



Development of a Web-Based Online Library Information System at the National University Using the Waterfall Method

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ABSTRACT

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The definitions of Pustaka places or libraries are: Several source charts from schools to lectures have not escaped the info-info/knowledge from the library. In relation to the advancement of this technology makes: people to be able to mind effectively also efficient work. For example: conventional systematic generation is more computerized. From the utilization of a feature of the web connected online, the de also: increased levels of efficiency and effectiveness in the book Search and booking. This research designed a website based information system with PHP. From the results of research that has been implemented authors implement the results of the research on: Development of information Systems Web based Online Library of national universities using Waterfall method.

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1. Introduction

The library is an organization in education which is arguably required-to utilize online & computerized technology in efficient performance, where the library is an organization in education that provides a variety of books to be referenced and can assist the learning process. A library that still uses a manual system is very inefficient, because all the available books will continue to grow and will also make it difficult for library members / officers to search for books. (Jaya, 2019).

Based on the above problems, then: National University needs a system that can facilitate librarians in arranging libraries to be easier, given the relatively short service hours of librarians are required to work quickly so that students do not spend their rest time, then a library information system is needed (Septian, 2020).

This information system will process all data in one system that will be processed automatically by the system. It is hoped that this online library can also accelerate and also facilitate the process of inputting data processing quickly and efficiently.

2. Literature review

2.1 Definition of Library

Library is a place of collection, management and organization of collections in library materials collecting, storing, managing, and also systematic arrangements in collections of library materials for visitors to use for fun facilities and infrastructure: get information (Pinem & Pakpahan, 2019).

2.2 Definition of the Internet

Its own definition of the Internet: connections between various series of computers that are also connected to one another ("Wikipedia: the Internet," 2020).

2.3 Definition Online

Online (English: Online) has a certain meaning in the form of telecommunications which means: connected network ("Wikipedia: Inside and Outside the Network," 2020).





2.4 Website Definition

Website is: a collection of pages can be universally connected from sites that contain a collection of information provided: individuals, groups and organizations ("Wikipedia: Website (Website)," 2020).

2.5 Definition of Information Systems

A system that is useful in some way, in order to bring up the needs in processing the required reports (Pinem & Pakpahan, 2019).

3. Research methods

The research conducted uses the System Development Method and the data collection that is used is by using a Waterfall Development Method: In this library information system also uses the method namely: System Development Life Cycle (SDLC) modeled: Waterfall shown in Figure:

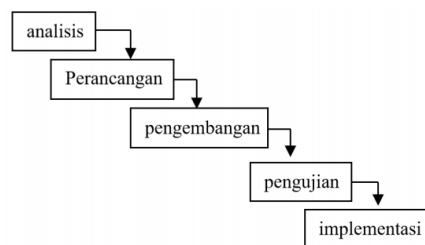


Fig 1. SDLC Model Waterfall

The SDLC method in the waterfall System Development Life Cycle (SDLC) model is: the approach used in the software industry to be able to develop various projects starting: size in small, medium scale and also large scale projects(Septian, 2020).

This development method itself has stages including: analysis of needs (analysis), design (design), development (development), and also all stages of testing (testing), as well as implementation in a real environment (implementation)(Septian, 2020).

4. Results and Discussion

To be able to make the application later we will also design a variety of flow (flow), the design is also determined as in the design in general, namely: a set of flow, application performance runs and also the implementation of the application results.

4.1 System Flowchart Running

To see and know the current system flow can be seen in the picture about the flow (flow) of the existing system of borrowing and re-library that already exists below:

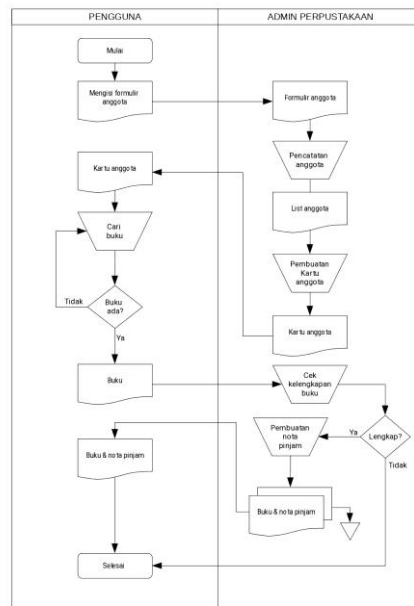


Fig 2 Loan Flowchart

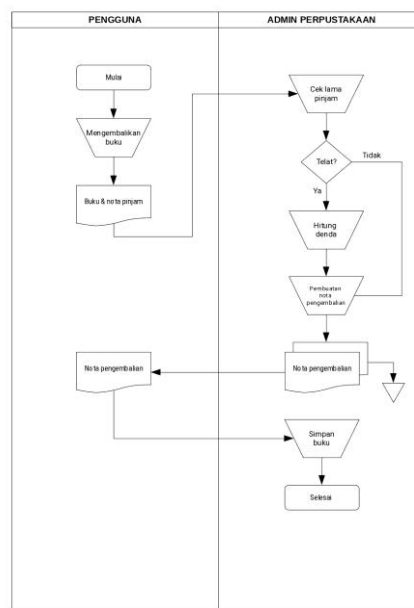


Fig 3 Returns Flowchart

4.2 Proposed Use Case System

The following is a use case that will also be proposed for making this system, which can be seen in the image below:

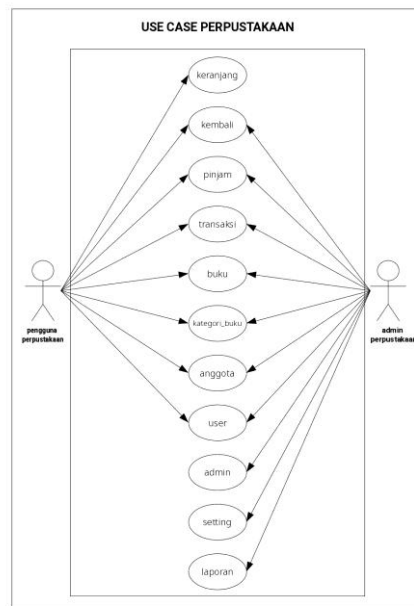


Fig 4. Use Case Library System

4.3 Class Diagram of the Proposed System

The following is a class diagram that will also be proposed for making this system, which can be seen in the picture below:

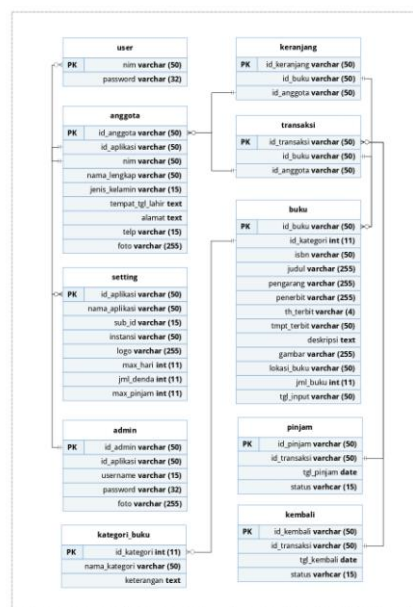


Fig 5. Class Diagram System Library

4.4 Activity Diagram of the Proposed System

The following is a set of activity diagrams which will also be proposed in making this system, which can be seen in the picture below:

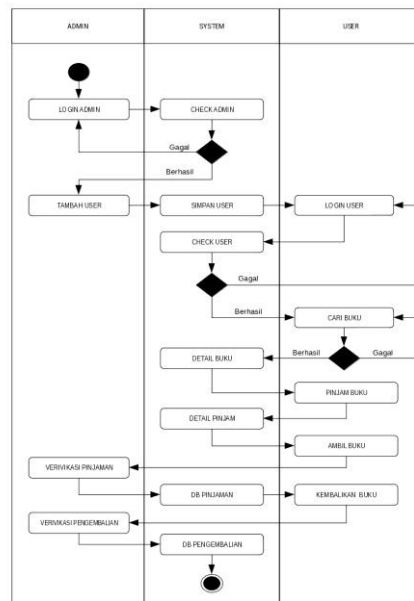


Fig 6. Library System Activity Diagram

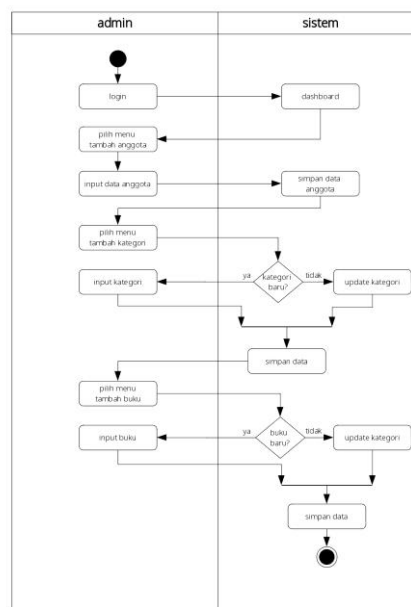


Fig 7. Activity Admin Flow Diagram

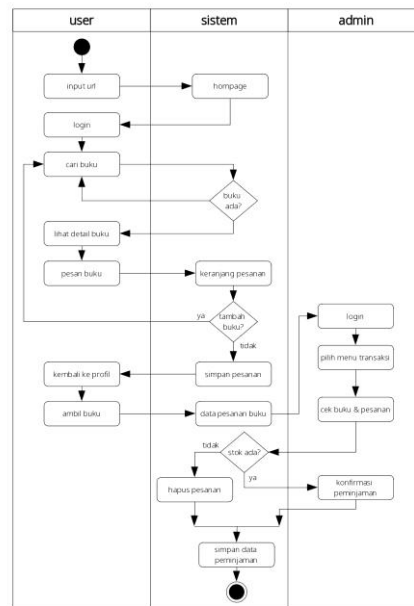


Fig 8. Activity DiagramBorrowing

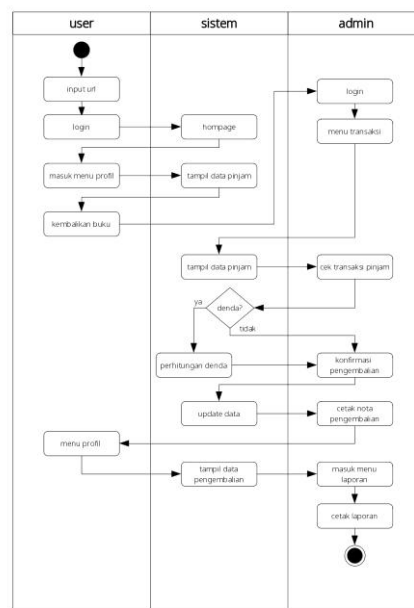


Fig 9. Library System Activity Diagram

4.5 Implementation on the Website

The following are the results of the implementation on the website that has been made using several depictions of the paths that have been made, the following is a description:

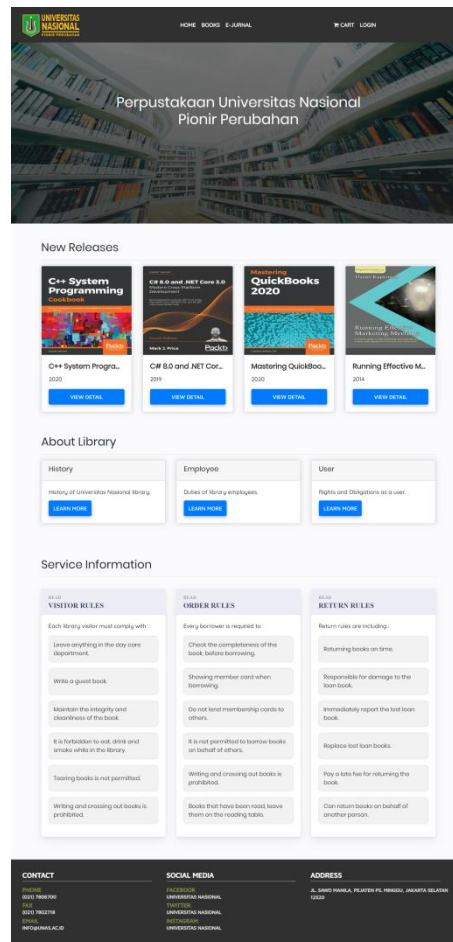


Fig 10. Start Page on the Website

In a home page there are functions, namely: Login button to also enter as a member with various member features, book to see the categories and types of books available, e-journals to access journals online, new releasebook to see what categories the latest book, there is also about the library, service information, and there is also contact info about the library and also the campus in the footer section.

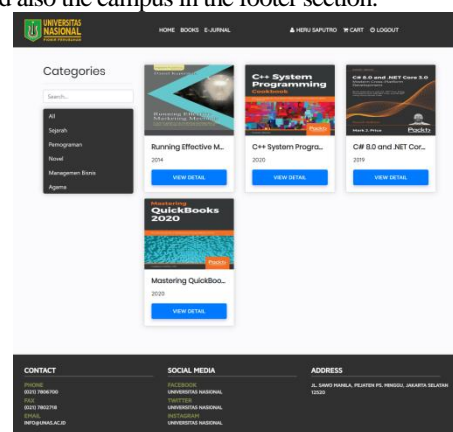


Fig 11. Book Categories page on the Website

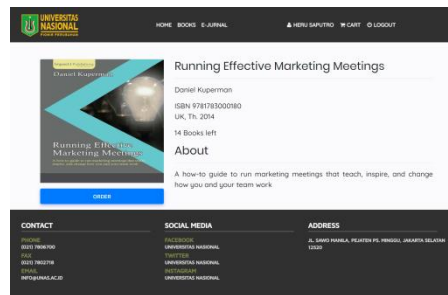


Fig 12. Book and Order Details Page on the Website

In a page of this book there is a function, namely: Side Button to be able to see what types of books, there is also a button for a detail of the book displayed (which also displays the function of ordering a book when we are logged in as a member who automatically enters into the cart page at the bottom of this).

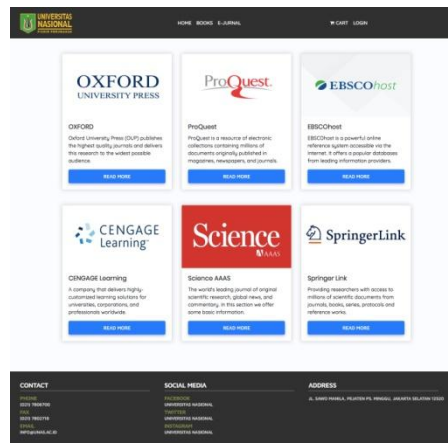


Fig 13. E-Journal page on the Website

In an e-journal page there is also a function, namely: Button to be able to go directly to the link which is also related: image of the available journal page

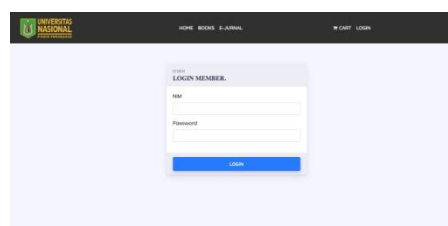


Fig 14. PageLoginMember on the Website

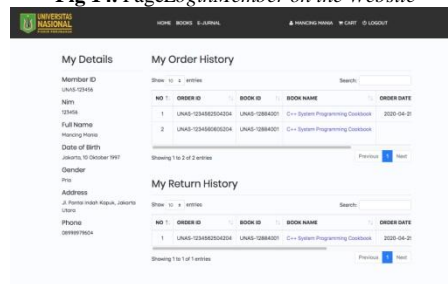


Fig 15. Member Profile Page on the Website

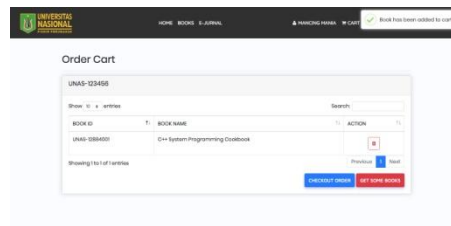


Fig 16. Member Cart page on the Website

In a login and member page there is also a function, namely: Function for members who provide more detailed information about borrowing and also the repayment along with details of things in the system in detail.



Fig 17. Admin Login page on the Website

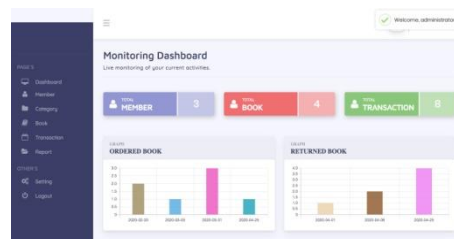


Fig 18. Admin Dashboard page on the Website

In a login and admin page, there is also a function, namely: The function for the admin to monitor and control matters in the panel related to the settings in this library system with further details can also be seen in the picture below:

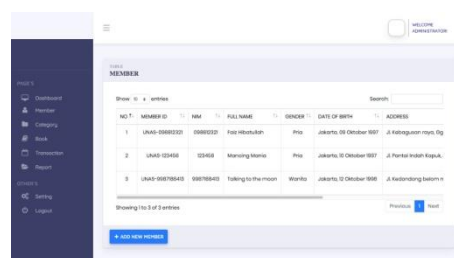


Fig 19. Member Management Page on the Website

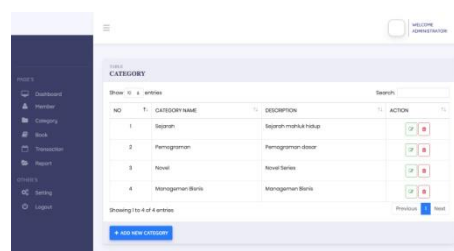


Fig 20. Category Management page on the Website

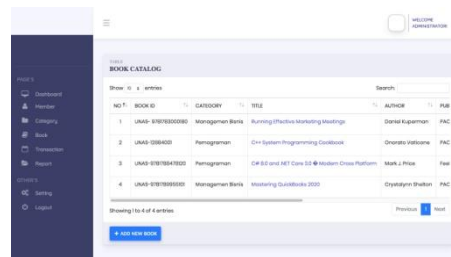


Fig 21. Book Management Page on the Website

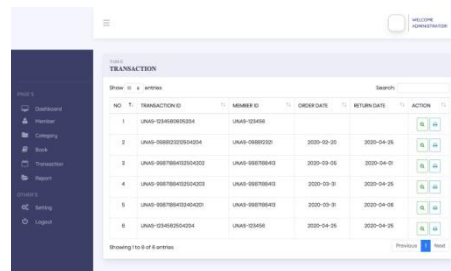


Fig 22. Transaction Management Page on the Website

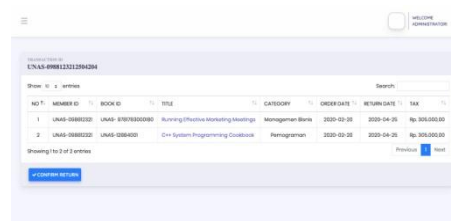


Fig 23. Transaction Management Page (HoursOrders and Returns) on the Website

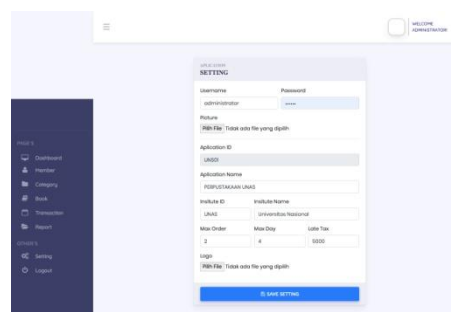


Fig 24. Admin Settings page on the Website

In a login and admin page there are also other functions, namely: Manager of the Member, Category, Books, Transactions and also Settings with the CRUD system method that is structured and feels comfortable: in the eyes.

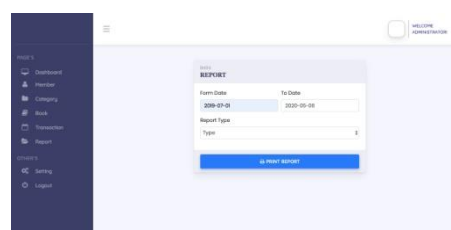


Fig 25. Report Management page on the Website



NO	ID TRANSAKSI	ID ANGGOTA	ID BUKU	JUDUL	TANGGAL PINJAM
1	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
2	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
3	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
4	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
5	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
6	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
7	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
8	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
9	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
10	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000

Fig 26. Loan Reports page on the Website

NO	ID TRANSAKSI	ID ANGGOTA	ID BUKU	JUDUL	TANGGAL KEMBALAN
1	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
2	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
3	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
4	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
5	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
6	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
7	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
8	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
9	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
10	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000

Fig 27. Return Reports page on the Website

NO	ID TRANSAKSI	ID ANGGOTA	ID BUKU	JUDUL	TANGGAL
1	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
2	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
3	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
4	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
5	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
6	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
7	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
8	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
9	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000
10	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000	10000000000000000000

Fig 28. Return Fines page on the website

In this login and admin page there is also the last function that is most important, namely: Management of Reports with Print Results that are structured and also with detailed fines that make this system feel very complex, comfortable and also safe.

5. Conclusion

Based on the discussion with an outcome in the above research regarding "Development of a National University Web-Based Online Library Information System Using the Waterfall Method "can be concluded as follows:

- The pattern of leadership at the head of the UNAS library in terms of: managerial functions and in terms of planning is still lacking.
- Management in the development strategy of managing the library and routines carried out every day is good.
- Supporting factors in management in the UNAS library in terms of qualified human resources according to their scientific fields.
- With the existence of this online library, it can reduce the deficiencies that exist in the library managerial.

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