



# Library Information System Design at State Senior High School 5 Prabumulih

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## Abstract

Information systems using very sophisticated and modern computer technology will be very helpful and facilitate us in processing data that can save time, space and costs. Based on the existing problems, this study aims to design a web-based library information system at SMA Negeri 5 Prabumulih. This system development method uses a research approach with SDLC or Software Development Life Cycle. While the model used in the design of this library information system is the agile model. The model provides a sequential or sequential software lifeflow approach starting from analysis, design, coding and testing. The programming language itself uses PHP with a codeigniter framework and for the database it uses MySQL/XAMPP. The results of this study show that the library information system at SMA Negeri 5 prabumulih is included in the feasible category after testing using black box testing category.

**Keywords:** Desktop, agile, library

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## 1. Introduction

Libraries, as part of educational institutions, contribute to enhancing students' knowledge. This is because libraries provide all the information resources needed for the learning process at school. Therefore, the use of library information systems is essential to support the teaching and learning process at school. The use of information systems can improve service quality, both in terms of the speed and quality of information provided, for managing and running library operations [1]. If libraries have not implemented computer-based information systems, in this case still using conventional methods for both processing and service, it will be difficult to improve students' knowledge. Library information systems can be used to solve problems in library processing and services. The use of library automation systems has become a necessity for libraries in an effort to improve the quality of services for their users. Increasingly easy access to the internet, which can be used for communication and information purposes by the public anytime and anywhere, is the reason for developing a library system, thus ensuring the information held by a library at SMA Negeri 5 Prabumulih. Based on the background explained, the author chose the title "Designing a Library Information System at SMA Negeri 5 Prabumulih."

## 2. Theoretical Review

### 2.1. Definition of Design

According to Sommerville in [2], the design process can involve the development of several system models at varying levels of abstraction. According to [3], design is a process of defining what will be done using various techniques. It includes a description of the architecture, component details, and the limitations that will be encountered during the process. According to [4], design is a set of activities that describe how a system will operate.

### 2.2. Understanding Systems

According to [5], a system is a collection of objects that are interrelated and interact with each other, and the relationship between objects can be seen as a single unit designed to achieve a goal. Thus, in simple terms, a system can be interpreted as a collection of variable elements that are mutually organized, interact with each other, and are interdependent on each other. According to [6], a system is a network of interconnected procedures gathered together to carry out activities or to achieve certain goals.

### 2.3. Understanding Information

According to [7], information is data processed into a form that is more useful and meaningful to the recipient. Information is said to be valuable if its benefits outweigh the costs of obtaining it. The quality of the information must be accurate, timely, and relevant. According

to [8], information is content in various formats, for example, written or printed information, stored in a database, or collected on the internet.

#### 2.4. Understanding Information Systems

According to [9], an information system is a combination of people, facilities, or technological tools, media, procedures, and controls intended to organize important communication networks that process certain and routine transactions to help internal and external management and users and provide a basis for appropriate decision-making. According to [10], an information system is data that is collected, classified, and processed in such a way that it becomes a single, related entity information and supports each other so that it becomes valuable information for those who receive it.

#### 2.5. Definition of Library

According to [11], a library is a room or building used to store books and other materials, usually arranged according to a specific arrangement for readers' use, not for sale. According to [12], a library is a room or section of a separate building containing a collection of books, arranged and organized in such a way that they are easy to find and use when needed by readers.

#### 2.6. Understanding Xampp

According to [13], XAMPP is free and open-source software that can be installed on various platforms, such as Windows, Linux, and OS X. This is because the XAMPP application contains dozens of module packages, programming languages, and other components. This will be discussed in more detail in the XAMPP features section. XAMPP is free and open-source software that supports various operating systems, such as Windows, Linux, and OS X. XAMPP is equipped with many modules, programming languages, and other supporting components, making it very useful for developing web applications locally.

### 3. Research Methods

According to Sugiono, a research method is the flow or steps a researcher takes in conducting research [14]. In this study, the research method used is a qualitative method, which utilizes qualitative data and is described descriptively in the form of images and words, systematically, factually, and accurately regarding the facts, characteristics, and relationships between the phenomena being studied. The descriptive method can be defined as a procedure for solving problems investigated by describing the conditions of the subject or object of the research, which can be people, institutions, communities, or others, based on visible or actual facts [15]. According to Moleong, a qualitative method is research that aims to understand the phenomena experienced by the research subjects [16].

#### 3.1. Data Types

According to [17] Qualitative data is information data in the form of verbal sentences, not in the form of numerical symbols or numbers. This qualitative data is a type of observation and interview data with library staff in the form of words, sentences or pictures and direct observations. In this study, the author uses qualitative data.

#### 3.2. Data Source

In this case, the researcher used two data sources: primary data and secondary data, each of which is explained below.

1. Primary Data Sources  
Primary data is data obtained through direct observation of the object or interviews with informants at the research site.
2. Secondary Data Sources  
Secondary data supports the primary data requirements and is obtained through literature review as a reference for writing the research, such as books, e-books, journals, previous research, and articles.

#### 3.3. Method of Collecting Data

This method employed several methods to obtain the required data:

1. Observation  
The author observed all issues in the library of SMA Negeri 5 Prabumulih to obtain information related to the design of the library information system.
2. Interviews  
Interviews were conducted face-to-face, individually. The researcher also used an interview guide to gather information obtained during the initial observations. This research, called structured interviews, involved interviews with the head of the library and library staff at SMA Negeri 5 Prabumulih.
3. Literature Review  
Literature review is a data collection technique derived from journals and previous research related to the research being conducted, both in terms of the object and the methods used.

### 4. Proposed Use Case Diagram

Use case is a description of the functionality of a system so that system users can understand and comprehend the usefulness of the system being built. The following is the proposed use case diagram:

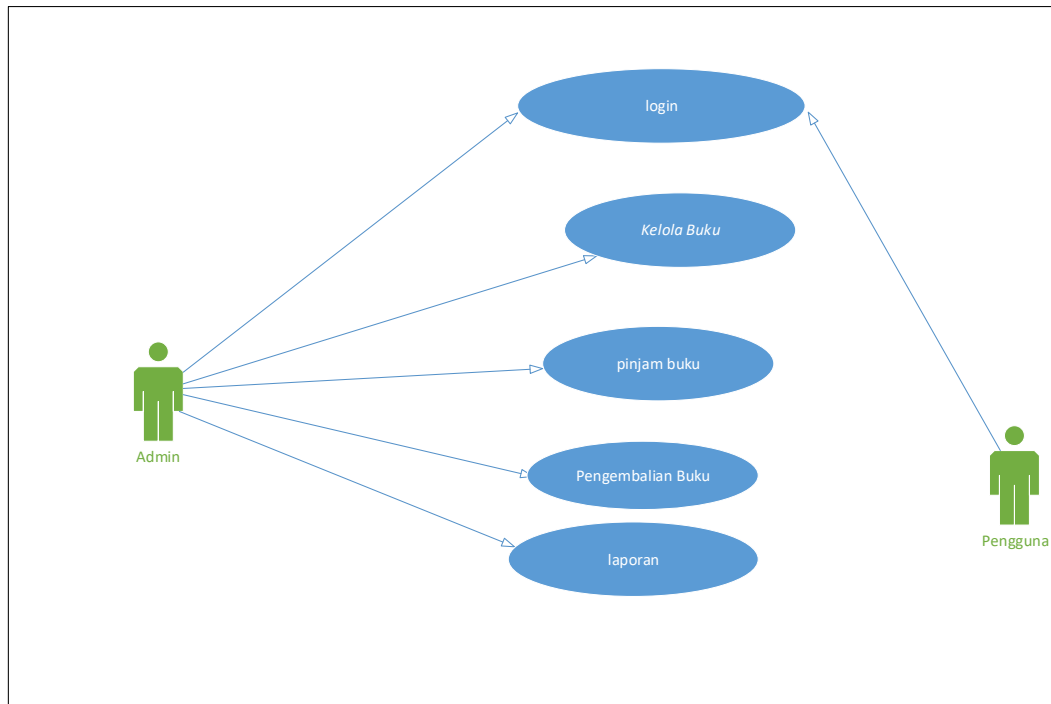


Fig. 1 : Proposed Use Case Diagram

## 5. System Implementation and Testing

### 5.1. Interface Implementation

The interface implementation is the finished display of the software system that has been developed. The following is a display of the interface implementation.

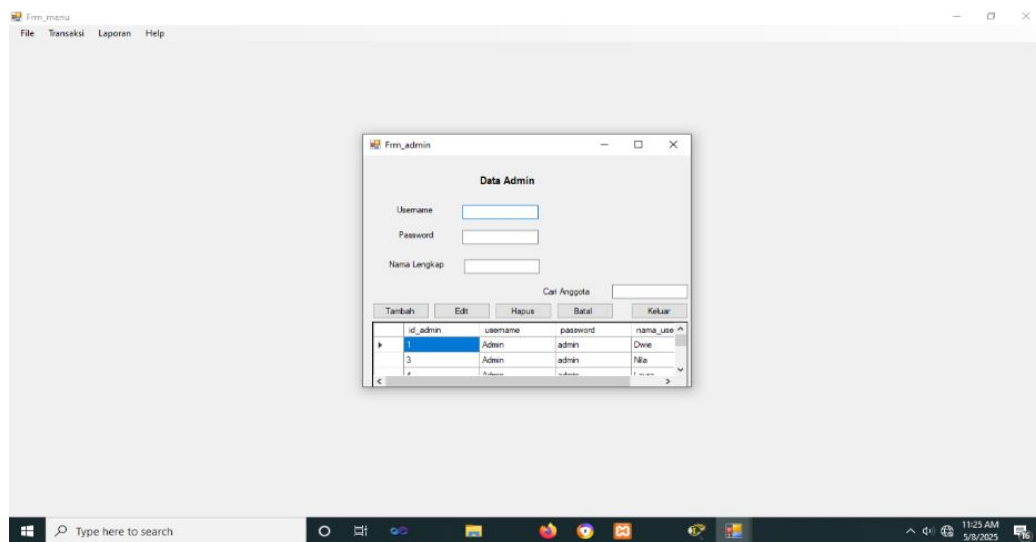


Fig. 2 : Admin Form Display Page

The above page is only used by admins who have been trusted to manage data at SMA Negeri 5 Prabumulih, by entering a username, password and full name. If the admin does not have an account, they will be directed to register first.

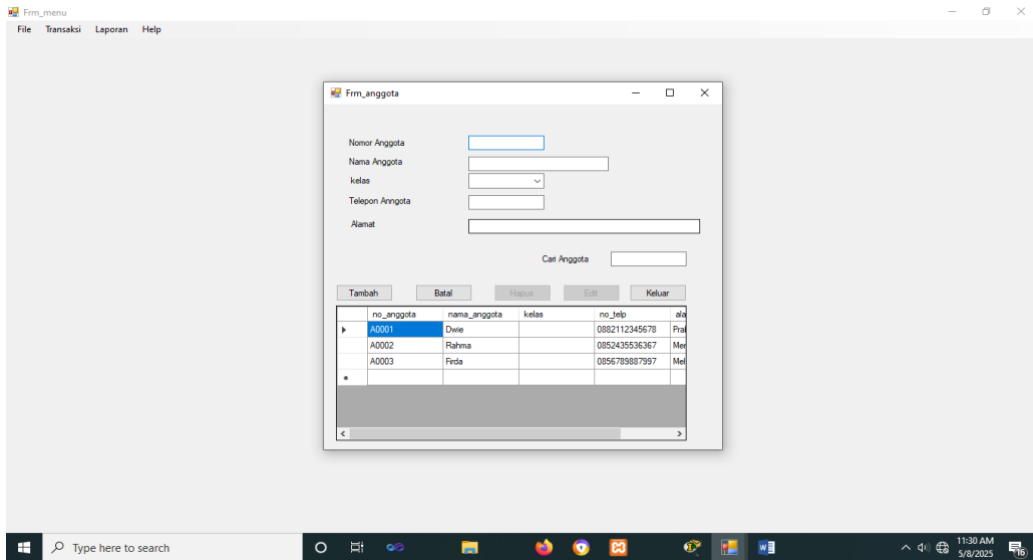


Fig. 3 : Member Form View Page

Figure 3 shows that members are used to display all member data in the database, such as member number, member name, class, member telephone number, and address.

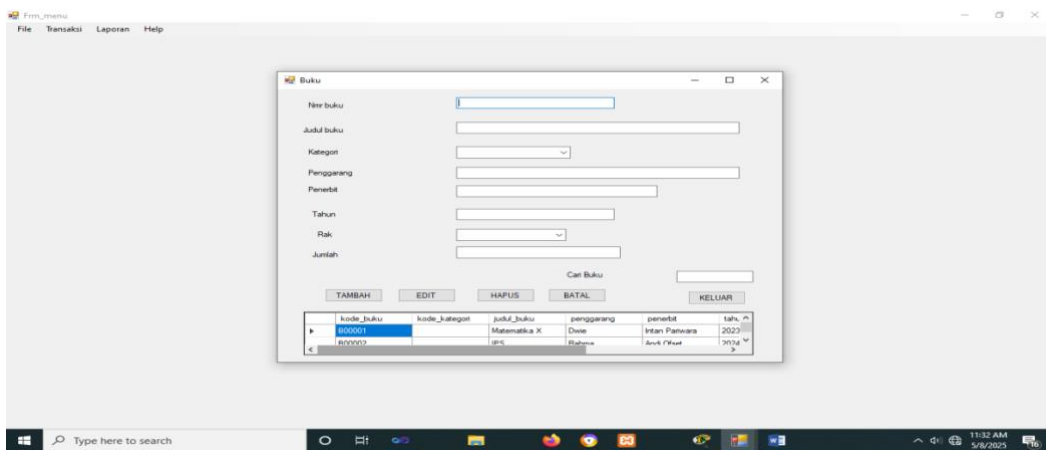


Fig. 4 : Book Form View Page

This page displays all the data in the database. To search for a book, enter the book number or title and click "Search." The search results will appear. In addition to search, you can also use "Add," "Edit," "Delete," "Cancel," and "Exit" to manipulate the entered book data.

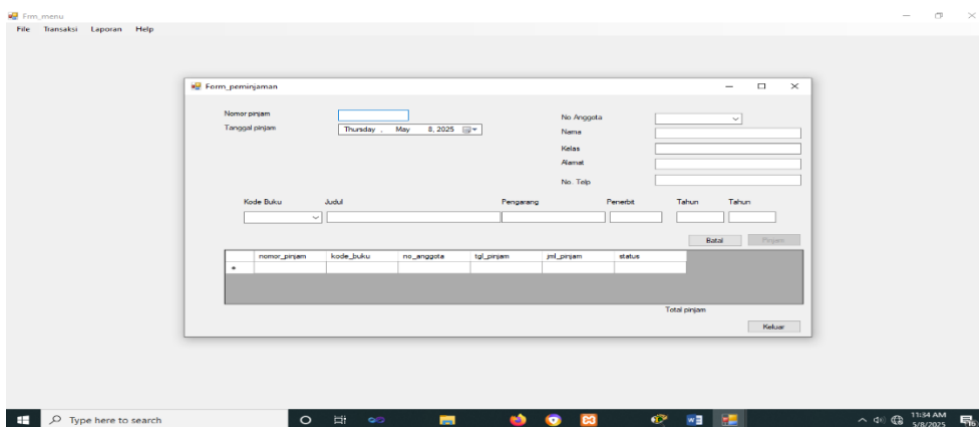


Fig. 5 : Loan Form Display Page

This page displays all loan data in the database and if you want to search for a loan, enter the code, member number, name, class, address and telephone number.

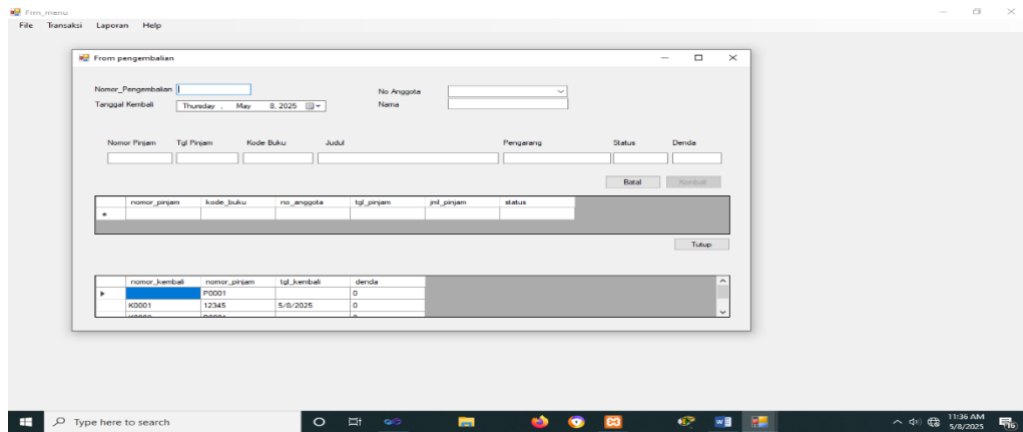


Fig. 6 : Return Form Display Page

This return page is for returning books. If you want to return a book, you must look for the return number, member number, name and return date.

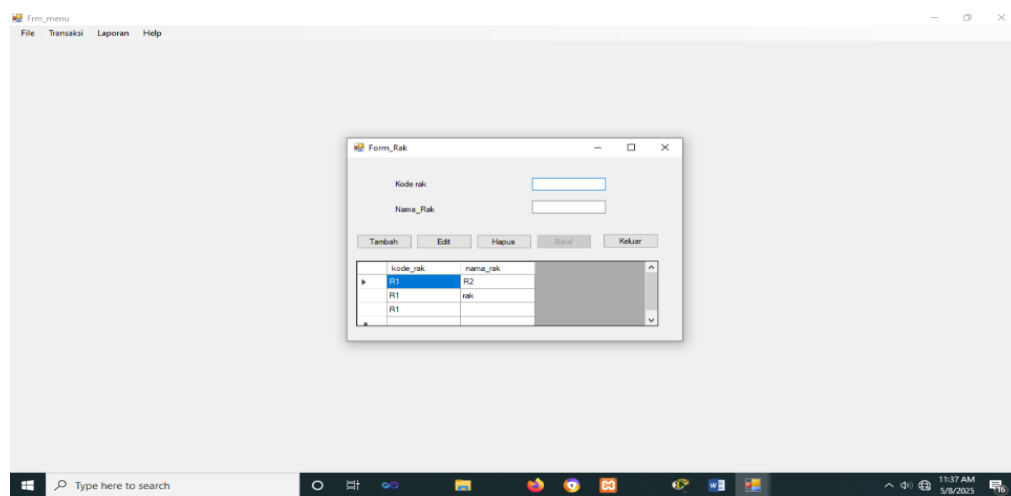


Fig. 7 : Shelf Form View Page

The shelf page is for searching shelf codes and shelf names.

## 5.2. Software Testing

In this testing phase, the system is focused on logic and functionality, ensuring that all systems tested are functional. This is done to minimize errors and ensure that the output produced is in accordance with what is desired. In this study, software testing will use a black box. After testing, each software item is declared valid or usable.

## 6. Conclusion

Based on the research conducted, several conclusions can be drawn:

1. The library information system design for the case study of SMA Negeri 5 Prabumulih used the agile method with the UML design model and supporting tools such as use case diagrams, activity diagrams, and class diagrams. The programming language used was PHP and the MySQL database.
2. The steps involved included member data entry, membership card printing, loan and return transactions, and fine reporting.
3. The design of this school library information system encompassed system design and interface design to facilitate both users and librarians in managing the school library.

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