

Project: Analysis, Design, and Information System for a Web-Based Library System

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Abstract—*The system to be developed is a web-based library system. This system is designed to facilitate library administration in storing information regarding books, library collections, book loans, and collection loans, as well as overall library management. This system was developed to meet the needs of library management, which requires a system capable of improving operational efficiency and providing information on book and library collection loans. In assessing the resulting added value, the system is expected to have a positive impact in line with these needs. The development of this web-based system is also expected to improve the productivity and effectiveness of library services by automating the business processes of library units. On an intangible level, the developed system can enhance the user experience in terms of convenience and satisfaction, as well as increase the value of the library as a provider of educational services to the community.*

Keywords- *Information System, Library, Web.*

I. INTRODUCTION

Advances in information technology have transformed the way educational institutions manage their information resources. Libraries, as centers of knowledge and information, face the challenge of transitioning from conventional systems to more efficient and accessible digital systems. This transformation is not merely an option but has become a fundamental necessity in the digital age [1]. Well-organized library management, as a hub for all information and knowledge, significantly influences and supports teaching and learning activities [2]. The existence of libraries as centers of information has now become a necessity for the general public. Libraries serve as an alternative information resource that provides various forms of information, reading materials, and library resources, both in print and non-print formats [3]. A persistent concern, as seen from various issues in the library world, is that some libraries still rely on traditional methods in their management.

Furthermore, accessing library materials for reading or borrowing requires physical presence, and the time spent

reading in the library is often limited. The transition from manual methods of managing and providing information to systems supported by computerization or digital technology is a step well worth evaluating and implementing [4]. With the rapid advancement of technology, this issue can be addressed by using web-based libraries, thereby streamlining all manual processes in the library [5]. One implication of the development of internet technology is the increasing use of computers or computerization in data processing at government and private institutions, particularly those in the field of education [6]. Libraries, as providers of knowledge and information, play a vital role within their parent institutions and user communities. One example of information technology development is the use of applications for data processing in libraries, which greatly assists in managing transaction data [7]. A web-based library information system will simplify library data management, speed up the book search process, and improve the accuracy of book borrowing and return records [8].

The purpose of a library is to provide facilities and information resources and to serve as a center for learning, because as technology advances, people need information that is both fast and accurate. To address this issue, libraries require a library information system to manage fine calculations, member reports, book data reports, and reports on book checkouts and returns [9]. Library services require a system that can efficiently manage collection, circulation, and membership administration data. The manual processes currently in use often lead to errors in data storage and record-keeping, causing delays in providing information.

Therefore, there is a need to develop a library system that can enhance user satisfaction through easier access to and borrowing of the collection, improve administrative efficiency, and support the library's operational effectiveness. It is necessary to develop a multi-user library information system that can assist library staff in managing visitor data, book data, member data, borrowing data, book returns, and report generation easily and quickly. This library information system requires regular maintenance and must be adapted to

functional needs [10]. With this *web-based* library system, an integrated system will be available that can display information on books and collections, borrowing history, membership status, member data, and provide faster and more accurate administrative record-keeping features.

II. METHODOLOGY

A. System Requirements Analysis

Conduct an analysis to identify the system's functional requirements, such as login, search, borrowing, membership status management, profile management, and the recording of book and collection information.

B. System Design

Conducting system design by performing an analysis process that includes the creation of use cases, activity diagrams, sequence diagrams, class diagrams, deployment diagrams, and entity-relationship diagrams.

C. Implementation

Creating a physical database that is then developed into a system interface that can be used directly, such as a dashboard, book list page, news page, login feature, membership page, profile management, search feature, loan tracking, and fine feature.

D. Testing

Ensuring that every feature displayed functions properly and meets user needs.

III. RESULT AND DISCUSSION

A. Use Case Diagram

Use Case Diagram to visualize and define the interactions of the designed library information system with the involved actors. The following is the software requirements analysis.

1) Visitor Page

On this page, visitors can view general library information, such as the address, contact information, operating hours, general collection, book news, and e-Library information. Visitors can also search for books by title, author, or shelf without having to log in.

2) Library Admin Page

The admin page includes features for managing all system data, namely: managing book data (add, edit, delete), viewing collection information, managing book news, viewing member loan data, checking remaining loan periods, and accessing member fine information.

3) Library Member Page

The member page includes: a login and registration menu, a profile menu (edit personal information, change password, notifications), a book borrowing menu (view borrowed books, remaining loan period, renewals), a borrowing history menu, a fines menu, a membership level menu (silver, gold, platinum), as well as access to news, the book collection, and e-Library information.



Figure 1. Member Login and Registration Use Case

The use case above shows the main actor—the member—who can access the member login and registration features provided by the library system.

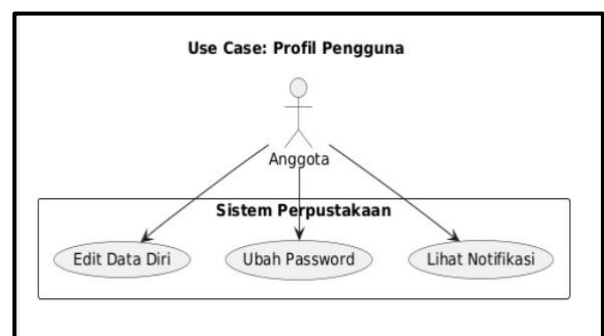


Figure 2. User Profile Use Case

The use case above shows a member who can access their user profile, which includes features for editing personal information, changing their password, and viewing notifications regarding borrowed books or collections and loan period reminders.



Figure 3. Use case for displaying book and collection information

This use case shows that members and administrators can access the general information menu, which contains information about books and collections available in the library.



Figure 4. Use case for searching book availability by shelf

This use case shows members and administrators who can access the feature to view information about books and collections available in the library system.



Figure 5. Membership Login Use Case

This use case shows members who can log in to the membership page to access benefits corresponding to their membership level. This login is specifically for library visitors who wish to receive additional benefits based on a specific membership status or level.



Figure 6. Use case: Displaying membership levels (silver, gold, platinum)

This use case illustrates the membership features accessible to members. Members can access specific benefits based on their membership level.

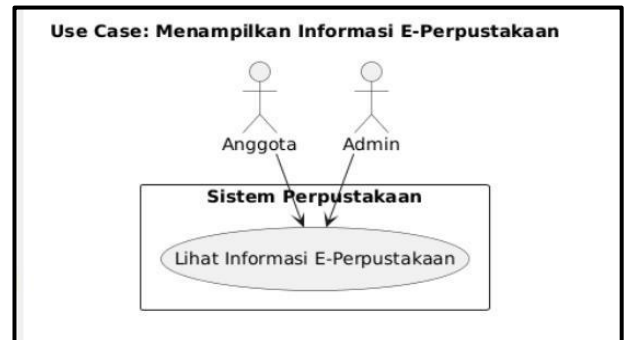


Figure 7. Use case showing e-library

This use case shows members and administrators who can access information related to the e-library, such as the address, contact person, library hours, available collections, and other information about the library.



Figure 8. Use case showing book news

This use case shows members and administrators who can access the news feature, which contains the latest news related to books and collections.

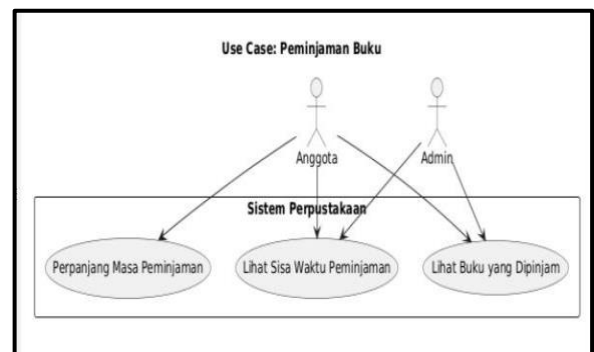


Figure 9. Book Borrowing Use Case

This use case shows members and library administrators who can access the book borrowing feature. Members can view books currently on loan, the remaining loan period for borrowed books or collections, and extend the loan period. Meanwhile, administrators can view the remaining loan periods for members and see which books are currently borrowed by members.



Figure 10. Borrowing History Use Case

This use case shows members who can access the history feature, which contains information about the history of books and collections they have borrowed, including the book title or collection name and the date of the loan.

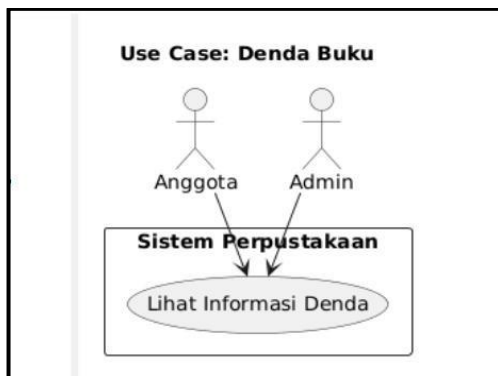


Figure 11. Use case: Member fines

This use case shows members and admins who can access a feature providing information about fines owed by members. This feature includes the title or name of the book or collection, the amount of the fine, and the status of the fine.

B. Activity Diagram

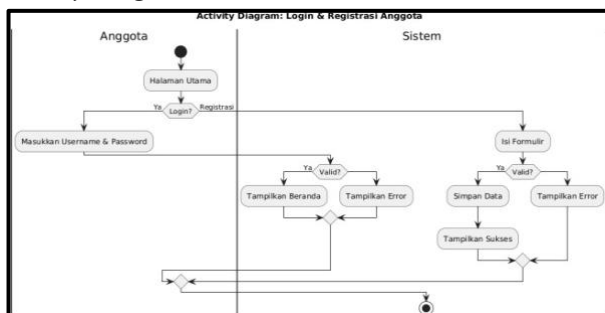


Figure 12. Activity Diagram for Member Login and Registration

This activity diagram illustrates the login and registration process for library members. Members choose to log in or register, and then the system validates the data. If the data is valid, the system displays the home page or a success message; otherwise, an error message appears. This diagram

briefly illustrates the interaction between members and the system.

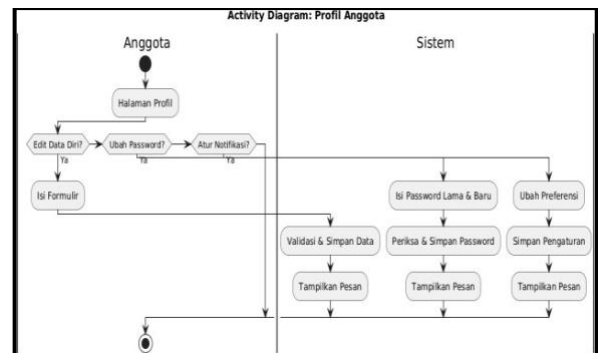


Figure 13. User Profile Activity Diagram

This activity diagram illustrates the workflow of the user profile feature. Users can edit their personal information, change their password, or manage notifications. Each action is processed by the system through data validation and storage, after which the system displays a result message as feedback to the user.

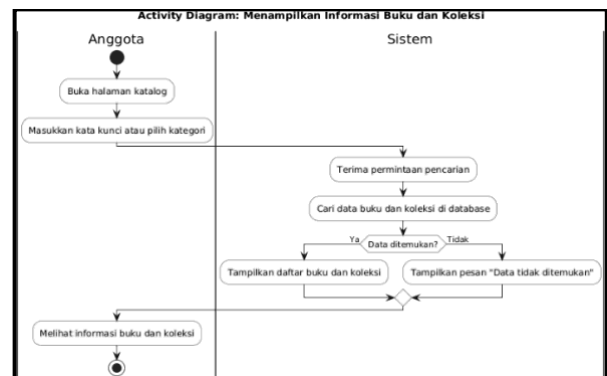


Figure 14. Activity diagram displaying book and collection information

This activity diagram illustrates the process of displaying book and collection information. The user opens the catalog page, then enters a keyword or selects a category. The system receives the request, searches the database for book and collection data, and then displays the search results if data is found or the message "no data found" if the results are empty. The process ends when the user views the information displayed by the system.

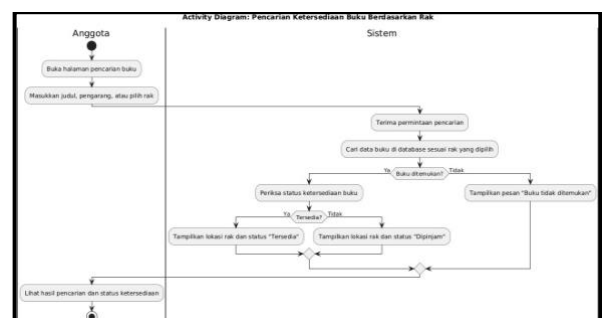


Figure 15. Activity diagram for checking book availability by shelf

This activity diagram illustrates the process of searching for book availability by shelf in the library. The user opens the search page, then enters a title or author, or selects a specific shelf. The system receives the request, searches for book data in the database, and then checks the availability status. If the book is found, the system displays the shelf location along with the status “available” or “checked out”; if it is not found, the system displays a message stating that the book is unavailable. The process ends when the user views the displayed search results.

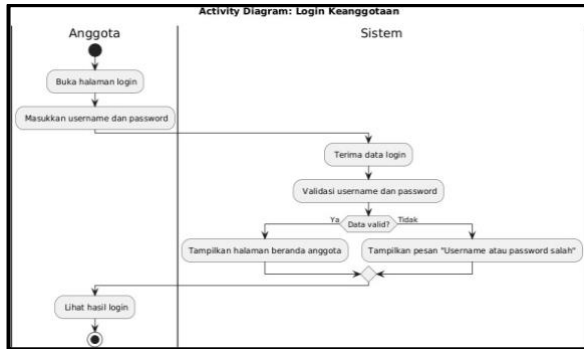


Figure 16. Membership Login Activity Diagram

This activity diagram illustrates the library membership login process. The user opens the login page, then enters a username and password. The system checks and validates the entered data. If the data is valid, the system displays the home page member; otherwise, the system displays a message stating that the username or password is incorrect. The process ends when the user views the login results.

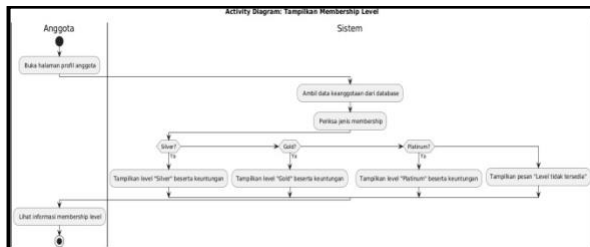


Figure 17. Activity diagram showing membership level diagram

The user opens the member profile page, then the system retrieves membership data from the database and checks the user's membership level. Based on the results of check, the system displays the membership level—such as Silver, Gold, or Platinum—along with its benefits. The process ends when the user views their membership level information.

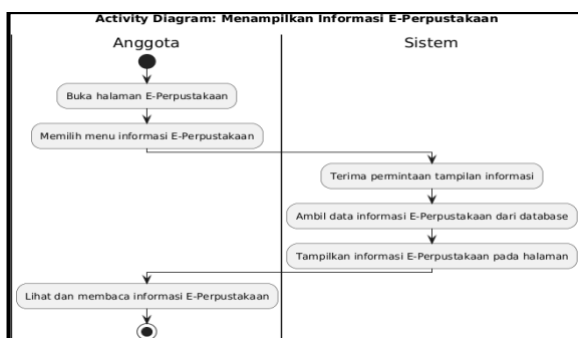


Figure 18. Activity diagram displaying E-Library information

This activity diagram illustrates the process that begins when a member opens the E-Library page and selects the information menu. After that, the system receives the request, retrieves the information from the database, and then displays the results on the E-Library page. Finally, the member can view and read the information presented by the system.

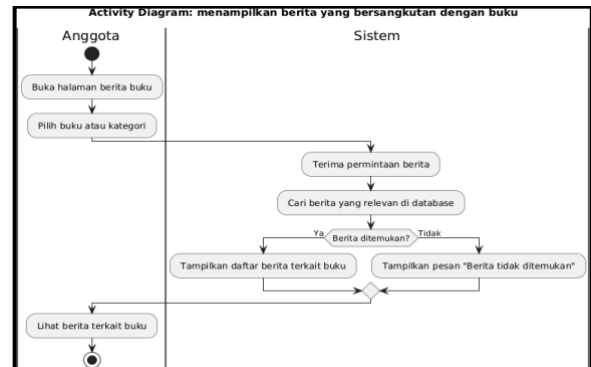


Figure 19. Activity diagram showing news related to books

This activity diagram illustrates the process when a member opens the book news page, selects a specific category or title, and the system then searches the database for relevant news. If relevant news is found, the system displays a list of related news items. If none is found, a message appears stating that no news was found.

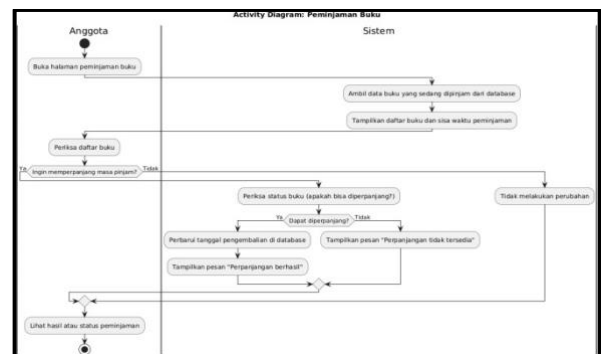


Figure 20. Activity diagram for book borrowing

This activity diagram illustrates the process by which members view and manage book loans. Members open the loan page, and the system displays a list of currently borrowed books along with the remaining loan period. If a member wishes to extend the loan period, the system checks the availability of an extension and updates the data if possible. Once the process is complete, members can view the results or status of their loan.

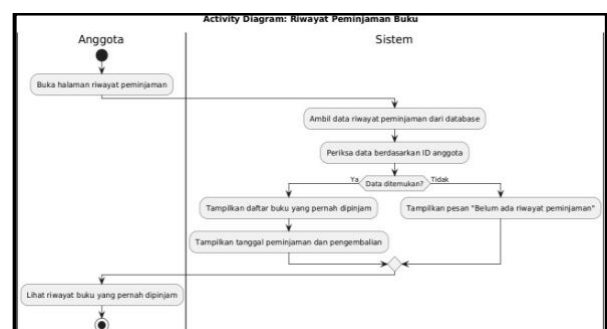


Figure 21. Activity diagram of book borrowing history

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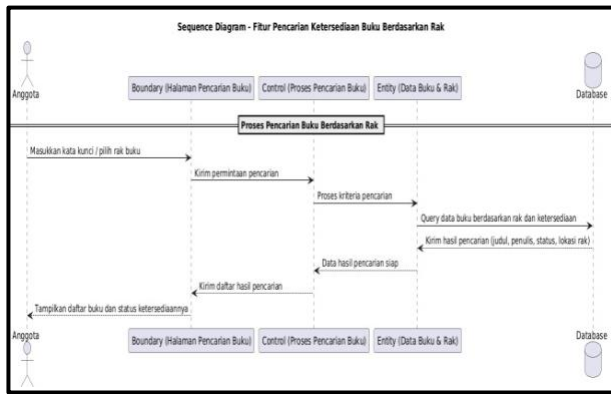


Figure 26. Feature for searching book and collection availability based on the shelves in the library.

In this feature, members enter a search keyword or select a shelf. The system then searches the database for book data based on the shelf and availability status, displays the search results—including title, author, status, and shelf location—and returns the results to the member.

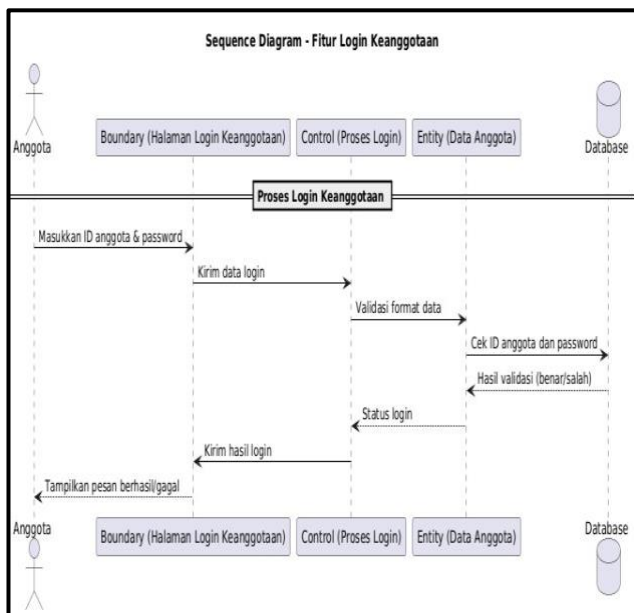


Figure 27. Membership login feature

In this feature, members enter their ID and password. The format of this data is validated by a control, then checked for validity in the database via an entity, and the system displays a message indicating a successful or failed login.

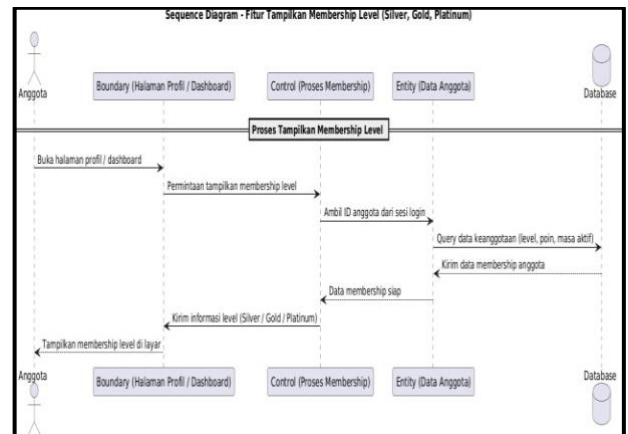


Figure 28. Display Membership Level Feature (Silver, Gold, Platinum)

When a member opens the profile page, the system retrieves the member's ID, fetches membership data (level, points, active period) from the database, and displays the corresponding membership level (Silver/Gold/Platinum) on the screen.

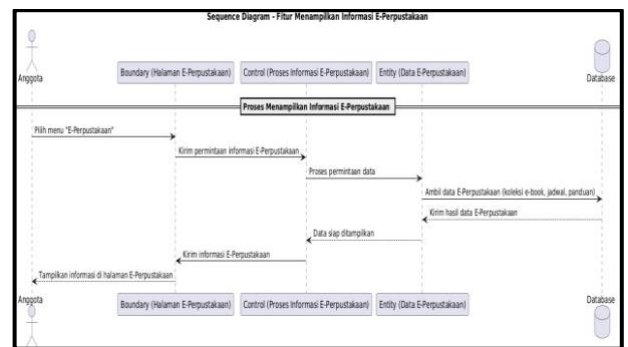


Figure 29. Feature to display E-Library information

When a member selects this menu, the system retrieves E-Library data (such as the e-book collection, schedule, and guidelines) from the database to display on the member page.

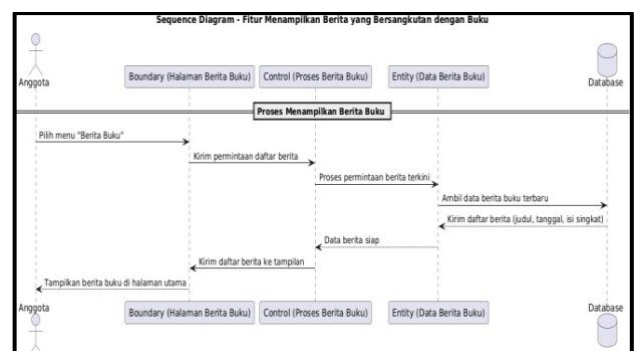


Figure 30. Feature displaying news related to books

When a member selects the "Book News" menu, the system processes the request, retrieves the latest book news data (title, date, brief summary) from the database, and displays it.

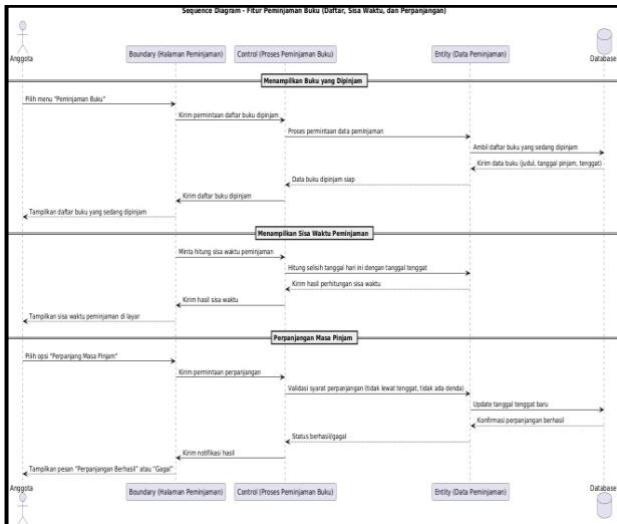


Figure 31. The borrowing feature displays borrowed books, the remaining loan period, and the option to extend the loan period

This feature consists of three parts: members can view borrowed books and the remaining loan period (calculated by subtracting the due date). Most importantly, it includes the loan extension feature, where the system validates the extension requirements (not past the due date, no fines), updates the due date in the database, and then sends a notification of the result.

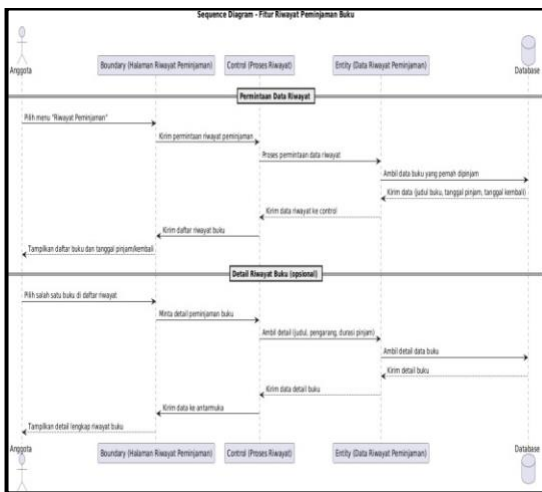


Figure 32. History feature to display the history of books previously borrowed by members, along with the dates the books were borrowed

With this feature, members can request their borrowing history, where the system retrieves a list of books they have ever retrieved from the database. Members also have the option to view the borrowing history for a specific book, with data retrieved from the database for display.

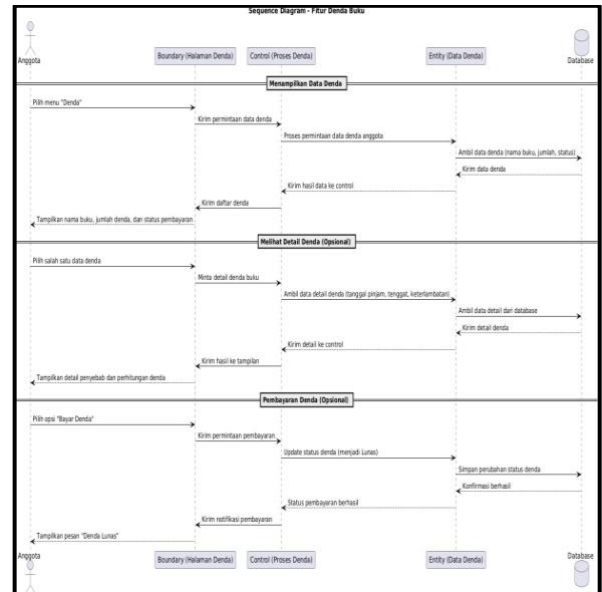


Figure 33. The fines feature displays the titles of books subject to fines, the fine amounts, the fine status

This feature manages three processes related to fines. First, the feature displays active fines. Second, members can optionally view fine details (reason and calculation). Third, members can pay fines (optional), where the system updates the fine status to "Paid" in the database and displays a confirmation message.

D. Class Diagram

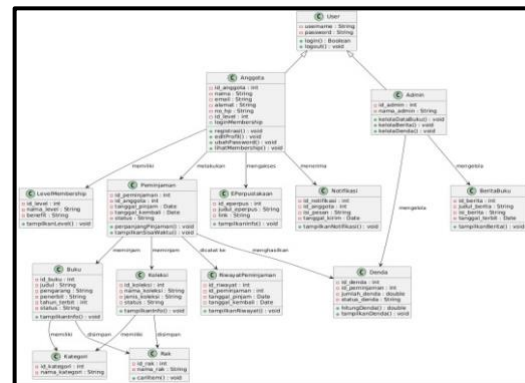


Figure 34. Library System Class Diagram

This class diagram illustrates the logical structure and relationships among the main components that make up the entire system. It consists of the User class and functional entity classes. The User class serves as the parent class representing system users, with the Member and Admin classes as its subclasses. The system's main entities include Book Collection, Category, and Shelf. Books and collections are organized by specific categories and shelves. Borrowing activities are managed by the Borrowing class. Each transaction is stored in the BorrowingHistory and will result in a late fee if the item is returned late. The system also features an E-Library for digital access and BookNews for the latest information, while Notifications send automated messages to members.

E. Deployment Diagram

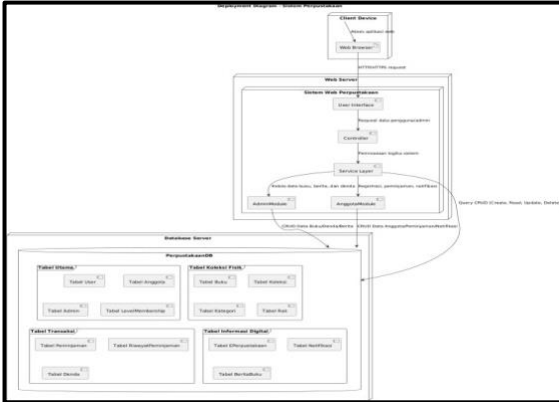


Figure 35. Deployment diagram of the library system

The deployment diagram shows the library system, illustrating how the software and hardware components are interconnected. This system consists of three main parts: the client device, the web server, and the database server. Users access the application through a web browser on their client devices. These requests are forwarded to the web server running the library's web system. There is a user interface layer to receive input, a controller to process system logic, and a service layer to manage core functions. This service layer is divided into two modules: the admin module and the member module. The web server then communicates

F. ERD (Entity Relationship Diagram)

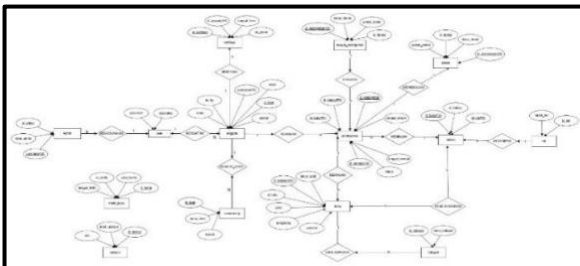


Figure 36. ERD of the Library System

The ERD depicts a library information system that manages users, memberships, loans, book collections, and fines. The "user" entity serves as the basis for authentication and is used by administrators, while the "member" entity represents registered library users who can receive notifications, have membership levels, and borrow books. Each member is linked to a "membership" entity to determine their level and benefits. Books are stored in collections, which are placed on shelves, and each book is also grouped by category. The borrowing process is recorded in the "loan" entity, which contains information about the book, the member, the check-out and return dates, and the status. Borrowing may result in fines if there are violations, and all borrowing activities are documented in the "borrowing_history." The system also provides additional content in the form of book_news and e-library_references as supporting information for the library. This structure forms a complete workflow, starting from user login, members borrowing books, to the recording of history and fines.

G. Physical Database

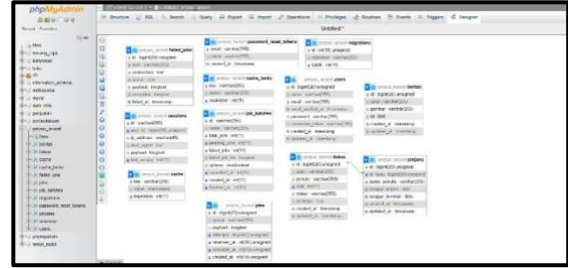


Figure 37. Database phpMyAdmin for the perpustakaan database

It displays several tables, including users, news, books, cache, cache_locks, failed_jobs, jobs, job_batches, migrations, password_reset_token, loans, and sessions. Each table contains columns that specify the data stored within it. The 'users' table stores user data such as name, email, email verification, and password. The 'beritas' table is used to store news information, including the title, image, and content of the news article. The 'buku' table contains data on the book collection, such as title, author, stock, status, and description. The 'pinjams' table records data on book ID, author name, checkout date, and return date.

There are also several other tables, such as the 'migrations' table, which records changes to the database structure; the 'password_reset_tokens' table, which stores password reset tokens; the 'cache' and 'cache_locks' tables, which store temporary cached data; and the 'sessions' table, which records user login sessions. The 'failed_jobs' table is used to store data on failed jobs in the queue, while the 'jobs' and 'job_batches' tables store information about jobs currently being processed by the system. The relationship lines between tables show the connections between them, such as the relationship between the 'buku' and 'pinjams' tables. The 'pinjams' table links borrowing data to the borrowed books via the 'id_buku' column. Simply put, this diagram illustrates the interconnected database structure used to manage library data.

H. Implementation

1) Dashboard View

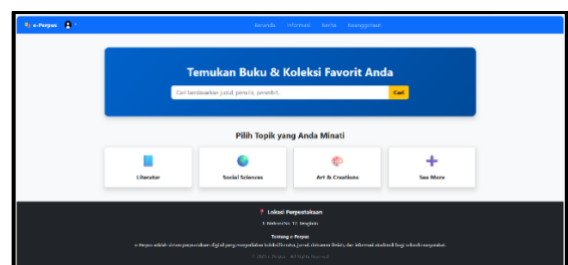


Figure 38. Dashboard View

The figure shows the dashboard of the e-Perpus digital library website. At the top are navigation menus such as Home, Information, News, and Membership. In the center of the page, there is a large search bar that makes it easy for users to find books by title, author, or publisher. Below that are several topic categories such as Literature, Social Sciences, Art & Creations, and other options, so users can choose reading topics that interest them.

2) Information Feature Display



Figure 39. Display of the library's address and contact information

The figure shows the Library Information page on the e-Perpus website. This page displays important details such as the library's full address, which is located at Jl. Mahoni No. 12, Bengkulu, Indonesia. Additionally, contact information is provided, including the library's phone number and official email address. This page is designed to make it easy for visitors to access basic information if they wish to visit in person or contact the library.

3) News Feature Display

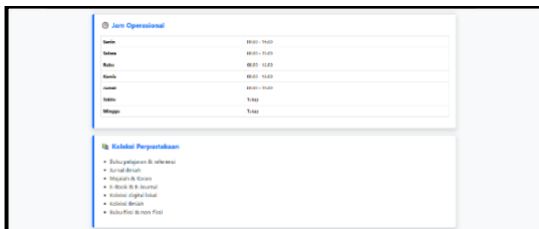


Figure 40. Display of operating hours and collection information

The image displays information on the library's operating hours and collections on the e-Perpus website. At the top, you can see the library's opening hours: Monday through Friday from 8:00 AM to 4:00 PM, while the library is closed on Saturdays and Sundays. Below that is a list of collections available at the library, such as textbooks, scientific journals, magazines, newspapers, e-books, e-journals, local digital collections, as well as fiction and nonfiction books. This information helps visitors know when the library is open and what types of reading materials are available.

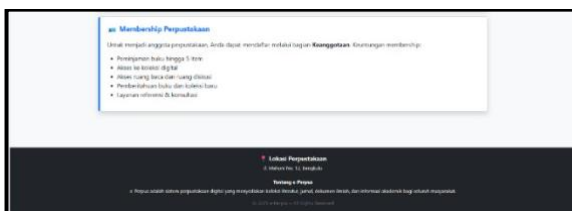


Figure 41. Library Membership Information Feature

This image displays the library membership information feature on the e-Perpus website. This section explains that visitors can register as members through the Membership menu. Benefits of becoming a member include being able to borrow up to 5 books, gaining access to digital collections, using the reading room and discussion room, receiving notifications about new books, and accessing reference and consultation services.

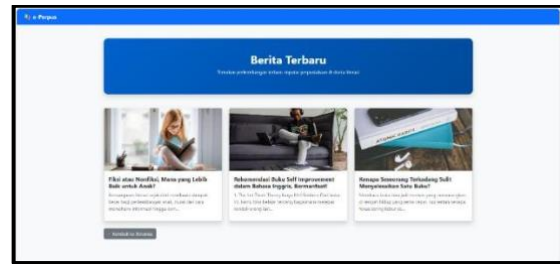


Figure 42. News Feature Display

The image shows the latest news page on the e-Perpus system. It features three news articles, each complete with an image, title, and brief summary. The topics cover fiction versus nonfiction, self-improvement book recommendations, and reasons why it's hard to finish a book. Below that is a button to return to the home page.

4) Login and Membership Registration Screen

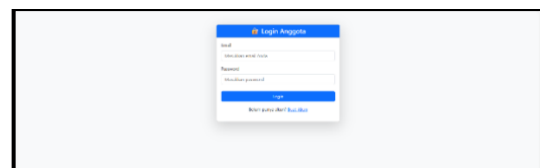


Figure 43. Member Login Screen This figure displays the member Login page on the e-Perpus system

It contains a simple form that asks users to enter their email and password before clicking the Login button. If a user does not yet have an account, there is a link to create a new account.

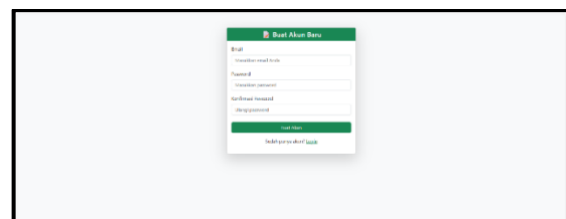


Figure 45. Membership Registration Screen This figure shows the Create New Account page in the e-Perpus system

Users are asked to fill in email, password, and confirm their password before clicking the "Create Account" button. At the bottom, there is also a link to return to the login page if the user already has an account.

5) Membership Feature Interface

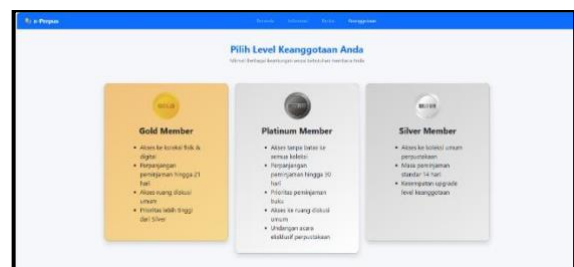


Figure 46. Membership feature interface

The image shows the Membership Level selection page on e-Perpus. It features three membership packages: Gold, Platinum, and Silver, each accompanied by a list of benefits.

Each level offers different perks, such as access to the collection, loan periods, priority service, and invitations to special events.

6) Profile Feature View



Figure 47. User Profile View

The image shows the User Profile page from the digital library app called e-Perpus. This page is used to view and update the user's personal data. The information on this page includes identity details such as full name, username, email, occupation, as well as settings like language and date format. On the left side, there is a panel a navigation bar that makes it easy users to switch to other account features, such as notifications, book history, fines, and security.



Figure 48. Notification settings screen

Figure shows the notification settings page of the e-Perpus app. This page allows users to control which types of notifications they wish to receive. Available settings include email notifications and the latest news, the date of last check-out date, overdue items, and account activity. Users can easily enable or disable each type of notification using the available buttons, ensuring they only receive information tailored to their needs.

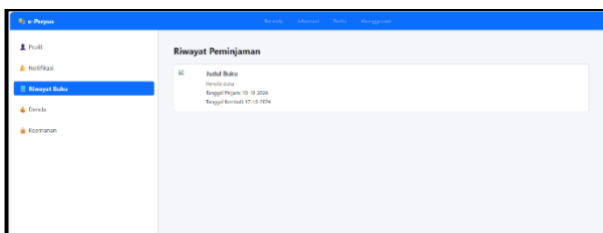


Figure 49. Borrowing History View

The figure shows a view of a digital library system called e-Perpus, and the currently active page is Book History (Loan History). This interface features left-side navigation containing main menus such as Profile, Notifications, Book History, Fines, and Security, while the top section includes navigation for Home, Information, News, and Membership. The main content of this page displays the user's Borrowing History, which currently shows the details of a single transaction: Book Title (where the book title should appear), Book Author (where the author's name should appear), with a borrowing date of 10-10-2024 and the return date as 10/17/2024, indicating that the book has been borrowed and

returned, or that this is the history of a completed borrowing cycle.



Figure 50. Fines screen

The image also shows the e-Perpus digital library system interface, but this time the user has selected the "Fines" menu from the left-hand navigation bar. The "Fines" page is specifically designed to provide information about any fines the user may owe due to late book returns or damage. In the specific case shown in this image, the system displays a reassuring message in a pale green notification box that reads "No fines yet." This means that, at this time, the user has no recorded fines or that any books previously borrowed have been returned on time, indicating good membership status regarding fine administration.



Figure 51. Account Security View

The figure shows Account Security page in the e-Perpus digital library system, accessed via the Security menu on the left navigation bar. This page serves as a control center for users to manage their sensitive personal information and access credentials. This interface provides four main fields that allow users to view and update their details, namely Full Name, Username, Email, and a field for entering a New Password. This design prioritizes user security, ensuring that they can easily update their password periodically or correct their basic account information; after all changes are made, users must click the "Save Changes" button to apply the updates to the system.

7) Book Search Feature Screen

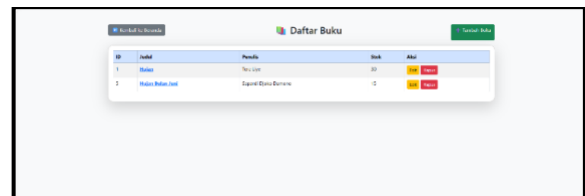


Figure 52. Book Search Interface

The figure shows the Book List page from the e-Perpus system. This page serves as the book inventory management dashboard for the digital library, displaying a list of books in a neat tabular format. The table includes important information such as the book ID, book title, author's name, and the number of copies available in the library. What distinguishes this view from the user view is the presence of an "Actions" column containing "Edit" (yellow) and "Delete" (red)

(red) buttons in each row, allowing administrators to modify book details or remove them from the collection. Additionally, there is an "Add Book" button in the top-right corner to enter new book entries, as well as a "Back to Home" button in the top-left corner to navigate back to the main page.

8) Book Loan Information Feature View



Figure 53. Book Borrowing Information

Feature Screen This figure shows the specific details page for a book in the "e-Perpus" system, which is the screen users see when they click on a book title from the selected book list. This page focuses on the book titled "Hujan Bulan Juni," authored by Sapardi Djoko Damono. Its primary function is to allow users to check out the book by clicking the green button labeled "Check Out Book." In addition to basic book details and the cover, this page also includes a "Borrowing History" section at the bottom, which displays the borrowing history of that book by the current user. In this example, the status is "No borrowing history," meaning that the user viewing this page has never borrowed the book "Hujan Bulan Juni." previously.

9) Add New Book Collection Feature Screen

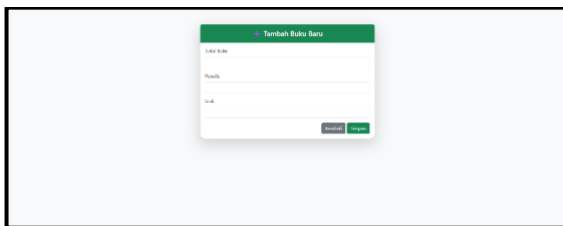


Figure 54. "Add Book" feature interface

The figure shows a form titled "Add New Book," which is part of the administrator or book inventory manager interface in the e-Perpus system. This form is specifically designed to allow administrators to enter data for new book entries into the library database. There are three main fields that must be filled out to describe the book to be added: Book Title, Author, and Available Stock. After all data has been entered, administrators have two options at the bottom: the green "Save" button to save the new book entry to the system, and the gray "Back" button to cancel the process and return to the previous page.

10) Book Information Edit Screen

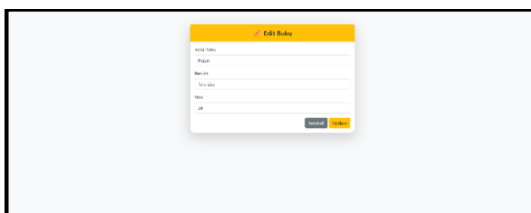


Figure 55. Book Information Edit Screen

The figure shows a form titled Edit Book, which is also part of the administrator interface in the e-Perpus system; it is accessed when the administrator clicks the Edit button on the previous Book List page. This form is used to modify the details of a book already in the inventory. The form is pre-filled with the data of the book to be edited, as shown in this example: the Author column is filled with "Tere Liye" and the Stock column is filled with the number 30—these are the details for the book *Hujan* as displayed on the "Book List" screen. The administrator can change the data in the Book Title, Author, or Stock columns as needed. The available actions are the gray "Back" button to cancel changes, and the yellow/orange "Update" button to save and apply all modifications made to the book's data.

11) Delete Book Screen

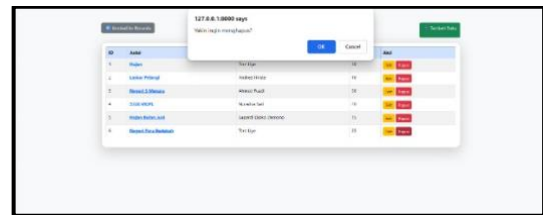


Figure 56. Book Deletion Screen

The image shows the "Book List" page of the "e-Perpus" system administrator interface, which appears when an administrator clicks the "Delete" button on one of the book rows in the table (for example, for the book *Negeri Para Bedebah* or another book). The confirmation message reads "Are you sure you want to delete?" (This page also displays the local IP address 127.0.0.1:8000.) The administrator must select OK to confirm and proceed with deleting the book from the inventory, or select Cancel to cancel the action.



Figure 57. Screen after the book deletion process

Figure display back The "Book List" page on the e-Perpus system administrator interface. This screen is the result of the book deletion process confirmed in the previous image, as clearly shown. The main focus of this view is the appearance of a green notification box at the top of the table that reads: "Book successfully deleted!" This success notification confirms to the administrator that the book previously marked for deletion has been successfully removed from the library's inventory. Additionally, the list of books in the table has now been updated and reduced, leaving only four main entries. This change demonstrates a complete data management workflow, from viewing data to selecting the (delete), confirmation, to success notification.

IV. CONCLUSION

Based on the results of the analysis, design, and implementation that have been carried out, it can be concluded that the web-based library information system that has been

developed can help make the library management process more effective, efficient, and organized. This system provides various important features such as login, search, borrowing, membership status management, profile management, and the recording of book and collection information.

Through the design of Use Cases, Activity Diagrams, Sequence Diagrams, Deployment Diagrams, and ERDs, the system is structured in a way that makes it easy to understand and further develop. The system's implementation—which includes a dashboard page, information about the library, membership, news, and book and collection management—demonstrates that the system operates in accordance with user needs. Overall, this system reduces errors in loan data recording, improves service quality, automates the loan process, and provides a better experience for users.

REFERENCES

- [1] Rasdanelis, Hidayani, Ernawati, and E. Syahputra, "Implementation of a Library Management System Using the SLIMS Application at the Ismail Marzuki Library, MAN 3 Pekanbaru," *Al-Ma'mun J. Kaji. Librarianship and Information Science Journal*, vol. 4, no. 2, pp. 141–156, 2023, doi: <https://doi.org/10.24090/jkki.v4i2.9587>.
- [2] Rusdiana, Juairiah, and M. D. Al-ayubi, "The Transformation of Digital Information Systems in Achieving Excellent Service: A Case Study of the Library at , a school accredited at in the City of Banjarmasin," vol. 13, no. 1, pp. 75–91, 2025, doi: <http://dx.doi.org/10.18592/pk.13i1.16342> pp.
- [3] A. Ramdhani and A. M. Thantawi, "Design and Development of a Web-Based Library Information System and Data Visualization Dashboard for Monitoring Reading Interest at SMK Negeri 21," *IKRAITH-INFORMATIKA*, vol. 8, no. 2, pp. 191–199, 2024, doi: <https://doi.org/10.37817/ikraith-informatika.v8i2>.
- [4] Isa and A. Thomas, "A WEB-BASED DIGITAL LIBRARY INFORMATION SYSTEM AT STMIK CATUR SAKTI KENDARI," *J. Sist.Inf. DAN Tek. Komput.*, vol. 7, no. 2, pp. 177–181, 2022, doi: <https://doi.org/10.51876/simtek.v7i2.161>.
- [5] Syefudin and O. P. Pramesti, "INFORMATION SYSTEM IN LIBRARIES," *J. Indones. Soc. Technol.*, vol. 2, no. 1, pp. 81–87, 2021.
- [6] B. Damanik, D. Sembiring, R. U. Ginting, and H. Situmorang, "INFORMATION INFORMATION LIBRARY AT STATE HIGH SCHOOL 2 PANGKATAN BASED ON WEB," *J. Health Tech. Health and Social Sciences*, vol. 7, no. 2, pp. 33–49, 2025, doi: <https://doi.org/10.51544/tekesnos.v7i2.6498> Copyright.
- [7] Sartika and A. Baijuri, "Web-Based Library Information System for Miftahul Ulum Elementary School Using PHP and MySQL," *JASIE "Journal of Applied Information Systems and Electronics"*, vol. 6, no. 1, pp. 20–28, 2024, [Online]. Available: <https://jurnal.unmuhjember.ac.id/index.php/JASIE/article/view/23152>
- [8] R. H. Siregar and A. M. Harahap, "Web-Based Library Information System at the Faculty of Science and Technology Library, UINSU," *JTSI*, vol. 5, no. 1, pp. 227–241, 2024, [Online]. Available: <https://jurnal.mdp.ac.id/index.php/jtsi/article/view/7606>