential for carrying out activities or procedures that are oriented toward the same goal through the operation of data, energy , or materials.

## 2. Information

Information is data that is processed or manipulated into a file in the form of paragraphs or images (Fauzi, Erniawati , and Setyawan , 2019). Meanwhile, according to Tukino (2020), information is data that is managed into something of greater value for the recipient , helping them make decisions. Information itself contains full value, namely accuracy, timeliness , and relevance.

Based on the definition above, the author concludes that information is a collection of data that has been processed and organized in such a way that it produces something understandable and beneficial to the recipient. Information is first processed to facilitate the recipient 's understanding .

## 3. Information system

According to Heriyanto (2018) an information system is a collection of interconnected subsystems, gathered together and forming a single unit, integrating and collaborating with each other in certain ways to perform data processing functions, receiving input in the form of data, then processing it (processing), and producing output in the form of information as a basis for making decisions that are useful and have real value that can be felt both at that time and in the future, supporting the operational, managerial, and strategic activities of the organization, and utilizing various existing and available resources for these functions to achieve goals. According to Stair and Reynolds (2019), an information system is a combination of information technology , people, and procedures used to collect , process, store, and distribute information and operational control in an organization.

From the descriptions of several experts above, the author draws the conclusion that an information system is a data processing process that produces information that functions to achieve a goal.

## 5. Online book

An online library is a collection of information available digitally and accessible via a computer network or the internet. This library includes various types of materials such as electronic journal articles , electronic books (e-books), conference papers , technical reports , and electronic databases . Users can search , read, download, and interact with these information sources using a computer , tablet, or smartphone connected to the internet . An online library refers to a collection of digital information sources accessible via a computer network or the internet, including electronic journals, e-books, and electronic databases ( Chowdhury and Foo , 2020).

## 6. Website

According to Yeni Susilowati (2019), the definition of a website can be interpreted as a number of web pages that have interrelated topics between one page and another page , which are usually placed on a web server that can be accessed via the internet or a local area network (LAN). Meanwhile, according to Abdulloh (2018), a website can be interpreted as a collection of pages containing digital data information in the form of text, images, animations, sounds, and videos or a combination of all of them provided through an internet connection so that it can be accessed and viewed by everyone around the world. The way to access a website is by using software called a web browser. A web browser is an application that runs HTML-based commands and scripts using a web engine .

## 7. HTML (HyperText Markup Language)

According to Abdulloh (2018), HTML is a standard web language managed by the W3C ( World Wide Web Consortium ) in the form of tags that structure each element of a website . HTML is code for creating an attractive website page structure , interconnected with each other , and certainly accessible via the internet .

## 8. PHP (processor Hypertext Protocol)

The Processor Hypertext Protocol is an open -source, server - side web programming language . PHP is a script integrated with HTML and resides on the server (server-side HTML embedded scripting). PHP is called a server -side programming language because it is processed on the server computer . This differs from client- side programming languages like JavaScript, which are processed in a web browser (client). PHP was developed in 1995 by Rasmus Lerdorf and is now managed by The PHP Group. As the name suggests, PHP is used to create personal websites. Over time, PHP has evolved into a web programming language that is used not only to create simple web pages but also popular websites used by millions of people, such as Wikipedia, WordPress, and others. PHP functions to shorten programming language scripts, is used to input data into database systems , and as a cookie and session management implementation in various applications that produce images. The following is a common example of using a PHP script to explain PHP as a script embedded in HTML.

## 9. Javascript

Client-side programming languages whose processing is carried out by the client are often used in web browsers to create attractive web pages .

## 10. Problem Formulation

Based on the background above , this research formulation will be the basis for identifying the problems to be researched, the objectives to be achieved, as well as the methods and approaches to be used in the research on the Design of an Online Library Information System at the STMIK Indonesia Banda Aceh Campus.

## RESEARCH PURPOSES

The purpose of designing this website-based information system at STMIK Indonesia Banda Aceh is to develop a PHP application framework based on a structured architecture. To be a solution to existing problems related to the process of managing and administering books at STMIK Indonesia Banda Aceh , so that with this information system it will help and facilitate book management activities quickly and precisely so as to produce effective, efficient and accurate book management.

**Related Research**

To   compile this   research , the author used several other related studies and had several things that could be compared, namely:

1.  Sistem Informasi Perpustakaan Online Pada SMA Generus Mandiri Bogor
2.  Android-based Library Application of Siliwangi Ams Banjarsari Vocational School
3.  Android-Based Digital Library Application at the Computer Science Department Library, University of Lampung

**RESEARCH METHODS**

In this study , the author used a design method to design the system. This method is needed to facilitate the designer in developing design ideas . The method used in conducting the research is the basis for compiling the research design and is an elaboration of the general scientific method, where the research method is explained from the initial planning stage until the research objectives are achieved.

In preparing this final assignment , the author requires relatively complete data and information to support the accuracy of the material description and discussion. Regarding the Design of the Online Library Information System for the STMIK Indonesia Banda Aceh Campus , a related study was conducted. The data collection techniques used are as follows:

a.  Interview

Interviews are a data collection technique carried out by the author with academic staff and students based on a predetermined and agreed time , so that the data is obtained directly from the data source .

b.  Observation

Data collection through direct observation can be used to obtain precise and accurate information on the research object's working system. This observation was conducted at the STMIK Indonesia Banda Aceh campus , located on Jl. Teuku Nyak Arief, Jeulingke, Syiah Kuala District, Banda Aceh City , Aceh.

c.  Studi pustaka

Data collection by reading books, journals, articles, the internet, newspapers , and other sources of information related to the problem being discussed, which can be used as a reference for research to develop a new system .

**RESULTS AND DISCUSSION**

1. **System Analysis**

   In this final project, the author created a website -based online library information system at the STMIK Indonesia Banda Aceh campus using PHP and MySQL as the database. This program was designed using the CodeIgniter framework. The author encountered many obstacles in managing the library , which still uses a conventional system . This conventional method is very ineffective because errors often occur , thus requiring a solution.

2. **System Interface Design**

   2.1 Tampilan halaman Login Admin

   The admin login page design indicates that the admin is accessing a website address. After entering the login page, the admin enters the username and password they created .
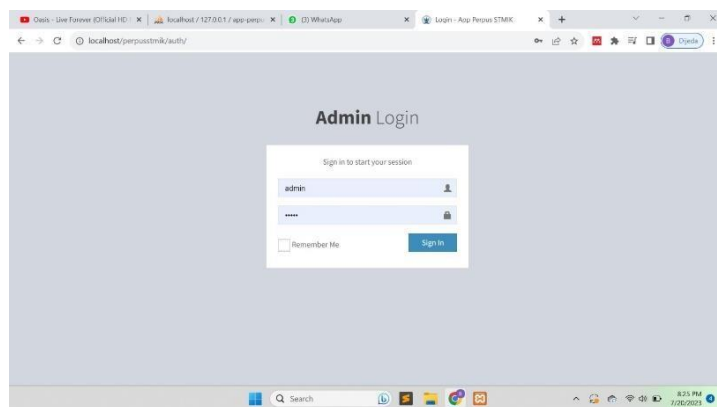


Figure 4.2 Admin Login Page Display

   2.2 Admin Dashboard Display

   Admin dashboard display design Based on the image below, the admin dashboard display design explains that the admin has logged in to the website and then a new admin dashboard form appears .
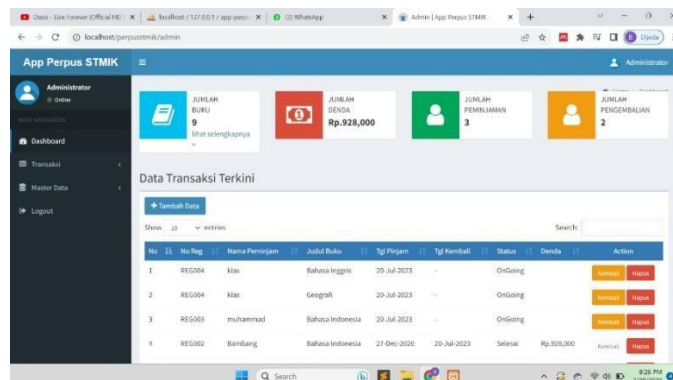


Figure 4.3 Admin Dashboard Page View

## 2.3 Add Student Display

The display design for adding or editing student member data based on the image below, the display design for adding or editing and adding student member data explains that the admin adds or edits data on the add student form .
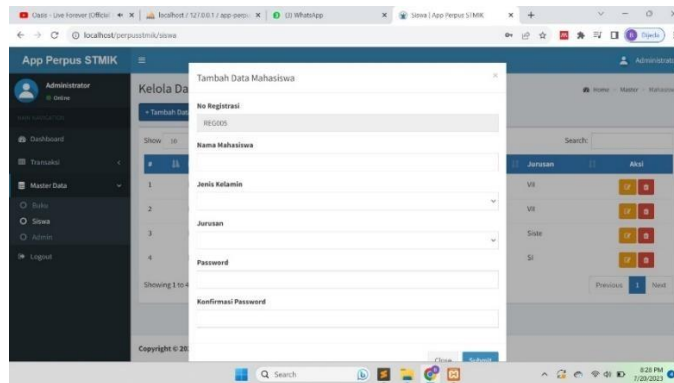


Figure 4.4 Display of the Add Student Data Page

## 2.4 Book Borrowing Display

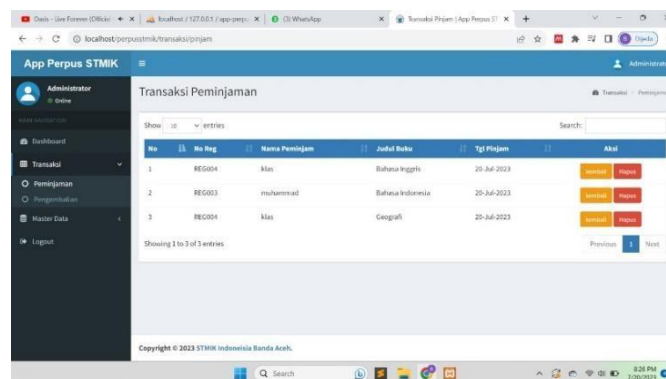The book lending display design explains that the admin selects the transaction module. After that, the admin selects "Add Loan" to add a loan transaction .
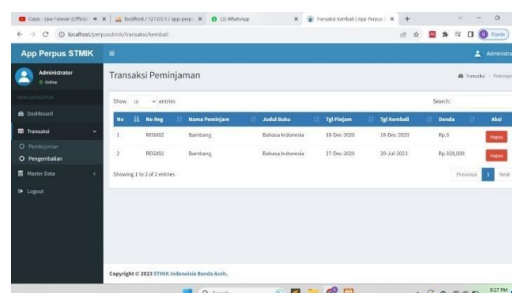


Figure 4.5 Book Borrowing Page Display

## 2.5 Book Return View

The book return display design explains that the admin selects the transaction

module . After that, the admin selects "Add Return" to add a return transaction .

Figure 4.6 Book Return Page Display

2.6 Unser Book List Page View

This page displays a collection report listing books that can be accessed or loaned by librarians. The display image can be seen on the user dashboard .
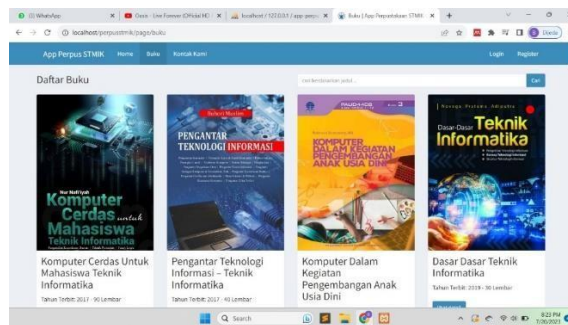


Figure 4.7 Unser          Book List Page View

2.7 Tampilan Halaman Register Unser

The design of the Unser registration page for borrowing books and logging into the website explains that registration is required before logging in to borrow books through the website. After completing registration, the Unser login page is accessed by entering the Unser code and password you created .
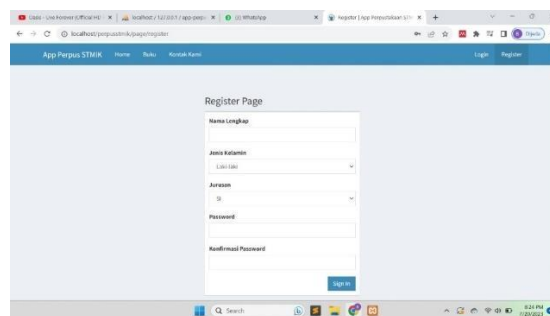


Figure 4.8 Display of the Unser Register Page

2.8 Tampilan halaman Login User

The design of the user login page explains that after registering on the website, the user must log in. Upon entering the login page , the user enters the username and password they created .
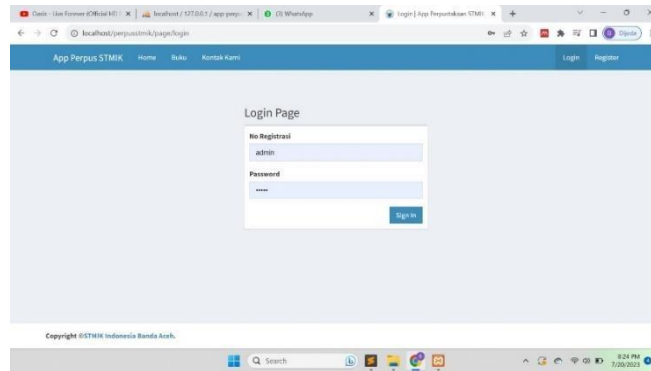
Figure 4.9 Unser Login Page Display

2.9 View Dashboard Unser

Unser dashboard display design Based on the image below, the Unser dashboard display design explains that Unser has logged in to the website and then a new Unser dashboard form appears .
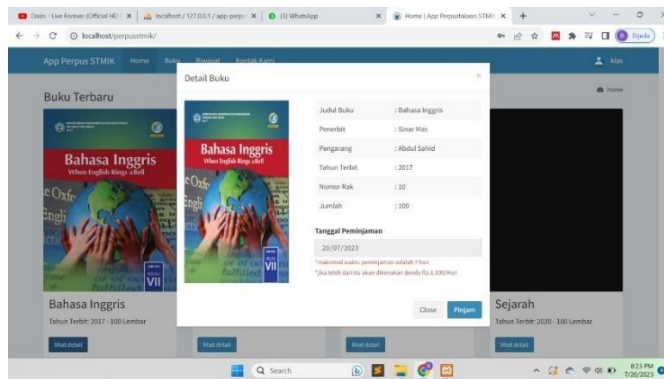


Figure 4.10 Unser Dashboard Page View

**CONCLUSION AND SUGGESTIONS**

**Conclusion**

After conducting analysis, design, and implementation in the process of creating the Website-Based Online Library Information System Design for STMIK Indonesia Banda Aceh , the following conclusions were obtained :

1. This application can be used for service activities in the library according to the needs and processing of master book data, library member data and makes online registration easier .

2. This web-based library information system makes it easy to search for books based on classification or category.

**Suggestion**

The suggestion for developing this library application is to add the following features :

1. In this library system, it is best to provide features such as database backup as a precautionary measure to reduce the risk of permanent data loss .
2. The application can be developed into a mobile version for Android and iOS. In the future, borrowing transactions can use barcode scanning to input data on books that students wish to borrow .

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