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Transportation Service Report Information System Using Prototype Method

(Case Study : CV. Femarse Inti Mulia)

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ABSTRACT

CV. Femarse Inti Mulia, a company engaged in the distribution of products, still processes reporting data, especially payments for transportation services, manually using Microsoft Excel. Problems arising from the old system are errors in the calculation of total wages for transport services for each pen, as well as the occurrence of differences in recording by the warehouse and the finance department. In addition, when using Microsoft Excel formulas, typographical errors can occur, causing calculations to be different than they should be. In light of these problems CV. PT. Femarse Inti Mulia needs an information system for daily transportation service wages reports that is capable of calculating daily transportation service wages, storing this data securely, and managing daily transportation service wages reports easily, quickly, accurately, and in a well-organized manner. The use of information systems for daily wage reports is the right solution to solve existing problems. With the prototype software development method and primary data collection, it makes it easier to design the daily wage report information system.

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1. Introduction

It is very important for any company to know the financial statements in detail, accurately and quickly. One of the routine issues on CV. Femarse Inti Mulia is a salary for freight service that becomes a routine expense that becomes a daily expense. In the Law of the Republic of Indonesia No. 23 of 2003, Article 1, Paragraph 30 on Labour, wages are the rights of workers/employees received and expressed in the form of money in return from the employer or employer to the worker/employee, established and paid in accordance with an employment contract, agreement or laws and regulations, including benefits to workers/employees and their families for a job and / or services that have been or will be performed. Based on the results of previous research [1] "a web-based payroll system assisted by tools supported by use case diagrams, activity diagrams, ERD, LRS and web prototypes that will be used for a smooth payroll process to be more paper-efficient, and to perform quick and accurate calculations".

A system is a group of elements that interact with each other to achieve a specific goal [2]. The system is defined as a collection of people who cooperate with each other with the provisions of systematic and measurable rules to form a single entity that carries out a function to achieve a goal. Meanwhile, information

is data that is processed to be more useful and meaningful for the recipient, as well as to reduce uncertainty in the decision-making process regarding a situation. Information systems are an organized combination of people, hardware, software, communication networks and data resources that collect, transform, and disseminate information in an organization [3]. Information systems are a combination of information technology and human activities that utilize technology to support the activities of a company or organization, in a broader sense information systems are more associated with interactions between humans, algorithmic processes, data processing and technology utilization [4].

On CV. Femarse Inti Mulia the creation of financial statements still uses the processing of the Ms.Excel application, especially in processing wage reports for transportation services, this causes the financial department to have difficulty in obtaining detailed, accurate and fast reports. In addition, it is also prone to errors in the calculation of wages for transportation services. "With the computerization process, it can speed up data processing and report generation, and the information produced is more accurate, fast and complete and the form can be designed as desired, so that if there is a problem, it can be minimized"[5].

Information System is a structured communication consisting of hardware, software, communication networks and human resources that receive, collect, change, and disseminate information in an institution / organizationInformation System is a structured communication consisting of hardware, software, communication networks and human resources that receive, collect, change, and disseminate information in an institution / organization [7]. By using this information system is a good solution to help solve problems that exist in the company By using this information system is a good solution to help solve problems that exist in the company [8]. By using the prototype method of an information system that is designed according to needs and can run very well so that it can be used as a reference for the development of the information system to be made [9].

2. Research Method

2.1 Software Development Methods

M. Shalahudin & Rosa A.S postulate that "Prototyping is an approach to software development that directly demonstrates how a software or software components will function in its environment before the actual construction phases are prototipe" M. Shalahudin & Rosa A.S present the steps are on the prototype model [10][9] :

1. Collection of needs: developers and clients define the goals and needs that will be required.
2. Design: designing the required software and making the design the basis for prototyping.
3. Prototype evaluation: the client evaluates the prototype made according to the needs of the system.

The prototype method is a technique in information systems development where the prototype method is used to represent the system so that customers and owners of the system can get an idea of the system to be developed by the developer [11]. Prototype models can be used to clarify customers' lack of understanding about technical issues and to help software developers understand the specifics of what the customer wants. This method allows developers and customers to interact with each other during the software development process. This is certainly very profitable and facilitates the production of software [12] as outlined below [13]:

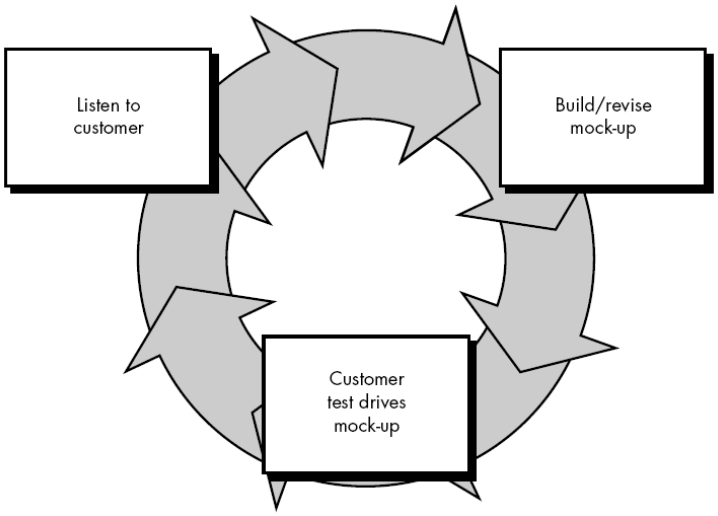

Figure 1. Prototype Method

1. Listening to the Consumers
   Listening to consumers is one of the methods used to obtain information about the needs of the information system to be created and can satisfy CV. Femarse Inti Mulia, implementing this method is very important because it is the first method in creating information systems.
2. Building a Mockup
   Building a mockup is a method after implementing the first method by building a transport service information system. This building method is the step of creating or building what kind of programme CV. Fermarse Inti Mulia. Building a Mockup is a method after implementing the first method by building a transportation service information system, this building method is the step of creating or building what kind of programme . CV Fermarse Inti Mulia..
3. Testing
   Testing is the last method used in the manufacture of information systems, this method is to find shortcomings in the results of making information systems for transportation service reports of CV. Fermarse Inti Mulia and this step was done with the CV. Fermarse Inti Mulia, such as errors and others, this method is used so that there are no gaps in the implementation of the programme's shortcomings.

The reasons of using the Prototype method [14]:
1. Development can save more time and also save costs.
2. Consumers or information system owners are involved in its creation so as to minimize the occurrence of system errors that can occur at the beginning
3. Clients can feel their own satisfaction when the picture of the system to be created has been owned.
4. Client has known the picture of the system before, that way its implementation and use will be easier.
5. In estimating the development of the system which can then be done easily.
6. Client can prepare the right software and match the related system he created.
7. With direct communication between customers and the development team, good communication can be established.
8. Teams can know what customers expect and want so they can be implemented more easily.

2.2 Data Collection Technique

In research, data collection techniques are the most strategic step because the main goal of research is to obtain accurate and precise data. Data collection techniques can be both quantitative and qualitative. Quantitative research uses data that is numerical or expressed in numbers, while qualitative data collection involves gathering more in-depth and contextual data [15]. In collecting important data related to the CV Fermarse Inti Mulia Transport Service Report information system, the data collection technique consists of :

1. Observation

Observation is a complex process, a process composed of various biological and psychological processes. Two of the most important are the processes of observation and memory [16]. In this observation process, the author observes firsthand how the operations of the transportation pay system work in CV. Femarse Inti Mulia.

2. Interview

Interviews are used as a data collection technique when the researcher wants to conduct a preliminary study to find the problem to be studied, and also when the researcher wants to know things from the respondents that go deeper, and the number of respondents is small. [16]. In this interview method, the author conducts a question-answer procedure with employees who know about the problem that the author is observing, based on the questions that the author has prepared. The interview model used is an unstructured interview where the use of an interview guide is only an outline. The researchers interviewed one of the warehouse staff and the financial staff responsible for managing the wages of daily transportation services by asking about the process of calculating the wages for transportation services [17].

3. Literature Study

Literature study is one of the methods used to collect data and study theories and information from reference materials such as books, magazines, e-journals, the Internet, lecture notes, articles, and other reading related to the system being developed [18]. The literature study method is used to obtain good reference sources in the form of books and articles on the Internet to obtain material on good program design related to that of the author.

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3. Result and discussion

3.1 System Needs Analysis

Needs analysis is a process of obtaining specifications and information about the software desired by the user. Both users and information systems developers need to actively contribute in this phase, as user information is the basis for software design [19]. Pay attention to several needs during the needs analysis, whether they are the needs of the users or the needs of the system. In the needs analysis used in the development of a website-based system, multiple needs are considered. In designing the information system for CV transportation service reports. Femarse Inti Mulia has two users that can interact in the system environment, namely the finance department and the warehouse department. Here are the information needs that each user has:

A. Needs

In this system, there are two users who can interact with each other, namely: Finance Section and Warehouse Section.

A.1 Financial Needs Scenario

1. Login with a registered username and password and logout
2. View, add, change, delete, print and download receipt data
3. View, print and download payment data
4. View, print and download receipt and payment reports
5. View and change profile

A2. Warehouse Section Needs Scenario

1. Login with a registered username and password and logout
2. View, print and download receipt data
3. View, add, change, delete, print and download payment data
4. View, print and download receipt and payment reports
5. View and change profile

B. System Needs

1. The user must log in with a username and password.
2. The system calculates the total wages of transportation services and the wages of transportation services per coolie.
3. The system calculates the total balance

3.2 *UML (Unified Modeling Language)*

Unified Modeling Language (UML) is a standard specification language used to document, specify and build software. UML is a methodology in developing object-oriented systems and is also a tool to support system development [20].

UML is a system development technique that uses a graphical language as a tool for documenting and specifying systems [21].

The objective of *Unified Modeling Language* (UML) [22] as follows :

a. Describes a system that uses object-oriented concepts.
b. Creates a modeling language that can be used by both humans and machines.
c. Provides a language that is free from a variety of programming languages.

3.2.1 *Use Case*

Use case diagram is a diagram used to illustrate the relationship between the system and actors [21]. The components of the Use Case Diagram consist of an actor and a use case. Actor represents a person or thing (such as a device, another system) that interacts with the system. An actor may only provide information to the system (input), only receive information from the system (output) or both receive, and give information to the system (input-output). Actor depicted with stick man [23].

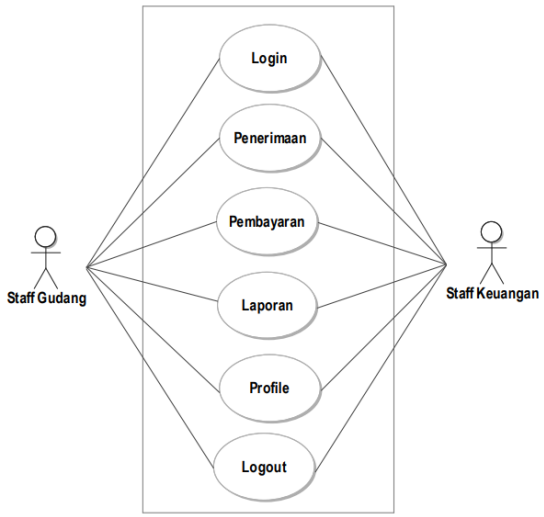


Figure 2. *Use case Diagram*

3.2.2 *Activity Diagram*

Activity diagram is a diagram used to describe the workflows (activities) in use cases, logic, business processes, and relationships between actors and workflows in use cases [21].

The activity diagram describes the workflow or activity of a system or business process or menus in the software. Note that the activity diagram describes the activities of the system and not what the actors do, that is, the activities that can be performed by the system [24].

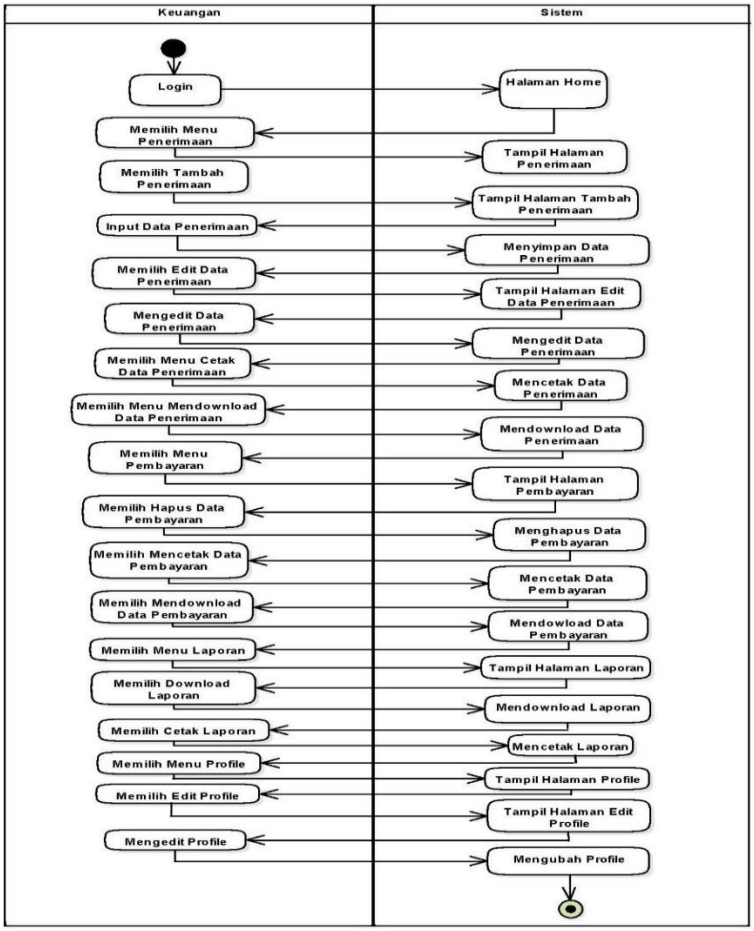


Figure 3. Financial Section Diagram Activity

1.2.3 *Class Model/Class Diagram*

It is a relationship between classes and a detailed explanation of each class in the design model of a system, also showing the rules and responsibilities of the entities that determine the behavior of the system [25].

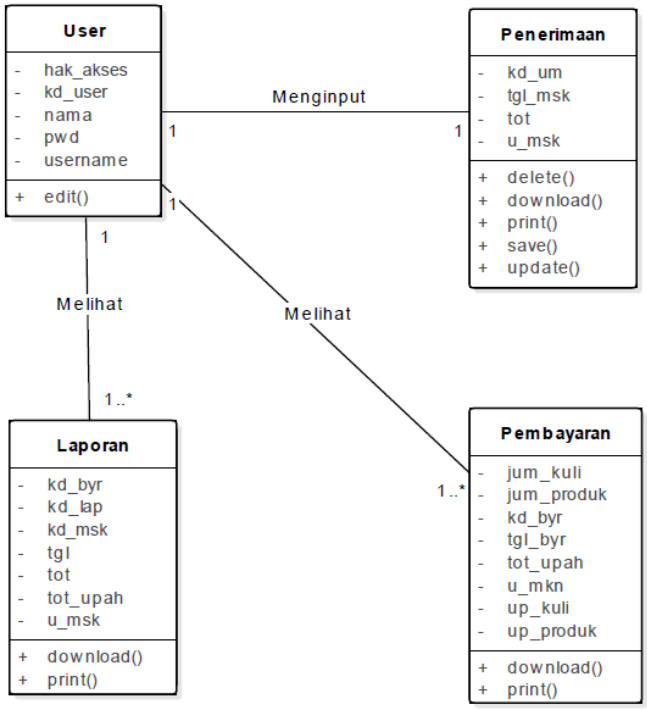


Figure 4. *Class Diagram*

1.2.4 Sequence Diagram

Sequence Diagram illustrates the behavior of objects in use cases by describing the life time of objects and the messages sent and received between objects [25].

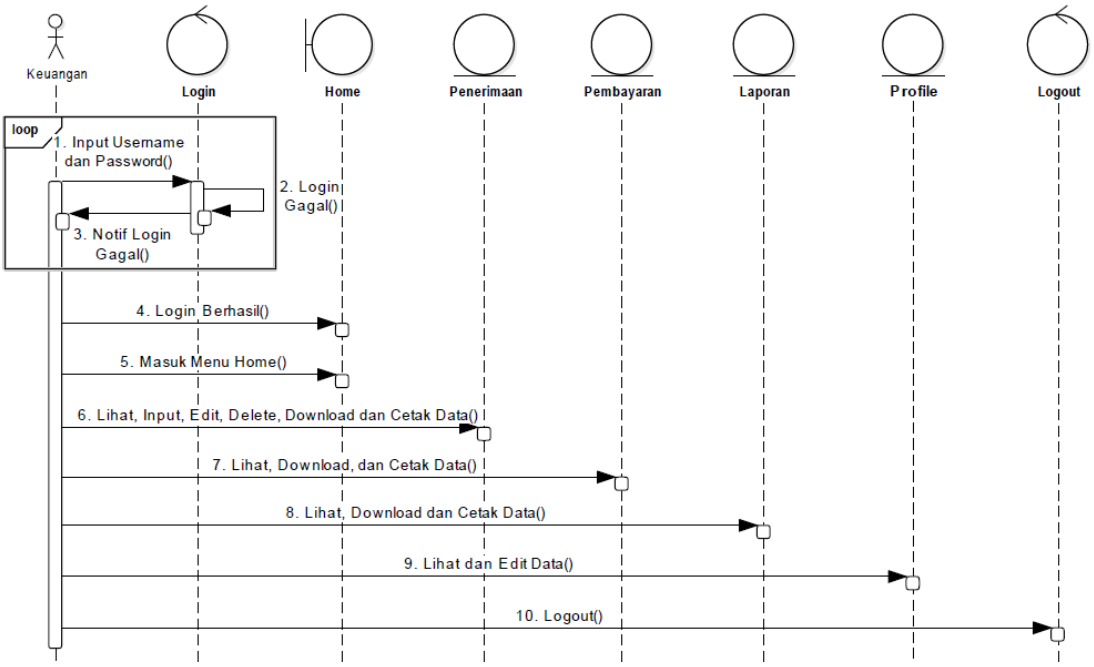


Figure 5. *Squence Diagram*

3.3 Interface Design

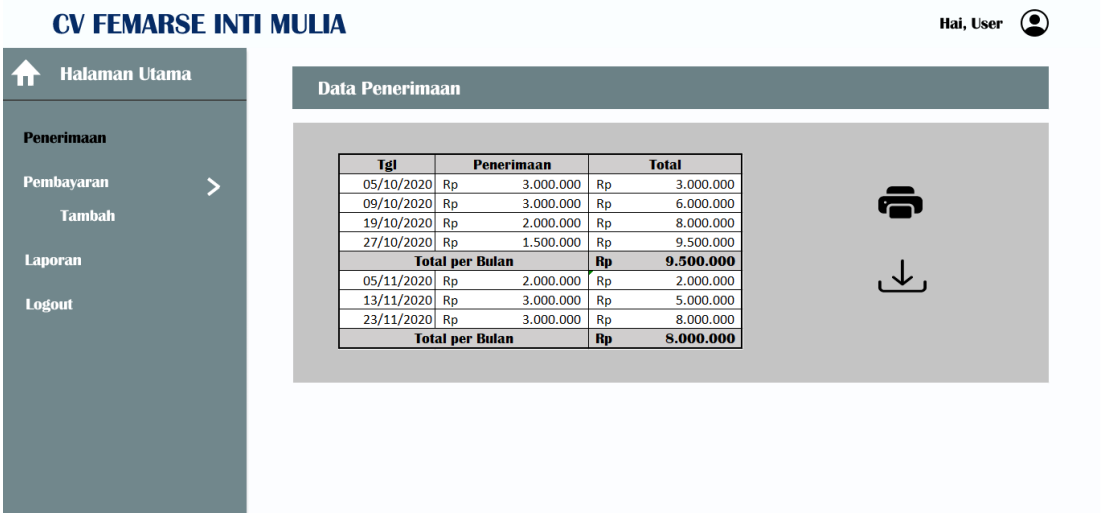
3.3.1 Login View

The initial process of entering the user information system is required to log in first as a form of security from the information system, where the user enters the username or email and password that has been registered.

Figure 6. Login page design

3.3.2 Main Page View

After successfully logging in, the officer will enter the main page of the information system, the initial display displays the data on the receipt of transportation service fees per day. There is a menu for printing and downloading receipt data.



Tgl	Penerimaan		Total	
05/10/2020	Rp	3.000.000	Rp	3.000.000
09/10/2020	Rp	3.000.000	Rp	6.000.000
19/10/2020	Rp	2.000.000	Rp	8.000.000
27/10/2020	Rp	1.500.000	Rp	9.500.000
Total per Bulan			**Rp**	**9.500.000**
05/11/2020	Rp	2.000.000	Rp	2.000.000
13/11/2020	Rp	3.000.000	Rp	5.000.000
23/11/2020	Rp	3.000.000	Rp	8.000.000
Total per Bulan			**Rp**	**8.000.000**

Figure 7. Main page design

3.3.3 Payment view

Displaying payment data, there is a menu to add payment, edit, delete, print and download payment data.

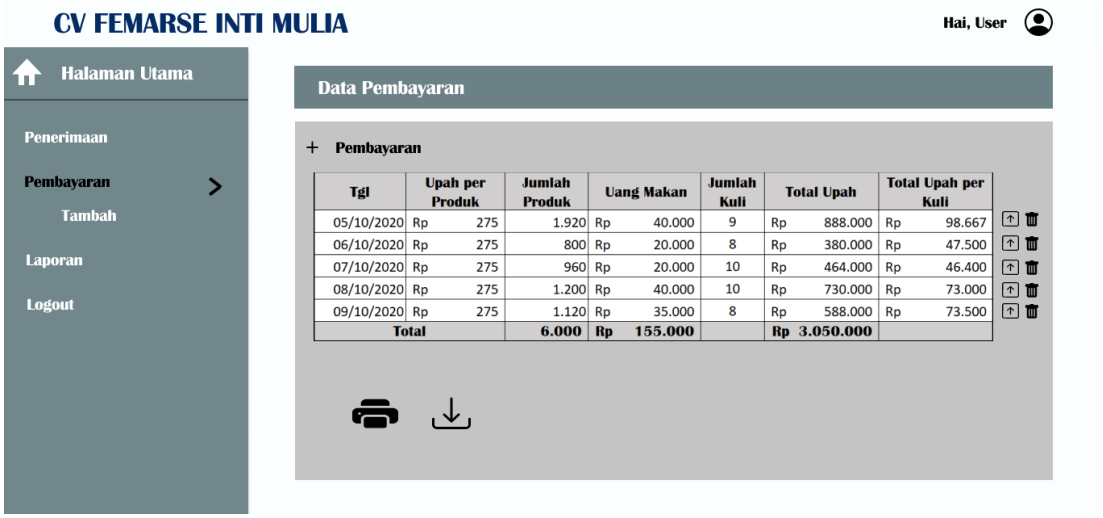


Figure 8. Payment design

3.3.4 Report view

Displays overall receipt data and payment data. There are delete, print, and download menus.

Figure 9. Design Report view

4. Conclusion

Among the conclusions that can be drawn from the discussion on the information system for wage service reports are the following:

- ✓ with this website, warehouse staff can easily calculate wages for transport services and minimise the occurrence of wage errors.
- ✓ warehouse staff can report wages for transport services to finance staff more easily and quickly.
- ✓ managers are expected to back up data every day in the future.
- ✓ carry out regular maintenance to ensure that the performance of the website remains at its maximum.

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