

Analyze Application Building Management Of The Bank Indonesia Representative Office West Java

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Abstract: One of the facilities and assets owned by Bank Indonesia is an official residence intended for permanent employees, office buildings, and other facilities such as borrowing rooms and goods that can be used by employees to support office activities. But in the implementation of maintenance of official houses and office buildings as well as the process of requesting room loan and goods still done manually. Therefore, a Building Management application is needed that can help the maintenance activities of official house buildings and office buildings as well as the process of requesting the loan of rooms and goods. Building Management application is a software that is used for building maintenance and management of all building needs including borrowing space and goods in an office building. This study aims to accelerate the process of requesting repairs to official office buildings and office buildings as well as borrowing rooms and goods. In addition, this application also generates automatic report recording output. The method in this study use V-Model is an extension of the waterfall model and is based on the association of the testing phase to each appropriate development phase. The result in this study is application to be built is based on the website using the CodeIgniter framework and the V Models system development method with stages arranged starting from verification which contains the needs analysis stage, design to the coding phase and also the validation process that contains testing of the application to determine application functionality and also know the level application usability for the user.

Keywords: Building Management; V Models; Framework Codeigniter; Indonesian Bank

INTRODUCTION

Bank Indonesia as the central bank that plays a role in maintaining monetary stability and the good financial system as well as the Indonesian system needs adequate supporting facilities to run smoothly (Bidari, Simangungsong & Sesaria, 2021). One of the facilities and assets owned by Bank Indonesia is an official residence intended for permanent employees, as well as other facilities such as facilities and goods that can be used by employees to support office activities. In its implementation, the maintenance and repair of official residences and offices is still the responsibility of Bank Indonesia. The maintenance system for these buildings and facilities must be neatly organized and recorded (Raza, Umer, Qureshi, & Dahri, 2020). Before the request for maintenance and borrowing of goods in the West Java Bank Indonesia Representative Office was carried out manually, namely through a short WhatsApp application sent by building maintenance or borrowing goods to logistics employees which were considered less effective because they had several shortcomings such as the recording process could not be carried out. Just remembering quickly can make recording errors and take a long time.

Therefore, after the author has carried out observations in the West Java Bank Indonesia Representative Office, the author will make a "Case Study Building Management Application For The Bank Indonesia Representative Office West Java" which is considered to be able to assist the building maintenance process, room borrowing and goods lending can be done and used easily and effectively. This application is used by applicants who are permanent employees of Bank Indonesia and Administrators who are employees of the logistics division tasked with maintaining buildings and facilities as well as experts who are employees to carry

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out execution of home and office repair work. This application runs on a web base which is considered by the author to have been widely used by device users so that it is easy to use. This application can perform tasks such as recording building maintenance and borrowing rooms and goods according to their availability which can be seen before making a loan. This will make it easier for the Administrator as an employee who registers to register and record the maintenance of buildings and facilities in the office environment (Griffin, 2021).

Application management in a company is very important (Swara, 2020). Therefore, the importance of building application management can be started from the information system section. The information system is a complete network of a very important system to support the flow of the running of the company (Prihandoyo, 2018). So this study discusses the importance of building management applications for Bank Indonesia companies in West Java. Several previous studies such as research by Rodrigues, Teixeira, Matos & Rodrigues (2019) study development of a web application for historical building management through BIM Technology, and then PWA, Maulana, Andini, & Nadziroh, (2018) study method UML (Unified Modeling Language). Le, Le Tuan, & Tuan (2019) study Smart-building management system: An Internet-of-Things (IoT) application business model in Vietnam conducted similar studies but still have different results, so on this basis, this study aims to determine Application Building Management Of The Bank Indonesia Representative Office West Java.

LITERATURE REVIEW

The system is a collection or group of any parts or components, both physical and non-physical that are interconnected with each other and work together in harmony to achieve a certain goal (Djahir & Pratita, 2015). According to (Hutahaen, 2015), in order for a system to be said to be good, the system must have the following characteristics:

a. Have Components

The first characteristic of a system is that it has components. This component is part of an interaction system, where all these components interact with each other. Each component or what can also be referred to as a subsystem in a system has the properties to carry out certain functions in an application.

b. Have Limits or Boundaries

This limitation is a barrier from a system to other systems, which makes the system into a unified whole system, and shows the scope of the system.

c. Having an External Environment from the System or Environment

The characteristics of the next system is to have an external environment of a system, or what is called the environment. Environment is the whole system and also the environment that is outside the boundaries or boundaries of a system.

d. Have an Interface

Interface or interface is the next characteristic that must be owned by a. A system will be considered as a system that can be operated properly and optimally if the system has an interface

e. Have System Input or Input

The next characteristic of a system is the input or input system. The input system or this input system is the type of energy used to be entered into a system. This input or input consists of two types, namely:

1) Maintenance Input

Maintenance input is an input related to the maintenance of a system, which is an energy that is entered into the system, so that the system can run properly and optimally.

2) Signal Input

The input signal is energy which is a signal, which means that this energy greatly affects the transfer process and also the transmission of data or information owned by a host to be passed through the system to the output or output.

f. Having the Output or Output of a System

Output or output is a characteristic of the next system. Output is the output of energy or results that are passed on by the input. This result or output can be in the form of data display and also information that appears on the user display, which contains information.

g. Have Processor and Processing System

The next characteristic that must be owned by the system is a data processor or system processing. Data processing or system processing is a component or part of a system that has the main task of processing input from a system into output or output of a system.

h. Having Goals from the System

The last characteristic is perhaps the most important characteristic of a system. These characteristics are the goals of the system. the target of the system is an analysis of who will use this application. Without the goal of making the system, it is certain that a system will not be useful and also useful.

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METHOD

The V-Model is an extension of the waterfall model and is based on the association of the testing phase to each appropriate development phase (Sima & Zapciu, 2021). This means that for every single phase in the development cycle, there is a directly related testing phase. This is a very disciplined model and the next stage starts after the completion of the previous stage.

There are several stages of verification in the V-Model, each of which is described in detail below (Graesleer & Hentze, 2020) :

1. Business Requirements Analysis
2. System Design
3. Architectural Design
4. Module Design
5. Coding Phase

The different Validation phases in the V-Model are described in detail below:

1. Unit Testing

Unit testing is testing at the code level and helps eliminate bugs at an early stage, even if all defects cannot be found by unit testing.

2. Integration Testing

Integration testing is associated with the architectural design phase. Integration tests are carried out to test the existence and communication of internal modules in the system.

3. System Testing

System testing is directly related to the system design stage. System testing examines all system functions and system communication in development with external systems. Most of the software and hardware compatibility issues can be found during the execution of this test

4. Acceptance Testing

Acceptance testing is associated with the business requirements analysis stage and involves testing the product in the user environment. Acceptance testing uncovers problems

RESULT

Ongoing System Analysis

Information services for requests for repairs to ongoing buildings and facilities at official residences and Bank Indonesia office buildings are currently still being done manually. Based on the results of observations made to endusers, the following problems faced by the West Java Representative Office of Bank Indonesia can be seen in Figure 1.

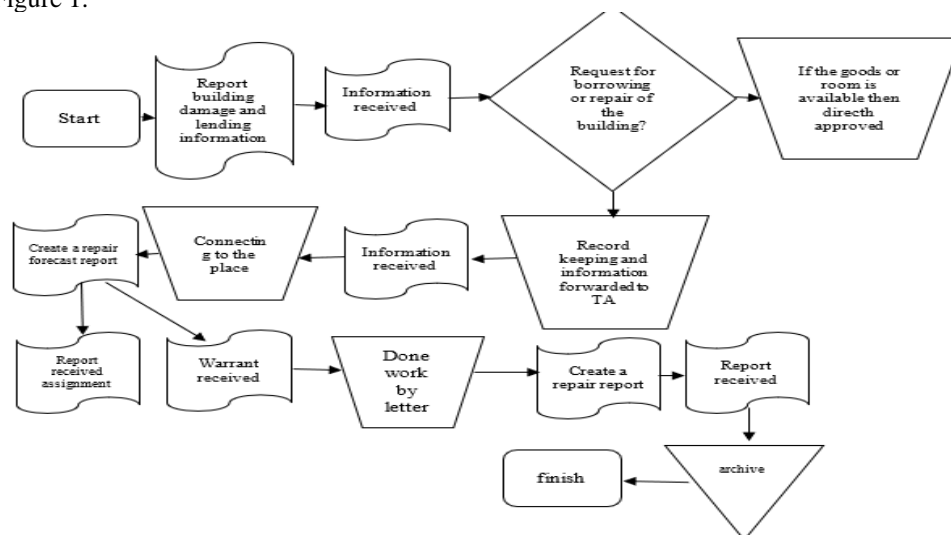


Figure 1. Ongoing System Analysis

System Analysis to be developed

The application that will be developed by the author is an Android-based Building Management Application. This information system will later make it easier for users such as applicants to report damage to official homes or office building workspaces as well as borrowing rooms and facilities, then the convenience for administrators is recording reports that are more organized and make it easier to make reports, as well as for experts in making

estimates, prices and reporting of actual prices. All of these activities can be carried out without the need to directly go to the logistics staff to report them so that activities can be carried out more efficiently and effectively. Application flow can be seen in Figure 2 below.

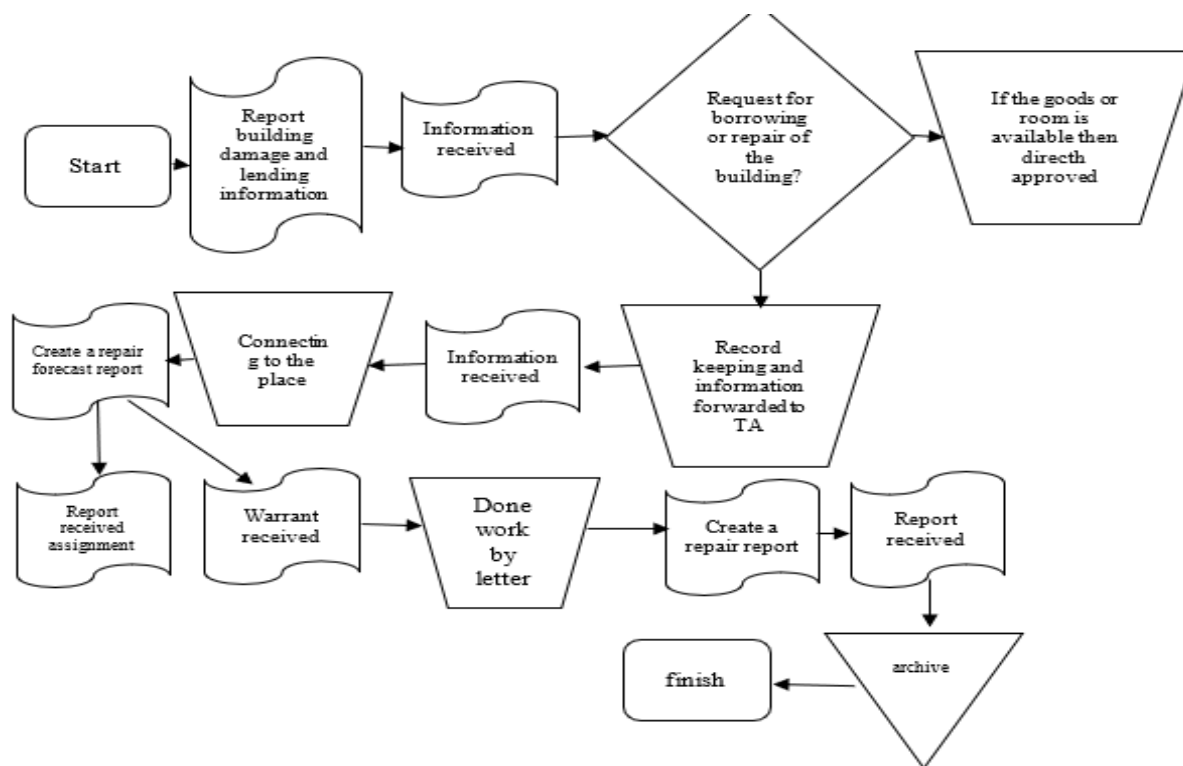


Fig 2. System To Be Developed

Hardware Requirements

The hardware requirements needed in making the Building Management Application at the representative office of Bank Indonesia West Java are as follows

1. Operating System Windows 7, 32 bit
2. PC or Laptop with at least 10 GB of storage media
3. Minimum RAM 3 GB
4. Monitor (if Using PC)
5. Modem or device for internet access

Software Requirements

The software needed in making the Building Management Application at the Bank Indonesia West Java representative office is as follows:

1. Web Browser (Chrome)
2. Web Server (XAMPP) php version 7.4
3. Sublime text 3

System planning

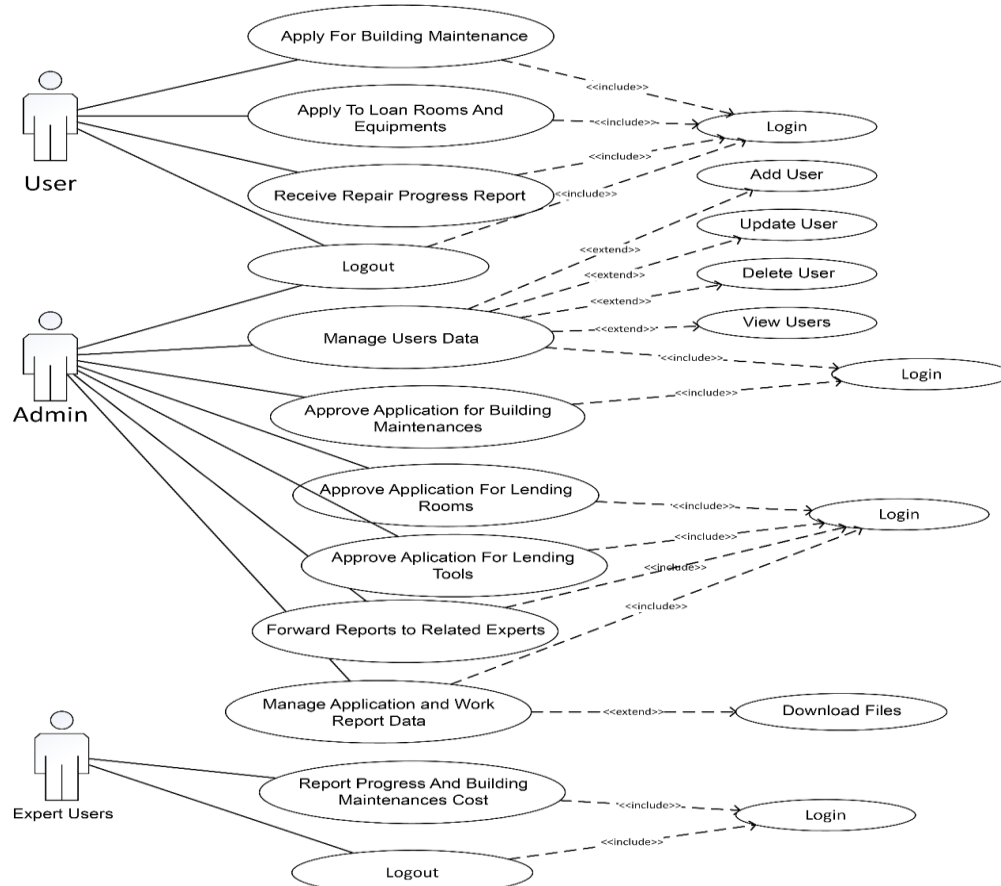
Use Case Diagrams

Use Case This diagram is made as a form of actor needs based on what he does to the system. The following is a Use Case Diagram to explain the work process of the Management Building Application at the representative office of Bank Indonesia, West Java Province, which can be seen in Figure 3.

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Activity diagrams

Activity diagrams are used as a depiction of the system functionally explaining logical processes or functions that are implemented by the program code.

1. Activity diagram User Make a loan application tool

This activity diagram describes the flow of user activities who will make an application for borrowing tools.

Activity diagram List can be seen in Figure 4.

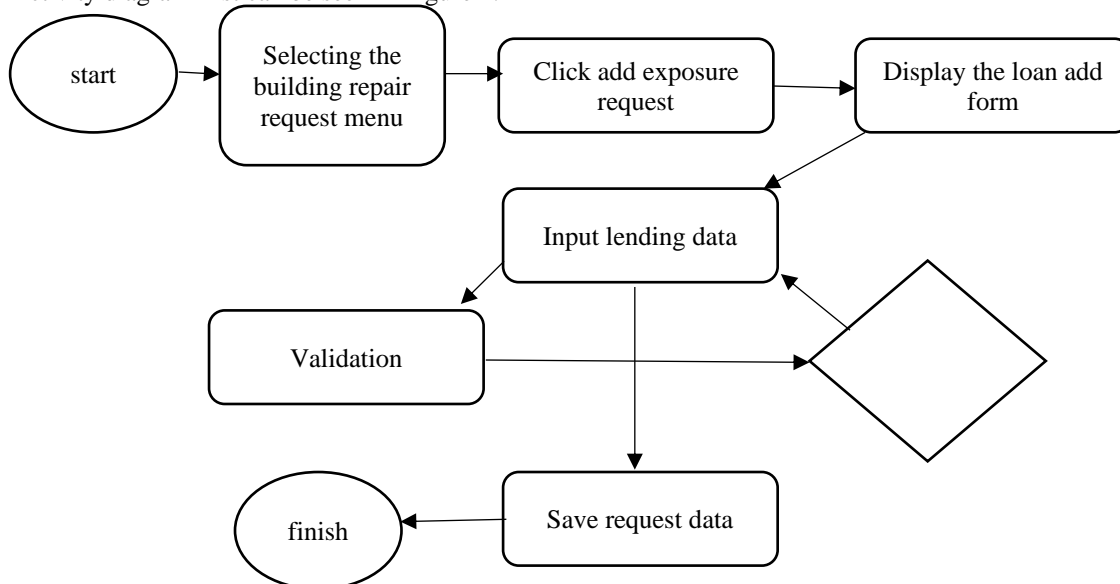


Fig 4. Activity Diagram User Apply For Tool Loan

*name of corresponding author

2. Activity diagram User Make a loan application room

This activity diagram explains the flow of user activities who will make a room loan application. Activity diagram List can be seen in Figure 5.

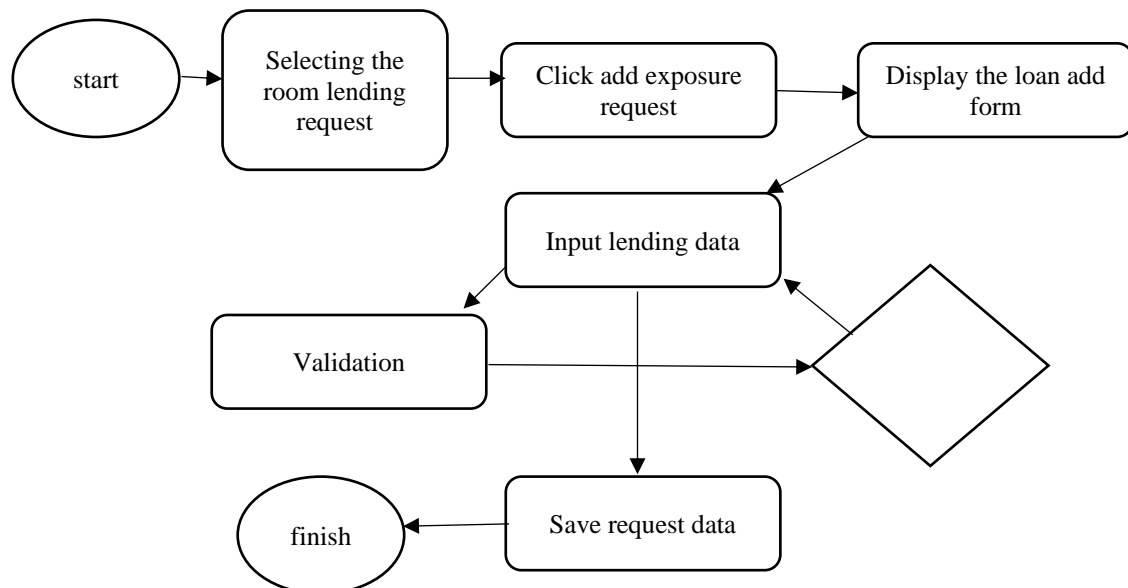


Fig 5. Activity Diagram User Apply For Room Booking

3. Activity diagram User Make application for Building Repair

This activity diagram describes the flow of user activities who will make a request for building repairs. Activity diagram List can be seen in Figure 6.

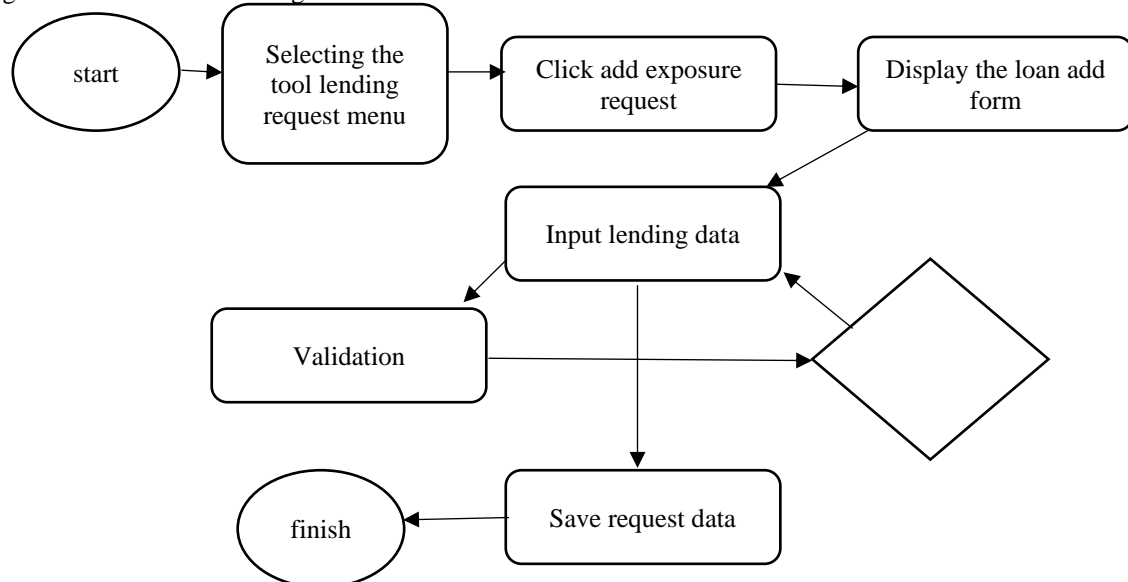


Fig 6. Activity Diagram User Request

Sequence Diagrams

Sequence Diagram Is a diagram that describes the interaction between objects and indicates the communication between these objects. The following is an image of the Sequence Diagram of the Management Building Application at Bank Indonesia representing West Java.

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1. *Sequence Diagram of User Requesting Tool Borrow*

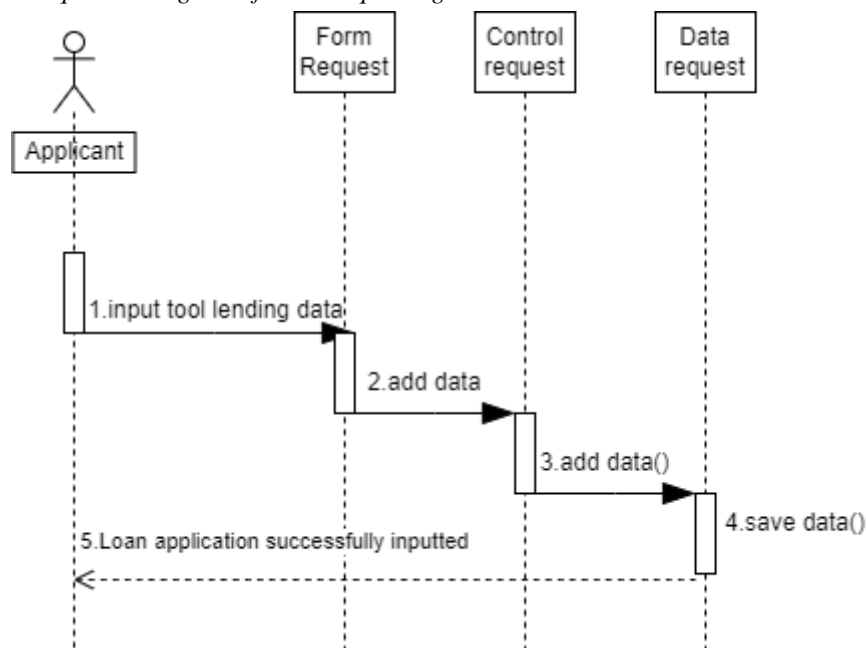


Fig 7. Sequence Diagram of User Requesting Tool Borrow

2. *Sequence Diagram of User Requesting Room Borrowing*

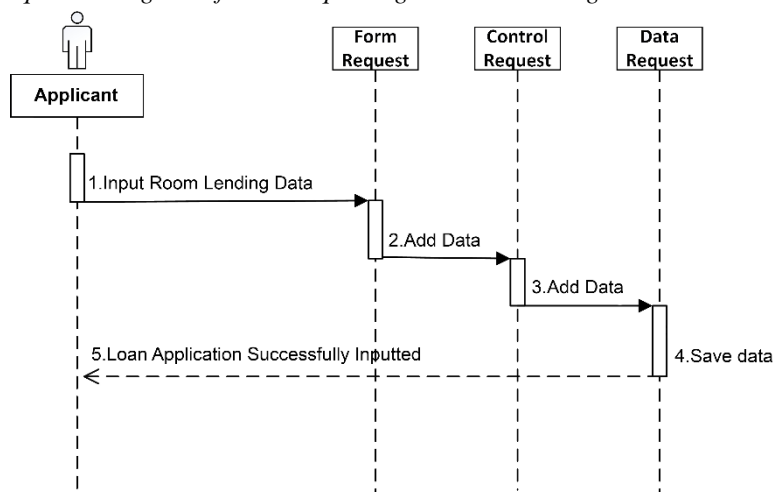


Fig 8. Sequence Diagram of user Borrowing Rom

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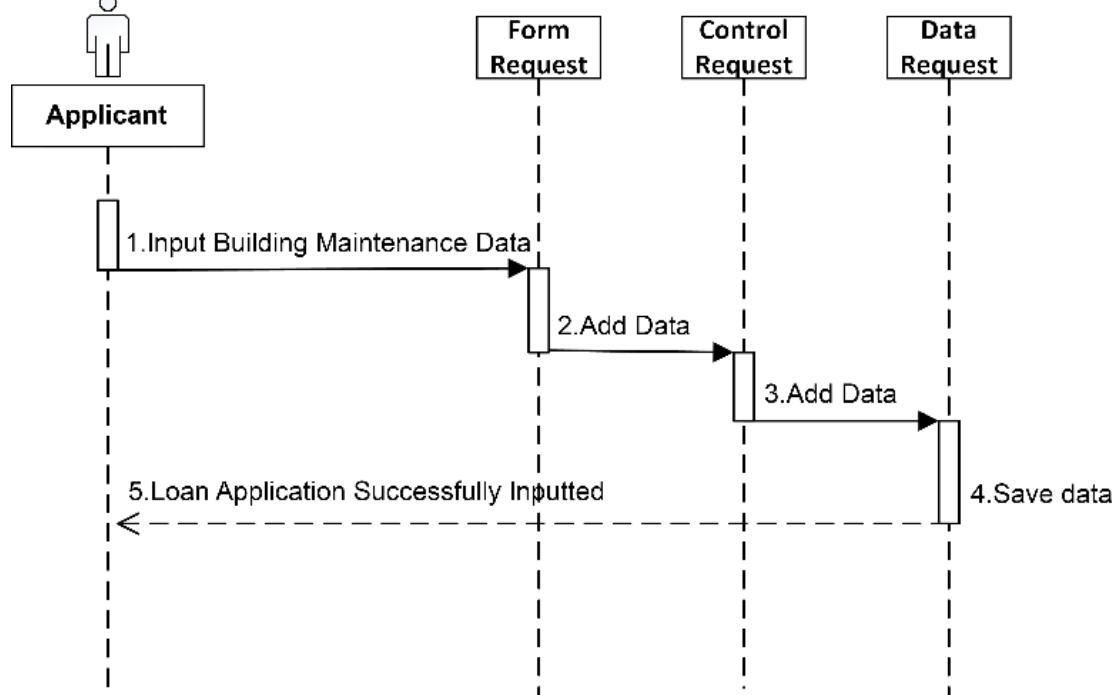
3. *Sequence Diagram of User Requesting Building Repair*

Fig 9. Sequence Diagram Building Maintenance

Database Design

Database design on the Management Building Application at Bank Indonesia, a representative of West Java, is a very important part. This database must be designed as a place to store data connected to the application. The database used in this information system is the MariaDB database.

1) Entity Relationship Diagram

Entity Relationship Diagram (ERD) is a process that shows the relationship between entities and their relationships. The following is an ERD image of the Management Building Application at Bank Indonesia representative of West Java.

User Interface Design

This interface design is intended to make a sketch of the system page to be built, the following is an overview of the system design to be built:

Crash Reporting Page Design

This page is used by the applicant to input damage data into the system. It can be seen in Figure 10 below:

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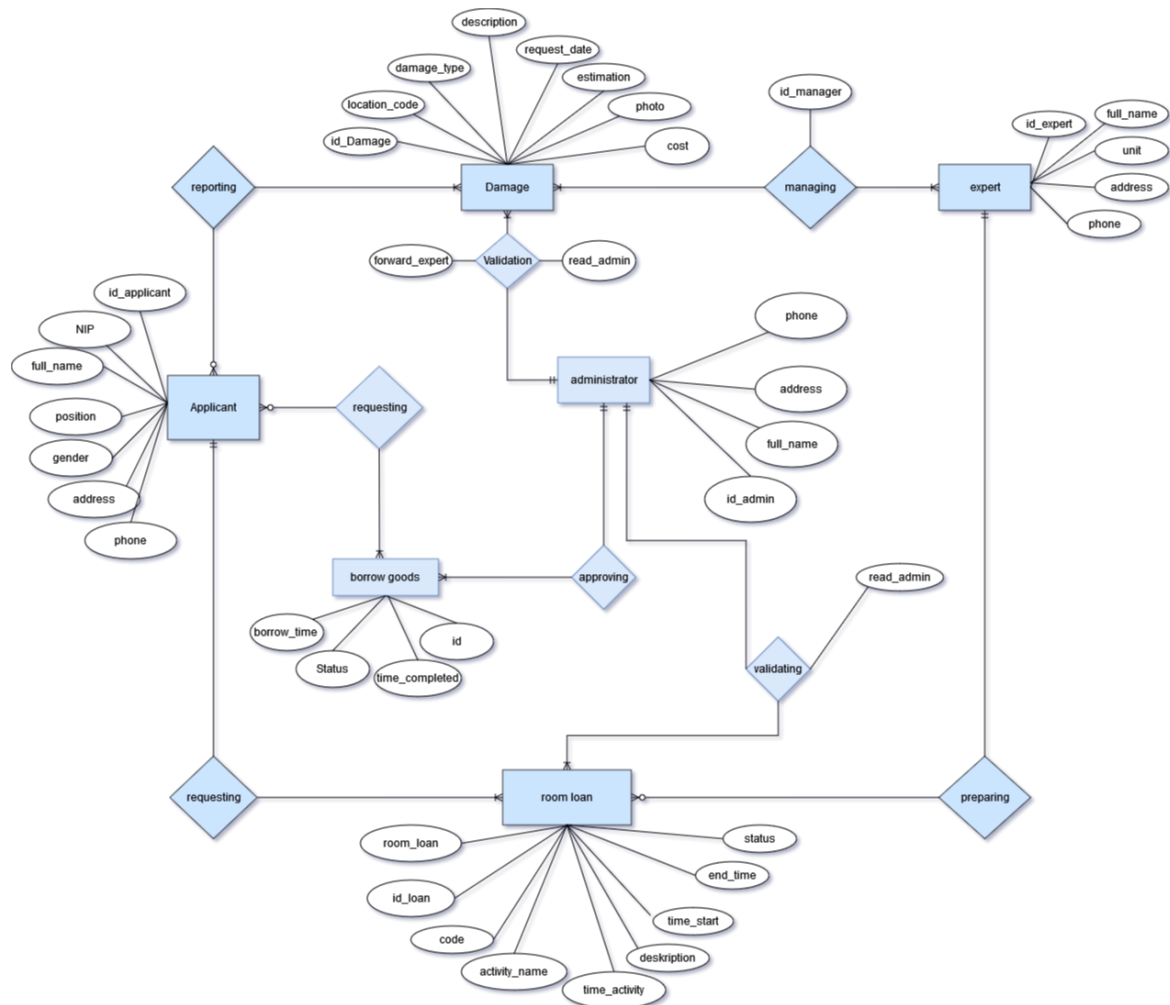


Fig 10. ERD System

User Interface Design

This interface design is intended to make a sketch of the system page to be built, the following is an overview of the system design to be built.

Crash Reporting Page Design

This page is used by the applicant to input damage data into the system. It can be seen in Figure 11 below:

The screenshot shows a web interface for reporting damage. On the left is a sidebar with a user profile and navigation links: 'Laporan Kerusakan', 'Peminjaman', and 'Loan'. The main content area is titled 'Header' and contains a form with the following fields: 'Nama Kerusakan' (text input), 'Lokasi' (dropdown menu), 'Deskripsi' (text area), and 'Lampiran Foto' (file upload area with a 'Pilih' button). At the bottom of the form are 'Kirim' and 'Batal' buttons. A 'Footer' section is visible at the very bottom.

Fig 11. Damage Report Page

Loan Page Design

This page is used by the applicant to input loan data into the system. It can be seen in Figure 12 below:

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Fig 12. Loan Page Design

The screenshot shows the RICA MURAHOTOKU website. The main content area displays a 'Ranking Report' for the category 'Muli, Perumahan Says M1 B1'. The report lists four items with their respective scores and status indicators:

Rank	Item	Score	Status
2	Perumahan	0	Not Passed
0	Sayur Paksi	0	Not Passed
0	Sayur	0	Not Passed
2	Sayur	0	Not Passed

Below the ranking report, there is a section titled 'Pilihan' (Choice) which lists four items with their respective scores and status indicators:

Rank	Item	Score	Status
0	Sayur Paksi	1	Not Passed
1	Sayur	7	Not Passed
7	Sayur	8	Not Passed
8	Sayur	8	Not Passed

The screenshot shows a WhatsApp chat window. At the top, the contact name is 'SISA MUSAQAMAH' with a profile picture of a person with glasses. Below the name is a status message: 'Oh, I'm in Nursing class...'. The chat history shows a message from the contact: 'Hi Korpri Petalita!'. Below this, there is a text input field with a placeholder 'Send message...' and a 'Send' button. The bottom of the screen shows a keyboard with a 'Send' button.

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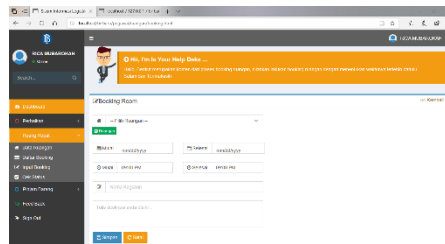


Figure 15. Room booking page

Based on Figure 15, it can be seen that this is the display of room reservation input page.

Acceptance Testing

According Aydiner, Tatoglu, Bayraktar & Zaim (2019), This test uses the black box method by providing access to respondents in accordance with the available access rights, in this case testing is carried out on 3 categories, namely testing of users as applicants, administrators and experts.

1. User

The application gets a score of 530 from a maximum score of 665 points with a percentage value of 79.6%. So the author feels that this application is sufficient to meet user needs and even tends to be good in terms of features.

2. Admin

The application gets a score of 306 from a maximum score of 360 points with a percentage value of 85%. So the author feels that this application is sufficient to meet the needs of administrators and even tends to be good in terms of features.

3. Experts

the application gets a score of 65 from a maximum score of 75 points with a percentage value of 86%. So the authors think this application is good enough to meet the needs of experts in terms of appearance.

CONCLUSION

Based on the process carried out by the author starting from the process of designing, developing and implementing a building management application, the case study of Bank Indonesia's West Java representative office, the author can draw the following conclusions the application can provide convenience for the Administrator in approving the building maintenance process, borrowing the proposed room and equipment and making notes as a report to the manager. Applications can provide convenience to experts in carrying out repair tasks and reporting progress and finances. Applications can provide convenience for applicants in reporting damage to buildings, borrowing tools and rooms. Applications can be a solution for tidying up building maintenance records, borrowing tools and workspaces. facilitate the Administrator in approving the process of reporting damage to buildings, borrowing tools and rooms. Based on the conclusions that the authors made, the authors also have several suggestions regarding the development of management building applications in the future is the application does not have a password change feature which is carried out by the user, experts or admin. So far, the existing password is automatically degenerated by the system in the form of a user id. The application does not yet have a date filter feature in terms of downloading reports, so the administrator can only filter reports manually in Microsoft excel.

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