Journal of Information System and Technology Research

Web Based Library Information System At Public Senior High School 1 Tigapanah

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A R T I C L E I N F O	A B S T R A C T
	Senior High School 1 Tigapanah is a high school located in Mulawari Village, Tigapanah District, Karo Regency. The existing system in the library is still done conventionally, namely by recording a list of members and transactions into a book. The data collection technique used is through survey methods and small interviews with respondents. The results obtained from this study indicate that the positive reinforcement with significant numbers in utilizing the school library comes from the invitation of friends, secondly from the teacher, from parents, from library facilities and finally from the librarian. While the negative reinforcement with significant numbers came from the teacher, the second was from discomfort factors such as stress and boredom, and the last was from the surrounding environmental conditions. In the library system, errors often occur in inputting so that data processing becomes slow and the calculation of fines given to students who are late in returning books to the library is often wrong. In paying attention to these problems, a system is needed that can process the existing transaction processes in the library. The programming languages used are: PHP, HTML, CSS, and JavaScript. With this system, all activities make it easy for the library to process borrowing and returning transactions as well as calculating fines.

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1. INTRODUCTION

The development of information technology is part of everyday human life. Information technology facilitates the search for the desired information easily and in a timely manner[1][2]. One application of information technology is to process data in the library. The library is an auxiliary unit in education in schools or institutions that functions as a vehicle for independent learning that provides various types of books as learning materials [3][4]. With the existence of a library, students find it easier to find information and encourage the creation of quality education in Indonesia and serve to educate the nation's life [5][6].

The presence of a library in SMA Negeri 1 Tigapanah is very important for students to help the learning process. Activities carried out in the library of SMA Negeri 1 Tigapanah are processing book data, members, transactions, recording fines and making reports. The problem experienced by the SMA Negeri 1 Tigapanah library is that data management is still recording in the book, therefore input takes a long time and there are many errors in calculating delays and the amount of fines given to members who are late in returning books to the library [7] [8].

Based on the explanation above, the author wants to discuss and create a new system that can process the existing transaction processes in the library with web technology and is expected to be able to assist officers in serving members [9][10].

2. RESEARCH METHOD

In this system there are several stages of research methods, including the following:

a. The planning stage where at this stage is the first step in research in determining the problem to be solved and includes problem identification, determination of title, determination of objectives, and determination of the data taken.

b. Data collection stage where at this stage data collection is carried out through observation and interviews and the data to be obtained in the form of interview data, agency profile data, and library studies.

c. Analysis stage This stage is the core stage of writing this research. As the output of the analysis, a web- and barcode-based library application interface design will be made.

d. Design Phase The system design on this system uses Unified Modeling Language (UML) tools. The diagrams used in this study are class diagrams, activity diagrams and database and interface design at this design stage, namely designing the database that will be used using MySQL and the system interface that will be built later.

e. The implementation and testing stages of the coding stage are the stage where the system is ready to operate in an actual state in accordance with the needs of library design, so it will be known that the system created can actually produce the goals to be achieved. While this testing stage is carried out with the aim of ensuring that the system made is in accordance with the results of the analysis and design and produces a conclusion whether the system is as expected.

f. Documentation Stage at this stage Documenting all activities carried out in this research. Starting from the preliminary process, planning, data collection, analysis and system design, implementation and system testing. The result of this documentation is the final project report.

3.   RESULTS AND DISCUSSION

Proposed System Analyst
The following is an analysis of the author's proposed system:
1. Input student data and input book data.
2. Provide information on student data and book data registered in the library of SMA Negeri 1 Tigapanah
3. Manage book lending transactions
4. Manage book return transactions
5. Displays transaction reports.

Analysis of the Proposed Procedure
The procedures for the service system at SMA Negeri 1 Tigapanah that will be proposed are as follows:
1. Proposed Book Borrowing Procedure
 a. Students log into the application to be able to choose the books to be borrowed.
 b. After selecting a book, students enter loan data such as the date of borrowing, the date of return and the number of books borrowed
 c. Students waiting for loan approval by officers
 d. The system provides information to officers when there is a borrowing process
 e. The librarian checks the validation of the loan, if it is true, the officer approves the loan and gives the book.
 f. Students get books, as well as loan data information on the application system
 g. Will make a loan report for filing.

The following is a flowmap of the proposed book lending procedure:
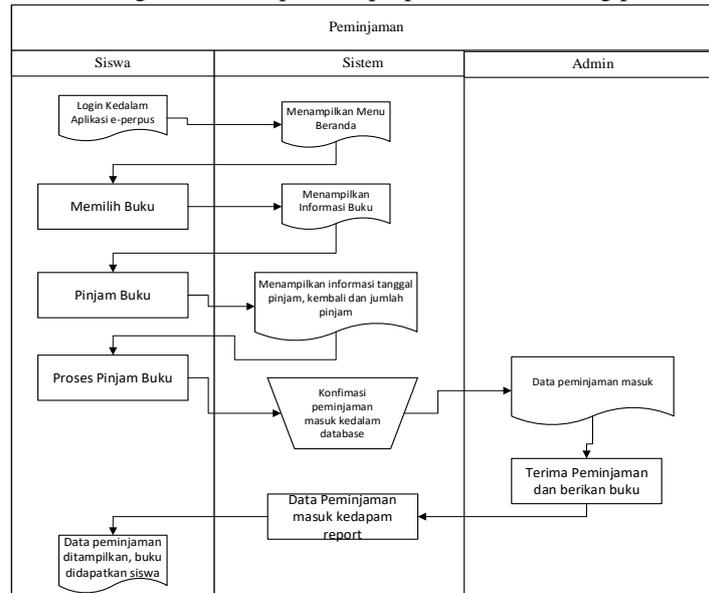
Figure 3. *Flowmap* of the Proposed Book Lending Proses

1. Proposed Book Return Procedure

    a. Students log into the application to be able to return the books to be borrowed.

    b. Students enter the borrowing menu, and take action to return books

    c. The system calculates the borrowing date and book return date based on the day the student returns the book, if the return of the book exceeds the borrowing limit, the student is subject to a fine of Rp. 500/day.

    d. The system approves the return of the book

    e. Book return information is entered into the database and report admin

    f. Students return books to officers

   Here is a flowmap of the proposed book return procedure:
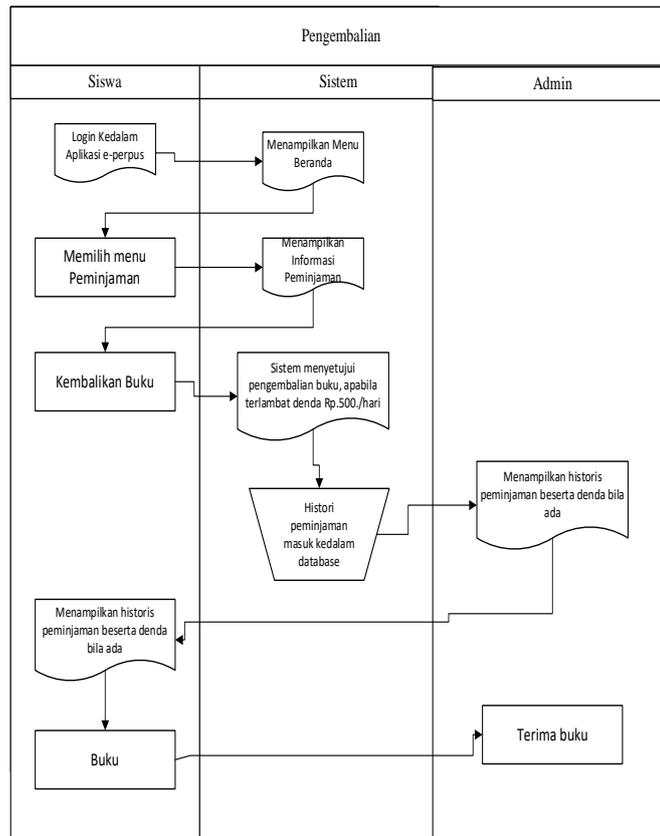
Figure 4. *Flowmap* of the Proposed Book return Process

A. *Admin*

admin can only be accessed by authorized employees or librarians of SMA Negeri 1 Tigapanah. The following is a display of the application menu that can be managed by the SMA Negeri 1 Tigapanah library admin:

1. *Login*

Here is the admin menu display in the application, namele :
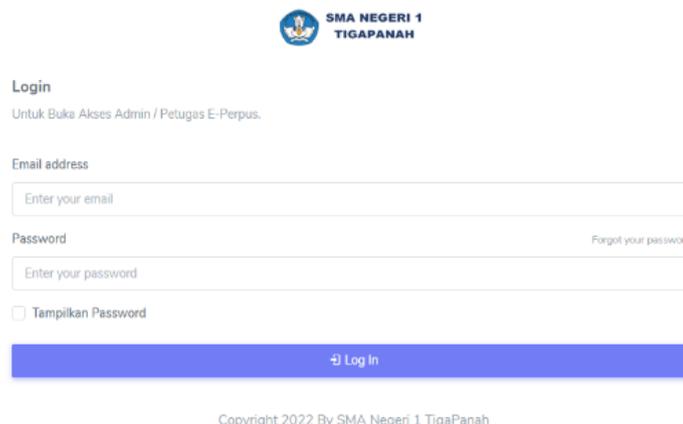
Figure 5. Login

To be able to enter the library application management system, the admin inputs the login data that has been registered in the database. If the username/email is recognized, the system will display the admin dashboard menu.

2. *Admin Dashboard*
   The dashboard is used as a liaison for the menus in the library application here is the dashboard menu on the application program that has been built:
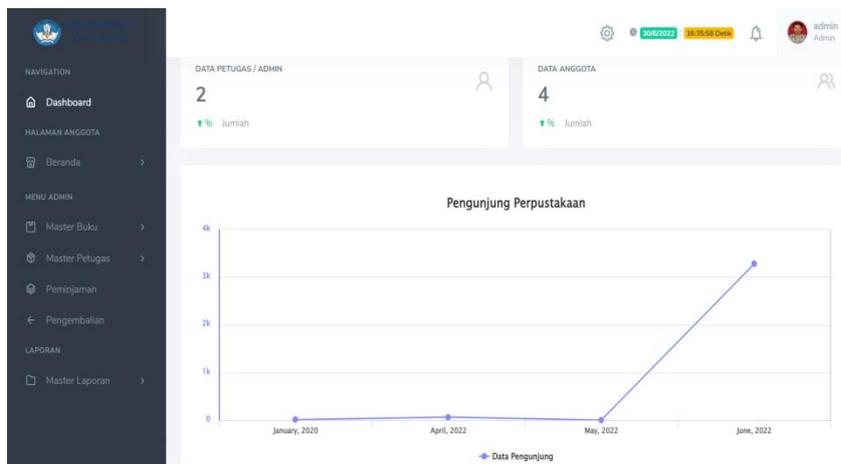

Figure 6. Admin Dashboard

Admin can view officer data,member data who have registered, application visitor data and income data for late fees for returning loan books.

3. Officer
   The officer menu is used by the admin to view officer information, edit, delete and add officer data.
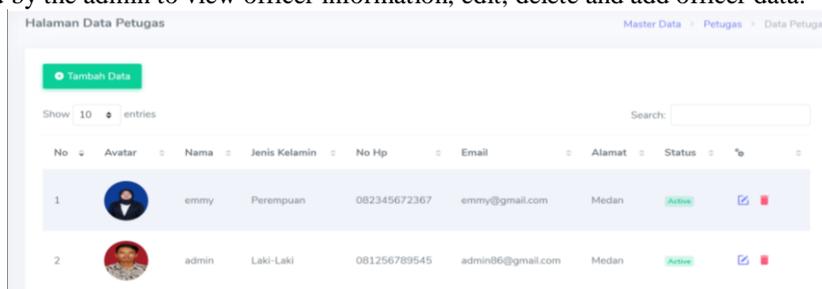
Figure 7. Officer

4. Member
   Members function to view member information who registers and can activate and deactivate members and admins have the right to delete members.
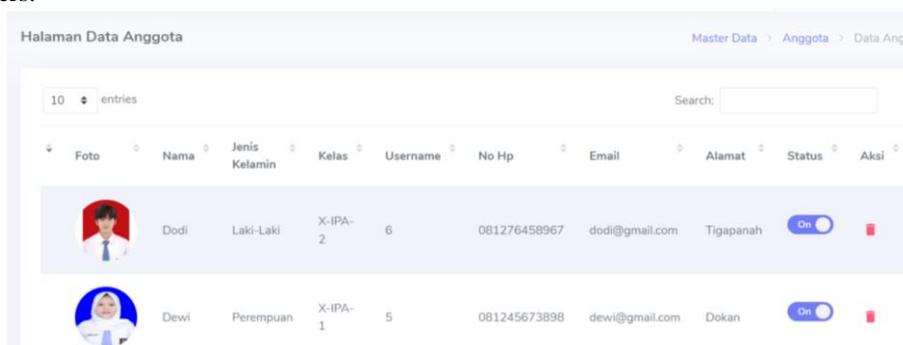
Figure 8. Member

Admin can activate and deactivate members and admin has the right to delete members.

5. Books

The function of the book is for admins to view information about books in the library, edit, delete and add books.
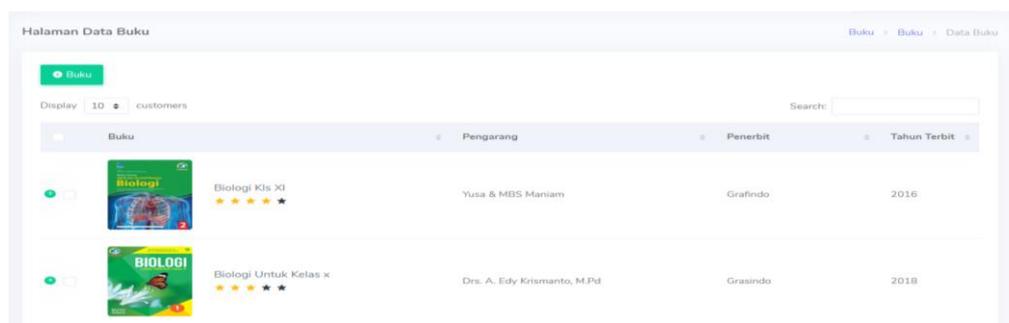
Figure 9. Book

Based on Figure 9, in this menu, the admin can add data, namely by selecting the "Add Book" button so that it displays a pop up menu for adding book data.

5. Borrowing Book

The menu used by the admin to view information on borrowing books that are being submitted by students.The following is the display of the book borrowing menu in the application:
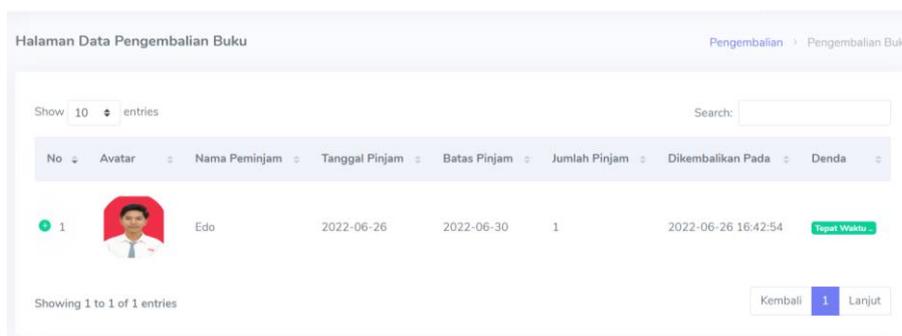

Figure 10. Borrowing Book

Admin can accept loans and loan rejections by pressing the "Process" button so that a pop up menu for the lending process appears.

6. Book return

Book return functions to view information on returning books that have been borrowed by students.
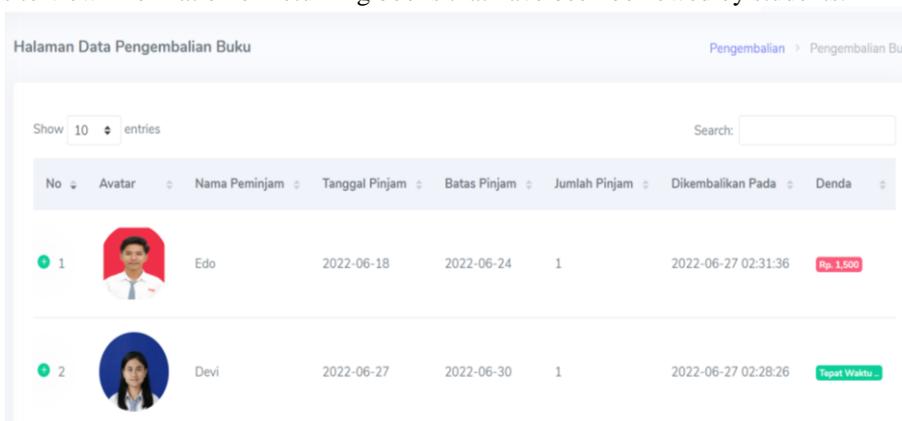

Figure 11. Book return

In this library system there is a member's personal data and the calculation of fines which can be seen when returning books borrowed from the library. In this system there is a provision, namely the maximum borrowing limit of 7 days. When it is over, a fine of Rp. 500/day. From the calculation of the fine has been implemented in the system. For example, for example, Edo borrowed a Math book on August 4, 2022 and made a return on August 13, 2022. Based on the return date, Edo returned 3 days late. So in accordance with the applicable rules, Edo was subject to a fine of Rp. 1,500

With the calculation of the fine as follows:

Loan Period 10 days

Borrowing Limit 1 week: 7 days

Fines: (Lending Length – Borrowing Limit)

10 – 7 = 3

3 x Rp. 500 = Rp. 1,500

7. Report
    The report menu is used to print out and recap starting from book data, borrowing and returning book data, member data, officer data.

Dinas Pemerintahan Provinsi Sumatera Utara

SMA NEGERI 1 TIGAPANAH

LAPORAN DATA PERPUSTAKAAN

Data Pengembalian

No	Peminjam	Judul Buku	Jumlah Pinjam	Di Kembalikan Pada	Jumlah Hari Terlambat	Denda
1	Edo	Biologi Untuk Kelas x	1	29/June/2022	1 Hari	Rp.500
2	Edo	Matematika	1	29/June/2022	-	-
3	Edo	Biologi Untuk Kelas x	1	27/June/2022	3 Hari	Rp.1,500
4	Devi	Matematik	1	27/June/20	-	-

Figure 12. Return Data Report

B. Student

The student application menu display is a menu that is accessed by in the process of borrowing books at the SMA Negeri 1 Tigapanah library. The following is an application menu display that can be used by students in the SMA Negeri 1 Tigapanah library application:

1. Menu *Login*
    The login menu is used by students to enter the system so that students can carry out the process of borrowing books at the library.

Figure 13. Student menu login

Members/students enter login data. If the login data is recognized, students can borrow books. If students do not have a username and password, students can register on the list menu.

Figure 14. Student List

Students are required to fill out the list required to register, then press the "Register" button which will then be confirmed by the admin or librarian.

2. Home
   Here are the results from the homepage:

Figure 15. Home

After members borrow books, Borrowing Book will be processed by the admin or librarian. Here is what the Borrowing looks like on the student application:

Figure 16. Borrowing

3. Book Borrowing History
   After a member borrows a book, the book loan will be returned and entered into the history system. Students can ee the history of book loans that have been returned. Here is a view of the Borrowing history on the application:
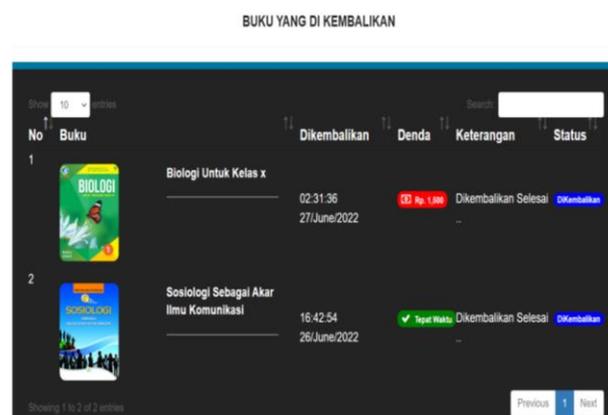

Figure 17. Book borrowing History

4. CONCLUSION

Library information system is a data processing system that utilizes computerized technology in the form of library applications that are built from the results of analysis in the library. The following conclusions are obtained from the process of analysis, design and implementation of the first system with this system students/members register themselves as library members easily and quickly, and officers can also be facilitated in managing and registering library members because the system is computerized. Secondly, this information system makes it easier for librarians to handle the transaction processes that occur. And

thirdly, the library information system can make it easier for officers to collect book data. And the fourth information system makes it easier for the head of the librarian to handle the existing data in the library, including member data, transactions and late return penalties. And finally, the information system makes it easier for librarian to calculate the number of book lending transactions, and can also make it easier for students to find borrowed books, because the library information system is computerized.

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