Fixed Asset Loan Scheduling Information System Using the Greedy Algorithm Method (Case Study: Cipelah Village)

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Abstract

To facilitate and streamline the activities of recording or inputting asset data in CIPELAH VILLAGE, computerization is needed in this village to schedule fixed asset loans. The fixed asset loan scheduling system is designed to help ease the asset cation staff when managing still manual or in-writing assets. This system is designed to manage computerized fixed asset scheduling, manage fixed asset loan data, manage borrower data, manage loan data, manage return data, manage asset data, and manage reports by asset cation staff. Then, those who can view the report are the asset division staff and the Village Head, and those who can manage the collateral data are the financial division staff. The research method used is literature study, field study, interview, and observation, and the system development technique used is OOAD (Object Oriented Analysis Design), and the method used is the GREEDY method. After the system is analyzed and designed in detail and the technology is selected, the next stage of system implementation is carried out. The implementation and system testing stage is a stage that is carried out after the system has been analyzed and designed in detail; this stage is also the stage of implementing the system for operation. The programming language used is HTML and PHP with the PHPMyAdmin database.

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Keywords : *: Assets, OOAD, PHPMyAdmin*

INTRODUCTION

The integration of current technological advancements with individuals' daily lives is inseparable. Technological advancements, specifically globalization, have facilitated direct access to diverse information occurring in various regions across the globe. Undoubtedly, the rapid advancement of technology has precipitated significant transformations in various aspects of human existence, encompassing both the realms of civilization and culture. This alteration also exerts a significant influence on the evolution of societal values. Individuals hailing from Eastern cultures and adhering to customs, such as those observed in Indonesia. Presently, within the context of Indonesia, there is a conspicuous manifestation of the substantial impact of technological advancements on the cultural norms and values upheld by the populace, encompassing both urban and rural communities. This phenomenon can be attributed to the process of modernization.

Technological advancements, including television, telephones, mobile phones, and the internet, have not only permeated urban communities but have also extended their reach to individuals residing in remote villages. Consequently, the general public has convenient

access to a wide range of information, encompassing favorable and unfavorable aspects. Regardless of our acknowledgment, there is an observable gradual influence on individuals' lifestyles and cognitive processes, particularly in rural communities, due to the pervasive imagery associated with them. It is evident that technological advancements have significantly impacted individuals' lifestyles and cognitive processes, particularly among the adolescent demographic. In contrast to previous times when students primarily carried textbooks and stationery, it is now commonplace to observe students bringing cell phones as an obligatory accompaniment to school. Regardless of the necessity for a cellphone as a communication device, it is evident that contemporary adolescents consider it an indispensable social tool. Individuals experience an enhanced sense of coolness and confidence in direct proportion to the quality of their mobile devices despite potential limitations in their proficiency with utilizing the advanced functionalities of said devices.

One such location is Cipelah Village, where the residents have developed a certain level of familiarity with technology, albeit only partially. In mobile technology, it is evident that most individuals possess a diverse range of cellular devices. Nevertheless, Cipelah Village's progress in adopting modern technology has been limited due to numerous obstacles. In Cipelah Village, there exists a diverse range of assets that necessitate effective management and require the awareness of the village community. One such asset category is fixed assets. There needs to be more knowledge within the community regarding the available assets in the village and the procedures for accessing these assets through online borrowing platforms.

Fixed or non-current assets refer to the tangible or intangible assets held by a company that possess a physical form and provide economic benefits for a period exceeding one year. The company acquires these assets to facilitate its operations, and they are not intended for resale. The effective management of fixed assets is crucial for ensuring the production of accurate and dependable information in regional financial reports. The management of regional fixed assets aims to enhance efficiency and effectiveness and generate additional value in asset management. This condition serves as the primary capital for regional governments to enhance their financial capabilities and support their role as providers of public services to the community.

Before the advent of contemporary information system technology, the village of Cipelah relied on a manual system for managing asset lending activities. During that period, the asset loan manager, the village asset administrator, was responsible for documenting village assets, including fixed assets. In the event of an augmentation in fixed assets or the occurrence of borrowing, the relevant information is documented in written form and subsequently communicated to the Village Head. The accumulation of errors in recording and data separation can occur when there is an increase, decrease, or borrowing of fixed asset data. Documenting asset loans in written form can result in data loss and the lack of tangible evidence of the loan. Consequently, this absence

of information may hinder the public's ability to ascertain whether the asset was borrowed, lost, or damaged.

One potential solution to address this issue involves implementing an information system, which can enhance the effectiveness of data processing and subsequently generate more efficient reports.

Based on the background above, the authors have studied fixed assets within the village. Hence, the author puts forth a suggested title, specifically "A Study on the Implementation of the Greedy Algorithm Method for Scheduling Fixed Assets Loans in Cipelah Village's Information System," to address the challenges encountered in Cipelah Village.

Objective

1. The objectives of this thesis research are as follows: 1. To conduct an analysis and design of a web-based fixed asset lending scheduling information system in Cipelah Village to enhance the performance of village employees.
2. This paper aims to explore the process of constructing a web-based fixed asset information system for Cipelah Village utilizing the Unified Modeling Language (UML) model. The objective is to enhance the organization and coherence of the system's documentation, thereby facilitating user comprehension and interaction.

Theoretical Basic

In the study conducted by Yanuardi and Permana (2018), Sutabri T. asserts that an information system is a comprehensive system that encompasses the collection, processing, storage, analysis, and dissemination of information, all of which serve a specific purpose. According to Heriyanto (2018), an information system is comprised of interconnected subsystems that are brought together to form a unified entity. These subsystems collaborate and integrate in specific ways to perform data processing functions. The system receives input in the form of data, processes it, and generates output in the form of information. This information serves as a foundation for making valuable decisions that have tangible effects in the present and future. Furthermore, the system supports operational, managerial, and organizational strategies and utilizes various resources to achieve its objectives. Based on the analyses provided by various experts in the information field, an information system is a procedural mechanism for processing data, resulting in the generation of information to attain specific objectives.

The greedy algorithm is a straightforward variant of the Best First Search algorithms, focusing solely on estimated costs, represented explicitly by the function f(n) = h(n). Greedy algorithms are a class of algorithms that consistently select the most favorable temporary or local solution at each iteration to address a given problem. The optimal decision will be made at each stage without considering its impact on the overall solution. According to Khader, Nurhasanah, and Kartika (2018: 208).

As per the Big Indonesian Dictionary, a schedule refers to the allocation of time that is organized according to a predetermined plan for the execution of tasks. A *schedule* can be defined

as a comprehensive enumeration or tabulation of activities, presenting an organized plan of action with a meticulous allocation of time for their execution. Scheduling is the systematic process of organizing and incorporating activities into a predetermined timetable, as defined by the Department of Education and Culture in 1995. A broader conceptualization involves allocating a collection of occurrences (such as lectures, vehicles, public events, etc.) using a finite pool of resources across a specified duration while adhering to pre-established limitations. These limitations can be classified as rigid or flexible constraints, with rigid constraints taking precedence over flexible constraints.

Fixed assets refer to the tangible assets owned by a company. The respective company exclusively owns these assets. The company utilizes its fixed assets to facilitate its operational activities, enhancing its overall performance and maximizing profitability. The company's fixed asset inventory comprises both tangible and intangible fixed assets. As per the Financial Accounting Standards for Entities Without Public Accountability (SAK ETAP) (2018:49), *fixed assets* are defined as tangible assets that are held to produce or supply goods or services, rent to others, or for administrative purposes.

Additionally, these assets are expected to be utilized for a duration spanning beyond a single accounting period. According to Sofia et al. (2018:240), *fixed assets* can be defined as tangible assets that are utilized in the operational activities of a company, possess significant value, and are not intended for sale to customers. Fixed assets encompass tangible resources such as land, buildings, vehicles, machinery, and equipment.

METHOD

In preparing this thesis, the research methodology used was the descriptive method. Descriptive research is a method aimed at describing existing phenomena at present or in the past. (HAMDI, Asep Saepul, 2014 : 5).

The descriptive method describes the variables that play a role in providing a situation or situation and the relationship between these variables. The method is divided into two techniques, namely, data collection techniques and system development techniques.

In conducting research to obtain data and information, the method used in the data collection process is carried out by using the following data collection techniques:

1. Observation

   By conducting research directly on the object under study by observing and recording the necessary data and information related to research, directly going into the field with the Head of Cipelah Village and the village asset admin to see and research the previous and current conditions.
2. Interview

   Namely, the method of collecting data by conducting interviews/interviews directly with the authorities, namely with village officials, to provide the information and data needed in the research and directly interviewing the informant, namely the Village Head, by asking various questions related to the management of existing assets

in the village, as well as how to borrow assets when the community is going to borrow these fixed assets.

3. Literature Study

   This technique examines problems by analyzing literature such as books, magazines, bulletins, and internet media.

Development Methods

Object-Oriented Analysis and Design (OOAD) is a systematic approach to analyzing requirements by considering the classes and objects involved within the problem domain. This analysis method serves as a foundation for developing software architecture, which involves the manipulation of system or subsystem objects. Object-Oriented Analysis and Design (OOAD) is a contemporary approach that involves a paradigm shift in problem-solving, wherein a model is constructed based on the principles and ideas derived from the real world. The foundation of creation is an entity that encompasses both a data structure and behavior in a unified manner.

RESULTS AND DISCUSSION

Analysis of The Running System

Based on the findings obtained from research conducted through direct observation at the Cipelah Village Office, an analysis of the existing system can be conducted.

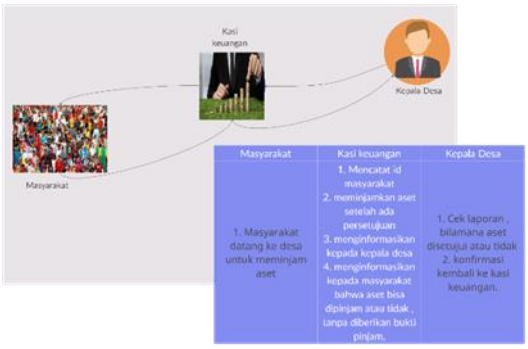


Figure 1. Current System Analysis

Document Analysis

a. Functional Analysis

   Based on the functional analysis, the mentioned statement aligns with the established organizational structure within the village about village assets. Specifically, the financial section is crucial in supporting the Village Secretary in executing treasury functions related to village financial administration services. This condition includes the preparation of the Village Cash Budget Plan (RAK Desa) and ensuring proper administrative practices. The tasks encompassed in this role involve the reception and preservation of funds, the depositing and payment of funds, and the administration and record-keeping of village revenue and expenses, all within the framework of implementing the Village APBD. Additionally, there may be involvement in managing village assets, including managing and borrowing fixed assets in Cipelah village. When individuals visit the village to request the borrowing of assets, the community solely provides their identification and contacts the financial department. Subsequently, the financial department contacts the village leader to

obtain an approval report. However, the community needs to have a loan letter as evidence, creating potential misunderstandings.

b. Procedural Analysis

Procedural knowledge frequently manifests as a sequential set of instructions that must be followed. Based on the findings of the procedural analysis, it can be inferred that the lending asset procedures in the village need a more comprehensive structure. This condition is evident from the investigation, which reveals that the procedure for lending assets does not involve direct engagement with the asset staff. The existing protocol exclusively relies on the outdated procedure, which needs provisions for asset management or dedicated personnel for fixed asset lending. The current management of asset lending could be more efficient due to the involvement of the financial director, whose primary responsibility lies in administrative oversight rather than asset lending operations.

c. Documentation Analysis

During the process of documentation analysis, it was observed that the village's records about the borrowing of village assets are still being manually recorded and need to transition to a web-based system. When the borrower desires to obtain the asset, they must complete the necessary written documentation. Continuous implementation of this process may lead to potential misunderstandings or data loss, raising concerns about the vulnerability of the data to manipulation by unauthorized individuals.

d. Questionnaire Results

Table 1. Questionnaire Results

No	Description	Response	
		S	T
1.	Assets are managed well by the asset chief.		√
2.	The procedures used are appropriate.		√
2.	Fixed assets can be loaned out without a schedule.		√
3.	Asset borrowers must carry the identity of the asset.	√	
4.	Borrowers must be provided with proof of loan assets.	√	
5.	Loan documents are well structured according to cation.		√
6.	The borrower is given a deadline.	√	

e. Analysis Results

Based on the comprehensive examination encompassing functional analysis, procedural analysis, and documentation analysis, it can be inferred that the existing asset lending system in Cipelah Village necessitates significant enhancements and the development of a novel system. Nevertheless, the current system needs more effective management due to the absence of a dedicated asset manager. The author has formulated a theoretical

framework for a novel system based on prior scholarly investigations.

New System Analysis

After identifying shortcomings in the previous analysis, the proposed system analysis entails a comprehensive depiction of the system slated for enhancement. The proposed system is designed based on the flow concept, which has been thoroughly researched and analyzed to develop a novel system.

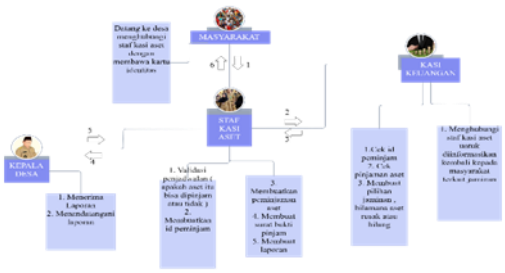


Figure 2. Analysis of the proposed system

Use Case Analysis

A use case is a comprehensive portrayal of a system's operational capabilities and functionalities as perceived and articulated by the user. Use cases function by delineating the customary interaction between the user or users of a given system and the system itself, employing a narrative that illustrates how the system is utilized. The provided image pertains to the analysis of a use case diagram.

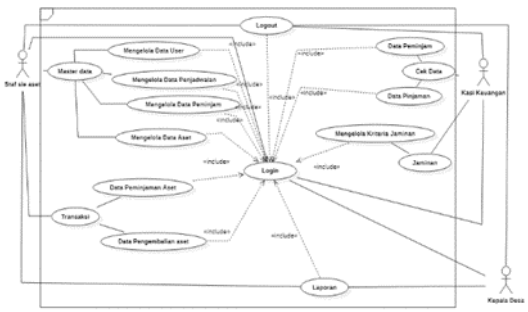


Figure 3. Use case diagram

The depicted image illustrates the utilization case diagram, elucidating the interconnection between actors and use cases. Actors represent users or other subsystems, facilitating their interaction with the system. In system design, a use case refers to a chronological series of events that delineates the interaction between a user and the system. The system's functionality is delineated through the identification of use cases, which are approached from an external perspective and serve the purpose of conducting feasibility testing on the system. Use case diagrams serve the purpose of elucidating the advantages of a system as perceived by individuals external to the system.

System Implementation

Login Implementation



Figure 4. Login page display

Main page implementation



Figure 5. Main page display

Scheduling page implementation

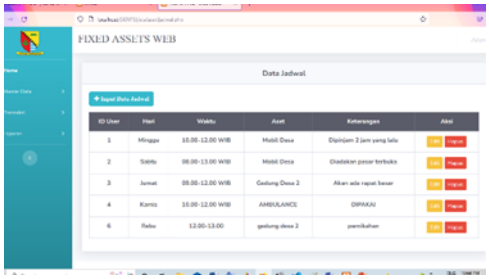


Figure 6. Scheduling page display

Asset Data Page Implementation



Figure 7. Display of Asset Data Pages

Loan Page Implementation

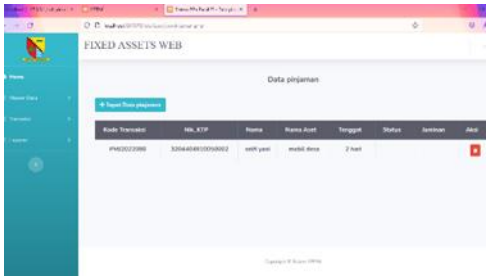


Figure 8. Loan page display

CONCLUSION

Based on the results of the thesis research conducted and the discussion of existing problems, the conclusions can be drawn as follows:

1. How to analyze and design a web-based fixed asset lending scheduling information system in Cipelah Village has been completed well through the system that has been created.
2. How to design an information system using the greedy algorithm method, which has been resolved through optimization calculations that have determined the optimal value of a completed system.
3. How to build a web-based fixed asset information system for Cipelah Village using the UML model has been completed by creating a concept so that the system becomes more structured.

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