SISTEM INFROMASI PERPUSTAKAAN DI PRIBADI BILINGUAL BOARDING SCHOOL BANDUNG

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ABSTRACT

Pribadi Bilingual Boarding School Bandung (PBBS) is a national school that implements high quality education system. With the support of professioanal foreign and local teachers who are ready teach children of Indonesia to the competitive education both nationally and internationally. But there are difficulties in finding and accessing literature in Pribadi Bilingual Boarding School Bandung's library. To support this, students must be faciliated by Perpustakaan for more effective and efficient learning.The benefits are students who are members of the Perpustakaan can access the literatur that they could access through website or online media.

This study aimed to design a Perpustakaan information system, to build a Perpustakaan information system and to test the system. Development system method that I used is prototyping method with object oriented method. And the data collecting technique are observation and interview. For method development using objects with several tools like Use Case Diagram, Activity Diagram, Sequence Diagram, Class Diagram, Object Diagram, Deployment Diagram.Programming language that is used is PHP and the database is MySQL.

As a research result in PBBS we can conclude that Digital Libray Information System expected improve academic achievments of school and help students in finding and acessing literature that found in schools library.

Keywords: Perpustakaan, Information System, Pribadi Bilingual Boarding School Bandung.

I. Introduction

1.1 Background

Modern library world is growing along with the development of information technology; the high need of information can make it more easily accessible whenever and wherever. This development is supported by the rapid development of information technology and digitalisation of the world, it's the rampant of smartphones, tablets and laptops that makes people think how to develop applications that can provide information that can be accessed via clutch.

According to (Adams, Jansen, and Smith 1999), there will be a continious expansion of the digital library activities. LIS and computer science professionals will encounter challenges that will cause the system further enhanced. Most libraries will have departments and programs in the digital library arena. The digital library will be built in the area of information and data management. The digital library provides an effective way to distribute learning resources for students and other users. Planning a digital library requires in-depth analysis of the organization and its users, the needed cost, an infrastructure requirements and maintenance.

The role of information systems to the progress of the school library is not in doubt. With the support of a good information system, the library will have different competitive advantages compared to other school libraries. In addition, a good information system can also provide a good service for visitors anyway.

Competence is the personal aspects of a worker which allows the achievement of superior performance. Personal aspects of workers including the nature, motives, system of values, attitudes, knowledge, and skills. Competence builts positive behavior. While the behavior will result a performance (Lasmahadi, 2002). Competence is one of the attributes adhered in human resources. So that the competency of one person can not be owned exactly same by other person. As one of the assets, competent human resources in the spesific branch can be a supporting element for the company to have a high competitive value.

"Digital libraries are the logical extension and argumentations of physical libraries in the electronic information society. Extensions amplify existing resources and services and argumentation enable new kinds of human problem solving and expression (Marchionini, 1998. Encyclopedia of library and information science, vol.63) "

With the Library Information System learner could learn more effectively, just sit s down and finds the information he or she wants to acess via the Internet. After opening browser or search engine we can find a variety of information that is scattered across the world, download and read the literature which (journals, articles, scientific papers, and materials) we're looking for.

Pribadi Bilingual Boarding School Bandung (PBBS) is a national boarding school that implements qualified education system with the National Plus curriculum which is established in cooperation with the Indonesian Yenbu Foundation with the accossiation of Turkish Pasiad. This school has student-based education system, using English language for some lessons like Mathematics, Physics, Chemistry, Biology and English. With the support of foreign teachers and local professionals who are ready to educate the children of Indonesia in the competitive education both nationally and internationally. But there are some difficulties in the searching and literature in the school's library. Ongoing sistem deemed less effective because it's still uses convensioanal data collection which is manual system for book borrowing transactions.Ongoing system uses a book containing the date, name, signature for data collection.While returning books system only uses streak method(sistem coret).The other system obstacle is the lack of space access for softcopy such as scientific papers and textbooks owned by Pribadi Bilingual Boarding School Bandung library.Along with it the data of the book collection owned by school is not available.So borrowers do not know the reduced availability of the book that they are looking for.To support these activities, the students must to be supported by the Library system to facilitate the learning process more effectively and more efficiently ,the benefit here is that students who are members of the library can access lessons that they will be tested through the website media or online media.

Literature data existing on the Pribadi Bilingual Boarding School includes: textbooks, scientific papers which are currently in the form of softcopy.While the hardcopy types are storybooks, history, language and other knowledge books.

With the development of information technology, today it is necessary to digitilize the literature in order to facilitate the students while accessing literature with an easy, effective and efisient way .So that the literature can be used and accesed collectively by the students in one time.

Obstacle experienced during ongoing system is that when literature is borrowed by one of the students, the other students could not use it. And for hardcopy it is hard to get information about the availability of literature in Pribadi Bilingual Boarding Schools library.

So from the above background, the author conducted an observation with the title of "Sistem Informasi Perpustakaan di Pribadi Bilibgual Boarding School Bandung (Library Information System at Pribadi Bilingual Boarding School Bandung)".

1.2 Identification and Problem Formulation

1.2.1 Problem Identification

Here is the problem identification and problem formulation existing at the Pribadi Bilingual Boarding School Bandung:

1. The data collection for borrowing transaction is still uses the conventional ways which are less effective.
2. Difficulties in the collective use of literature because there is no access room for literature with softcopy type.
3. Difficulties in providing services that can be accessed in anywhere because there is no system with library application.

1.2.2 Problem Formulation

Problem Formulation is as following :

1. How to analyze the ongoing library sistem?
2. How to design a libarary appliction so the search for library materials such as articles, books, papers which are not well organized can be accessed and published through digital media?
3. How to test library application that has been designed?
4. How to implement library application?

1.3 Research Objectives

1.3.1 Research Purposes

The purpose of this thesis is to build a Libarary Information System at Pribadi Bilingual Boarding School Bandung which is expected to be useful for an easy data processing and information providing in order to further streamline time.

1.3.2 The Purpose of this Study

1. To analyze the ongoing library system at Pribadi Bilingual Boarding School Bandung.
2. To design library aplication at Pribadi Bilingual Boarding School Bandung.
3. To test the designed library aplication at Pribadi Bilingual Boarding School Bandung is new system in conformity with that required by the user?
4. To implement proposed system that has been built.

1.4 Usability Research

This study is divided into two kinds of observation, which are as following:

1.4.1 Usability Practice

1. The emergence of a new system which overcomes all the problems that exist in the old system.
2. Can help in storage of Pribadi Bilingual Boarding School's library materials in the form of systematic Software.
3. Students can download library materials available at Pribadi Bilingual Boarding School's library.

1.4.2 Usability Academic

1. The results of this study are expected to contribute ideas to other researchers or academics who will conduct the research.

2. This study is expected to add insight, understanding, and experience for author in implementing knowledge that author learned during studying at Indonesian Computer University (UNIKOM).

1.5 Limitations

1. Only the administrator has the right to upload softcopy of literatures.
2. Inputting data of hardcopy literature is with manual method.
3. Library member registration is only for Pribadi Bilingual Boarding School Bandung students.
4. Booking literature is only 12 hours, more than 12 hours is automatically canceled.

II. Theory

2.1 Information System Definition

Information System is a system created by humans which consists of procedures that will help the organization and the organizations managerial in taking decision.[2, p.12]

2.2 Library Definition

Library means book,bible.In English it's called library, in Dutch bibliotheek.The root of word library is liber (Latin) means a book, while the root of bibliotheek is also a book Biblos (Greek) Thelibrary terms has always been associated with the book and the bible.

Definition of library emerged from the library linkage with the book concludes that the library is a room, section or subsection of a building or the building itself used to store books, usually stored according to specific arrangements and used for library members.

Another definition is that a library is collection of books or physical accommodation of the books which are arranged for the purpose of reading, studying, enjoying and having pleasure. [6, p.1]

III. Object and Methods

3.1 Object Research

The object of this research is "Sistem Informasi Perpustakaan di Pribadi Bilingual Boarding School Bandung"(Library Information System at Pribadi Bilingual Boarding School Bandung) .To complete the object of this study,there would be be described about school profile, a brief history, vision, mission, organizational structure and proposed job description.

3.2 Research Methode

According to *Kamus Besar Bahasa Indonesia* (Indonesian Dictionary) method is regular way used to achieve a goal according to desire or it is systematical way to achieve the setted goal more easily.

According Sugyono (2010) research method is basically a scientific way to get data with a specific purpose and usefulness.

3.2.1 Research Design

While doing research design of the Library Information System it is very necessary to do planning and designing, so that research could operate properly and systematically. The research design according to Moh. Nazir (2003: 84) is all the processes that needed while doing the planning and execution of the research.

From the above definition it can be said that the design of the research for Library Information System application is all the research processes which have done by author starting from design planning until execution of Library Infromation System in a certain time.

3.2.2 Types and Data Collections Methods

In this research the primary data source is obtained from direct observation (*pengamatan langsung*) and interview, while the secondary data like documents which are related to this research are from the Department of Education (*Dinas Pendidikan).*

3.2.2.1 Primary Data Sources

Primary data was obtained by direct observation to the place of research, Pribadi Bilingual Boarding School, and with interview to the school's librarian.

a. Observation
   Sutrisino Hadi defines observation as a complex process, a process composed of a variety of biological an phsycological processes.Among which the most two important processes are observation and memory [13]. In this research, author conducted an observation to Pribadi Bilingual Boarding School in Bandung.
b. Interview
   Interview is used as data collection techniques, if researchers want to conduct a preliminary study to find problems that must be investigated, and if researchers want to know more about respondents, is their value is more or less. Author collected data and gathered some information by asking questions verbally to a librarian at a Pribadi Bilingual Boarding School.

3.2.2.2 Secondary Data Sources

Secondary data is the data collection type which is studying data that is already available or given by the concerned person (librarian). Secondary data such as the organizational structure, vision, mission, functions of the organizational structure (job description), all relevsant data about organisation that is used to built Library Information Sytem, were obtained from Pribadi Bilingual Boarding School Bandung's library.

3.2.3 Method and System Development Approach

While building an information systems, it is necessary to use a methodology that can be used as guidelines for how and what should be done during building of the system, such as system's approach and system's development. In this research the systems approach is using Object Oriented approach and for developing it's information system using prototype developement method.

3.2.3.1 System Aproach Method

System approach that is used is Object Oriented which uses OOAD (Object Oriented Analysis and Design) and visualized with UML diagrams among them are as following: Use Case Diagram, Activity Diagram, Sequence Diagram, Class Diagram, Object Diagram, Component diagrams and Deployment diagrams.

3.2.3.2 System Development Method

The main reason why author chose prototyping method is because this method is often used for building and developing of Library Information Systems. Apart from that, there are some other reasons that make the author prefer prototyping method compaired to SDLC. SDLC has two major interrelated issues; the first is an extension of time is needed to use the SDLC. This will increase the time needed to hire a systems analyst, it will automatically add extra cost which is required in the development of a system. The second problem is that the user needs change over time. In a long interval, starting from system

design phase till to implementation phase, the user needs could change. And will make back to the system's analysis phase again, so the development system became futile.

3.2.3.3 Analysis and Design Tools

With the method of object-oriented systems approach; the author will describe the characteristic of the system by using a model called Unified Modeling Language (UML). UML is a language that has become the industry standard for visualizing, designing and documenting software systems today.

IV. Result and Discussion

4.1 System Design

In this step of the system, author explains about,system design,research design objectives,proposed system overview and proposed design procedure.

4.1.1 System Design Objectives

The purpose of designing system is to fullfill user needs about new system's design and implementation.

4.1.2 Proposed System Overview

Information system which author proposed is web based system.This system is specifically designed for Pribadi Bilingual Boarding School's library to facilitate access to library materials for the students and to make easier book borrowing transaction management for librarian.Sistem provides reports that can only be seen by Pribadi Bilingual Boarding School librarian.

4.1.3 Proposed Design Procedure

While designing this system author used use case diagram of the proposed system as well as activity diagram, sequence diagram, class diagram, object diagram, component diagram and deployment diagram. The difference between the old system and the new system proposed is the documentation of the old system is still manual, but new system makes it more developed, which is aimed to display information about library literature and helps to manage literature's borrowing transaction in website.

4.1.3.1 *Use Case Diagram*

Interaction between actor and system in new system is displayed with use case diagram as following:Figure 4.1.

4.1.3.2 *Activity Diagram*

The following activity diagram displays detailly actions which are done by user and how they react to proposed Library Infromation System :Figure 4.2-5.

4.1.4 Perancangan Data

This section explains about class diagram dan deploument diagram of proposed system.

1.1.4.1 *Class Diagram*

The following class diagram explains interactions between classes in Library Information System at Pribadi Bilingual Boarding School:Figure 4.6

1.1.4.2 *Deployment Diagram*

The following displays deployment diagram of Library Infromation System at Pribadi Bilingual Boarding School Bandung's library: Figure 4.7

4.1.5 Interface Design

Pada bagian ini, akan dijelaskan mengenai perancangan struktur menu pada Sistem Infromasi Perpustakaan di Pribadi Bilingual Boarding School Bandung.

4.1.5.1 Structure of Main Menu

Berikut ini adalah gambar perancangan struktur menu pada Sistem Infromasi Perpustakaan di Pribadi Bilingual Boarding School Bandung: Gambar 4.8.

4.1.6 Implementation and Testing

Penggujian merupakan proses menjalankan dan mengevaluasi sebuah perangkat lunak secara manual maupun otomatis dengan tujuan untuk menguji apakah perangkat lunak tersebut sudah sesuai dengan apa yang diharapkan. Ada dua teknik pengujian yang dapat digunakan untuk menguji perangkat lunak, yaituk teknik pengujian black box dan teknik pengujian white box.

4.1.6.1 Software Implementation

Software which are used while making proposed system are as follow:

- Windows 7 Operation System.
- Google Chrome Browser.
- MySql as DBMS.
- PHP Version 5.6.9 as programming language.
- Neat Beans IDE 8.0.2 as code Editor.
- Pencil software for designing proses.

4.1.6.2 Hardware Implementation

Hardware which are used while making proposed system are as follow:

- Intel Processor Core i3 wtih 2.53 GHz speed.
- RAM 2 GB
- Hardisk with 500 GB capasity.

While for making application executable these hardware types are needed:

- Prosesor Intel Core i5 dengan kecepatan 2.4GHz atau lebih.
- RAM 8 GB
- Hardisk with 500 GB available space or more.

4.1.6.3 System Testing

The following explains about testing of Library Information System at Pribadi Bilingual Boarding School:Table 4.1-2.

V. Conclusion and Suggestions

5.1 Conclusion

Library information system is a data processing system that utilizes computerized technology in the form of library application which is built based on analysis made at library. The following conclusions were derived from process analysis, system design.

1. Library applications can provide a more effective data collection where the data can be connected directly to the literature data / stock of literature in PBBS library.
2. Library application could facilitate the learners because it provides access to softcopy of literature.
3. This application can provide services which are accessible personally about the stock of literature in the PBBS library.

5.2 Suggestions

In order to Library Infromation System work properly there are some suggestions as following:

1. To give acess for teachers and other school employees.
2. Facilities students to share (upload) library materials such as ebook, scientific work.
3. To input the literature data using scanning method.

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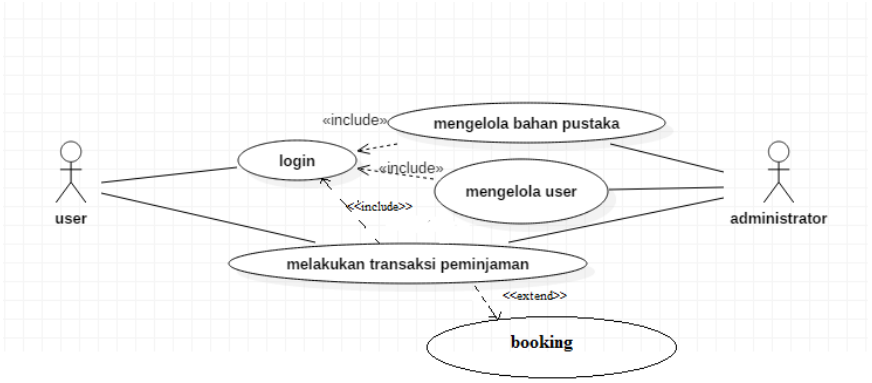
[11] Syafrizal Melwin,"Pengantar Jaringan Komputer", Yogyakarta: Andi, 2005

Tabel 4.1 Test results (1)

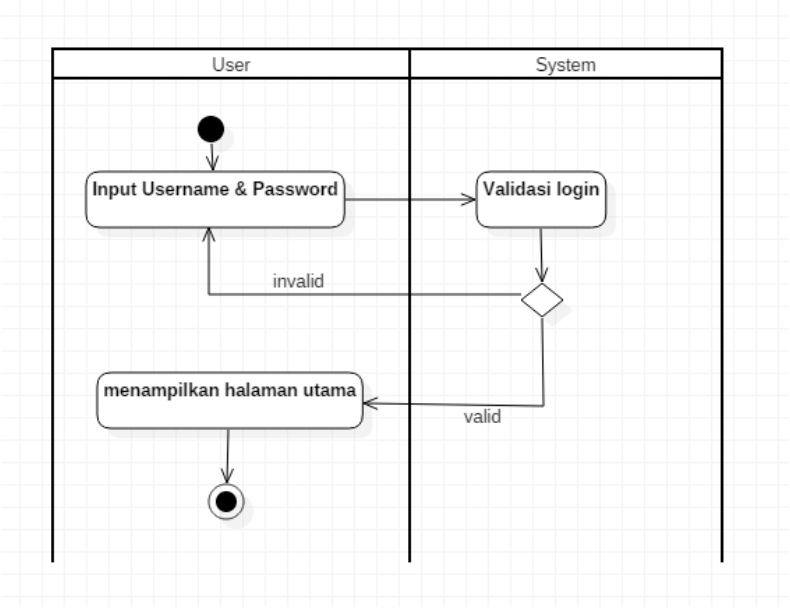
Cases and Test Results (Normal Data)			
Input	Expected Data	Observed Data	Conclusion
Select *Peminjaman* at *Transaksi* menu	Page Peminjaman appears.	Data muncul sesuai dengan yang diharapkan	[✓]Accepted [ ]Rejected
Select *Tambah* button	Form add borrowing data appears.	Form muncul sesuai dengan yang diharapkan	[✓]Accepted [ ]Rejected
Select Edit tombol	Form edit borrowing data appears.	Form untuk merubah data periode muncul sesuai dengan yang diharapkan	[✓]Accepted [ ]Rejected
Cases and Test Results (False Data)			
Input	Expected Data	Observed Data	Conclusion
Fill the wrong data	Data not saved	Data not saved	[✓]Diterima [ ]Ditolak

Tabel 4.2 Test results (2)

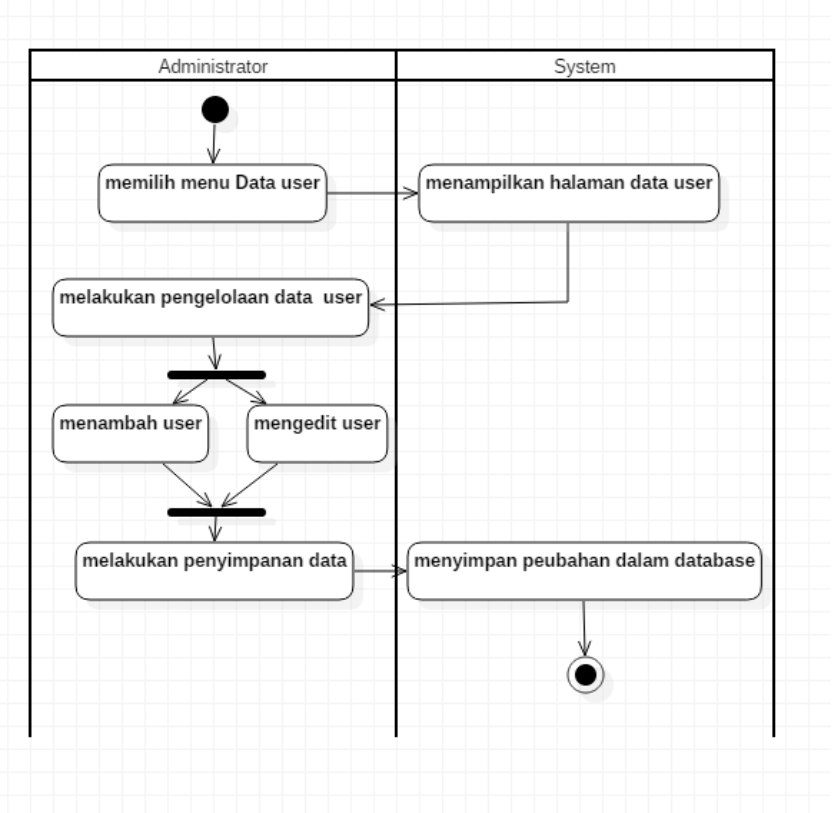
Kasus dan Hasil Uji (Data Normal)			
Input	Expected data	Observed data	Conclusion
Select *Pengembalian* at *Transaksi* menu	Page *Pengembalian* appears	Data appears as expected.	[✓]Accepted [ ]Rejected
Select *Tambah* button	Form add borrowing data appear.	Form appeared as expected.	[✓]Accepted [ ]Rejected
Pilih tombol Edit	Form edit borrowing data appear.	Form editing borrowing period appears.	[✓]Accepted [ ]Rejected
Cases and Test Results (False Data)			
Input	Expected data	Observed data	Conclusion
Fill the form uncomplete	Data not saved	Data not saved	[✓]Accepted [ ]Rejected



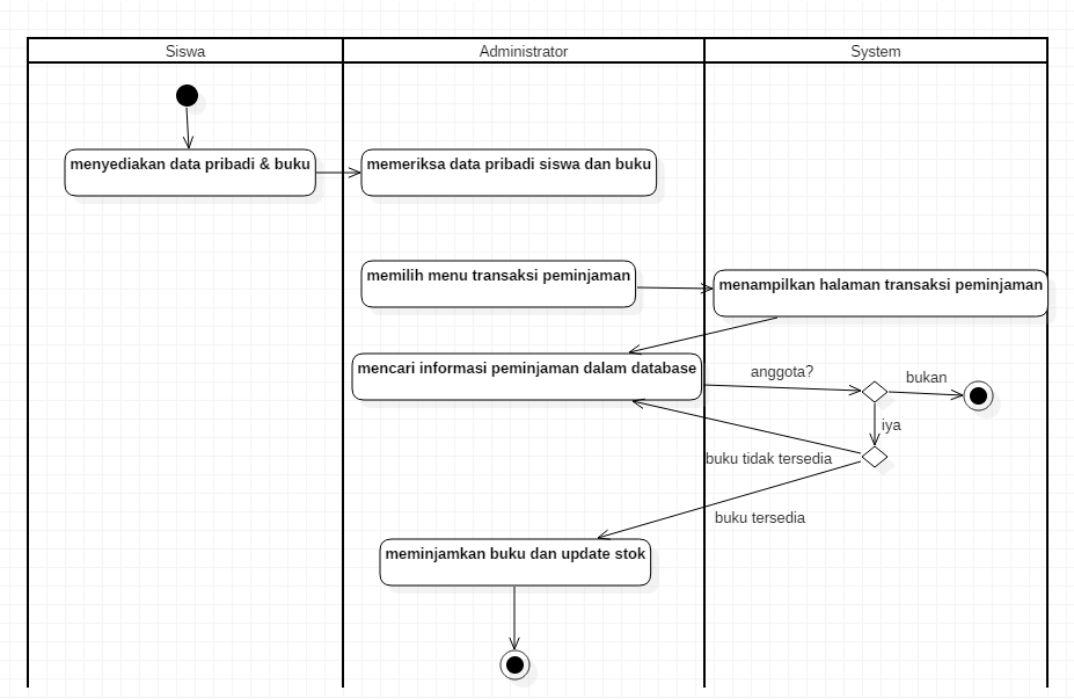
Gambar 4. 1 Proposed Use *Case Diagram*



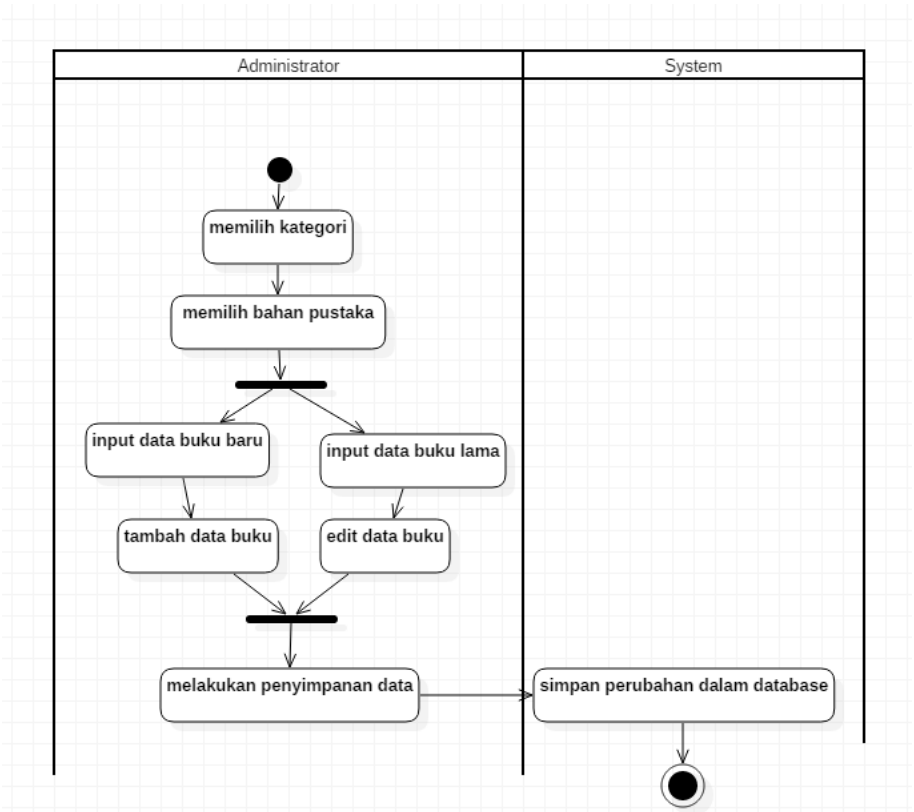
Gambar 4.2 Log in *Activity Diagram*



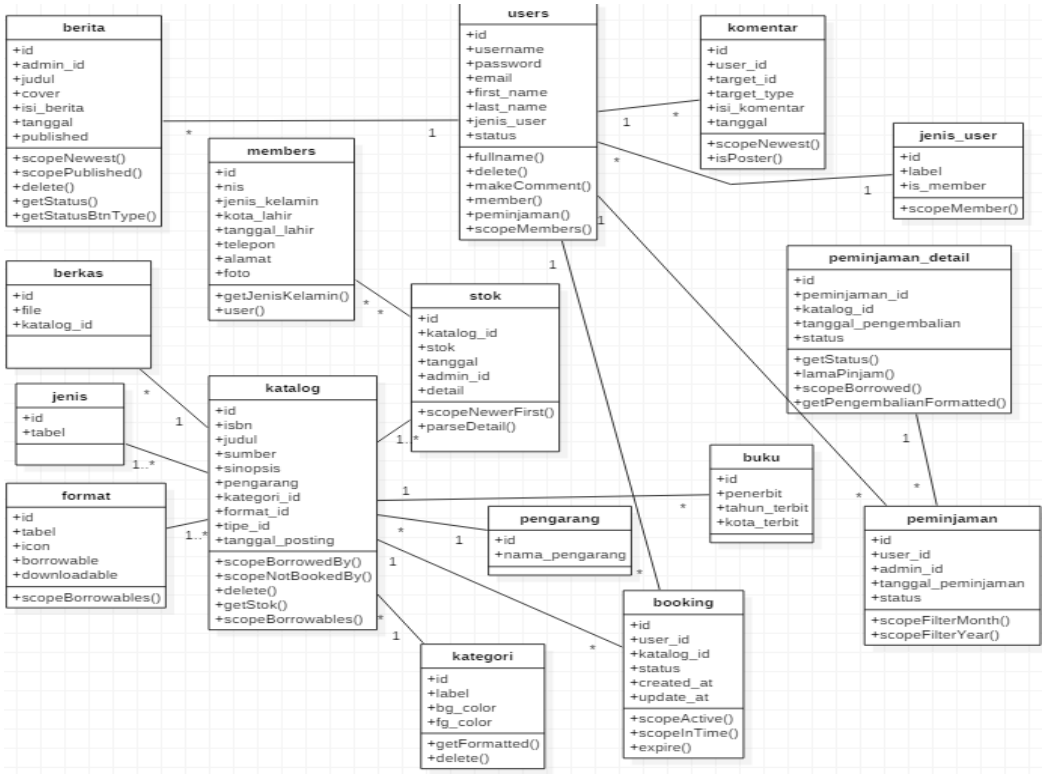
Gambar 4.3 Manage User Data (*Mengelola Data User*) Activity Diagram



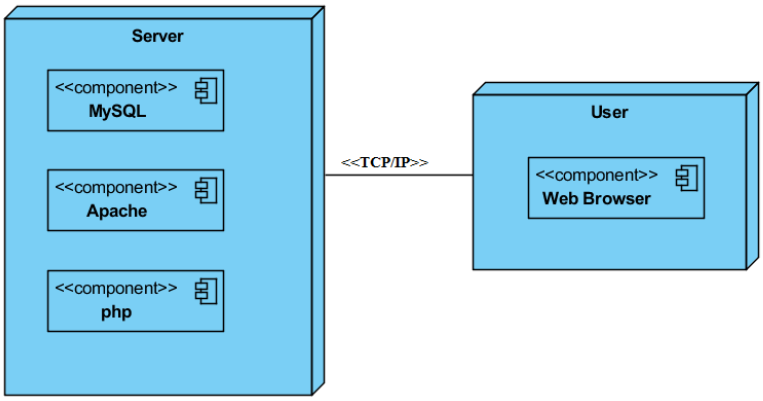
Gambar 4.4 Manage Borrowing Transaction (*Mengelola Transaksi Peminjaman)*Activity Diagram



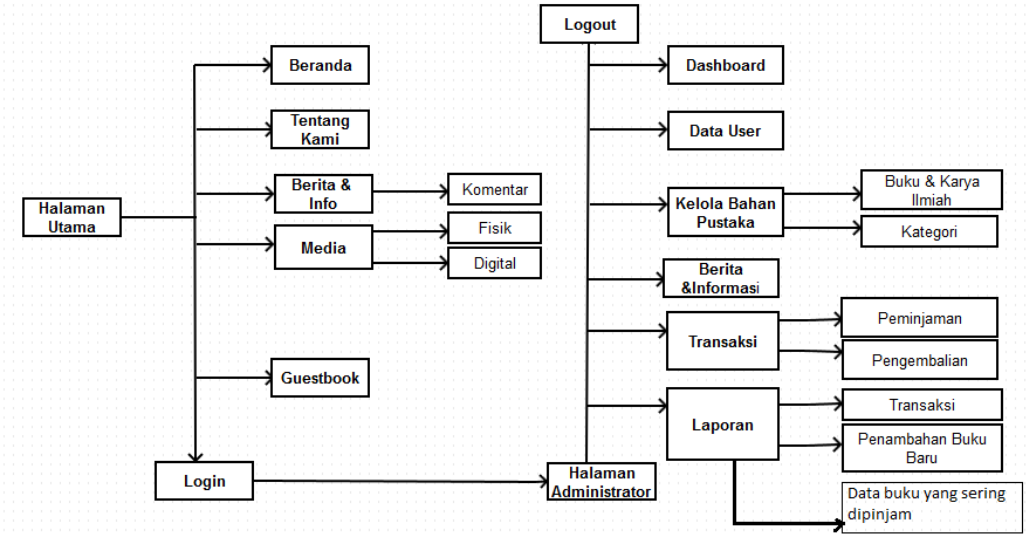
Gambar 4.5 Managing Literature (*Mengelola Bahan Pustaka*) Activity Diagram



Gambar 4.6 ***Class Diagram***



Gambar 4.7 ***Deployment Diagram***



Gambar 4.8 Structure of main Menu