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PT SATYA ABADI VISIMED INVENTORY APPLICATION DESIGN

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ABSTRACT

One way Logistics management of medical equipment is a process that involves planning, determining needs, procuring, storing, distributing medical equipment that you wish to purchase and agreeing to make payments to third parties. In carrying out its business operations, this company still uses manual data input and data processing still uses spreadsheets, so it takes relatively longer time and storage of large amounts of data is not optimal. In carrying out its business operations, this company still uses manual data input and data processing still uses spreadsheets, so it takes relatively long time and storage of large amounts of data is not optimal. The aim of making this application is to produce a logistics management application which is expected to help companies manage the procurement of medical equipment more effectively and efficiently, make it easier for the logistics division to carry out its administrative processes so that there are no delays, make it easier to record purchases and payments for goods, and make searching easier necessary data. The system development methodology used is the Waterfall approach, UML diagrams, and it uses the PHP programming language with the Laravel framework, MySQL database, and Blackbox testing as application testing. The design results in this thesis are a web inventory application at PT Satya Abadi Visimed.

Keywords: *Logistic application, Website, Waterfall*

1. INTRODUCTION

Currently, companies are increasingly competing in using technology to support all their business activities which are never separated from strategic information, especially in terms of information on the entry and exit of goods, except for companies in the field of medical equipment distribution. The role of logistics in achieving the goals of an organization or company is very important because the existence of good and adequate logistics really determines the smooth running of the company's operational and administrative activities, especially those related to the procurement of goods. Apart from that, intense competition between companies means that companies must be able to optimize their business processes, especially in the logistics sector, one of which is using technology. To help with these activities, an application is needed that can make these activities easier so that they run fluently, and the information obtained can be more precise and accurate. When fulfilling consumer desires, PT Satya Abadi Visimed often experiences several problems such as the number of goods not being in accordance with consumer requests, procurement of goods not on time, recording transactions that are still manual, resulting in errors in data input into the spreadsheet (human error), and Loading a lot of data causes the spreadsheet to become slow, making it difficult for officers to filter. With the problems that occur in the logistics division at PT Satya Abadi Visimed, a solution is needed that can overcome these problems. One of them is

creating a web application program so that it can achieve a better level of service. This application program design activity is carried out to optimize logistics activities, increase business process efficiency, and company productivity.

2. METHODOLOGY

2.1 Waterfall

The Software Development Life Cycle (SDLC) Waterfall method consists of requirements, design, implementation, verification, and maintenance stages. This approach is used in the software industry to develop various types of projects, both small, medium and large scale [1].

The stages of the waterfall method are [2]:

1. User Requirements Analysis

   This stage aims to carry out an analysis of the various needs required in the application development process. At this stage, interviews are conducted to determine user needs.

2. Design

   This stage has a focus on program creation, including data structure development, application interface design, and the process of writing program code in the application.

3. Coding

   At this stage, the program code creation process must be synchronized with the results of the needs analysis and designs that have been carried out previously. This will ensure that the input and output produced during application development are in accordance with the plans and requirements that have been set.

4. Testing

   This test is carried out to check its logical and functional suitability with the aim of verifying that the results of the application are in accordance with the desired expectations, as well as to reduce the potential for errors that may arise.

5. System & Integration Testing

   Each program unit and program has been selected and tested as a whole system to ensure whether the system requirements have been met.

6. Support & Maintenance

   Support and maintenance of existing devices or applications is very important. Therefore, in this stage, as much as possible in the development of the application system can be implemented and operate well. This stage can also be called the improvement stage, where if there are changes or additional features during the application development process, you can repeat the entire application development process from analysis to programming without the need to create new software.

2.2 Blackbox Testing

Black box testing is a method for testing software after it has been built. This method is used both to test small units in software and integrated results to check software functionality based on its functional specifications without the need to check the design and program code. This aims to ensure that the functions, input and output of the software comply with the specified specified requirements [3].

2.3 Unified Modelling Language (UML)

UML (Unified Modeling Language) is one of the tools used in the development of object- oriented systems, and has become an industry standard for describing and documenting software systems [3]. UML to describe the functional requirements expected from a system which illustrates the interaction between the system and actors. This model is the first step in creating an application program that can describe the types of interactions between system users and the system itself. The following are the design results for the PT Satya Abadi Visimed inventory application:

1. Use Case Diagram

   Use Case Diagrams describe the functionality provided by the system as units that interact between units or actors. For each use case that has been identified, a system behavior analysis is required. The following is a use case diagram shown in Figure 1.

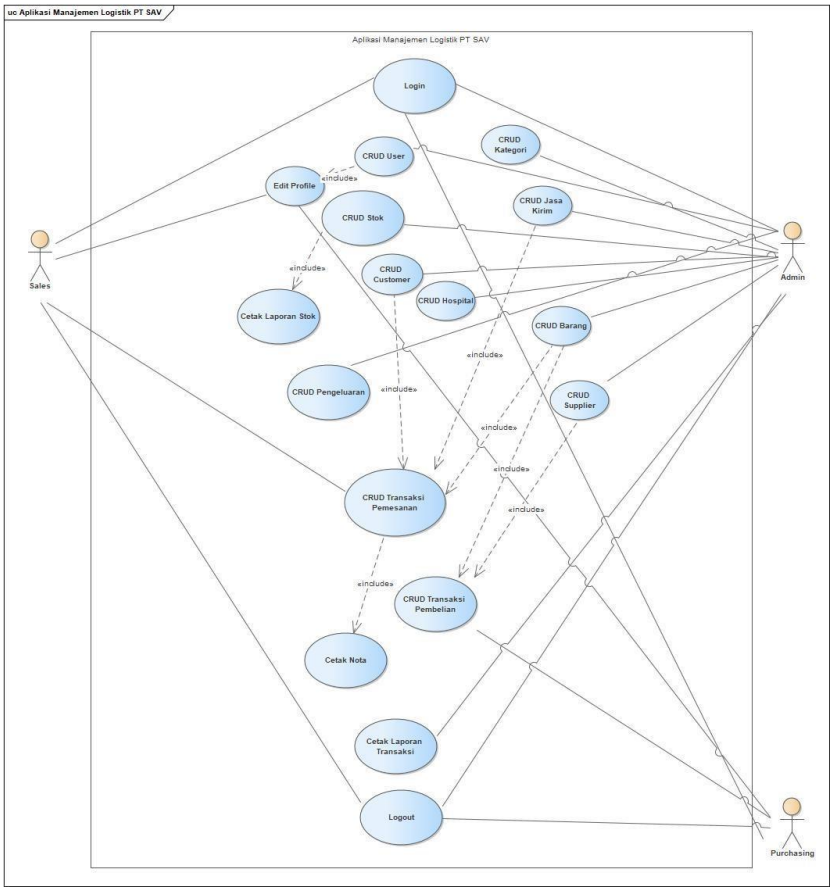

Figure 1. Use Case Diagram
Source: Personal Documentation

2. Activity Diagram

   Activity Diagrams are used to model the workflow of a business process and the sequence of activities in that process from the use case being executed, starting from the starting point to reaching the end point. The following is an activity diagram shown in Figure 2.

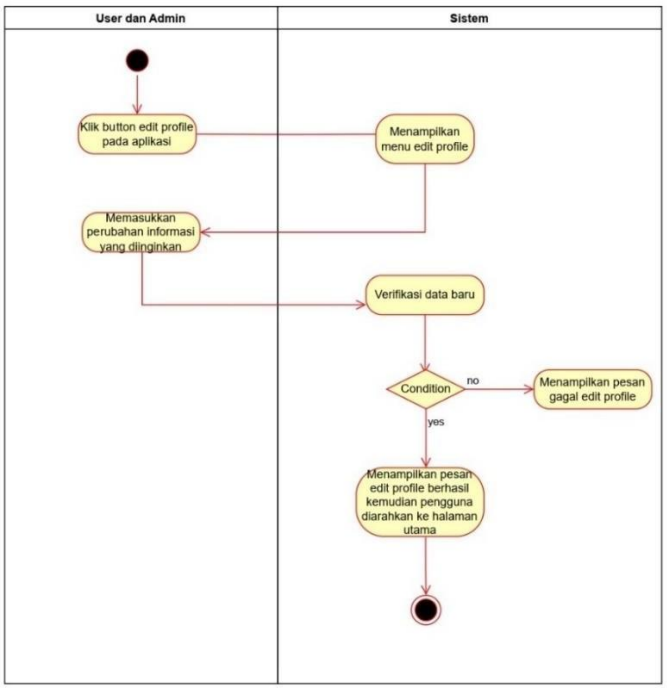

Figure 2. Activity Diagram
Source: Personal Documentation

3. Sequence Diagram

Sequence Diagram is a diagram that describes how objects interact with the system, including users, displays, and others in the form of a massage that highlights timing [4]. The following is a usecase diagram shown in Figure 3.

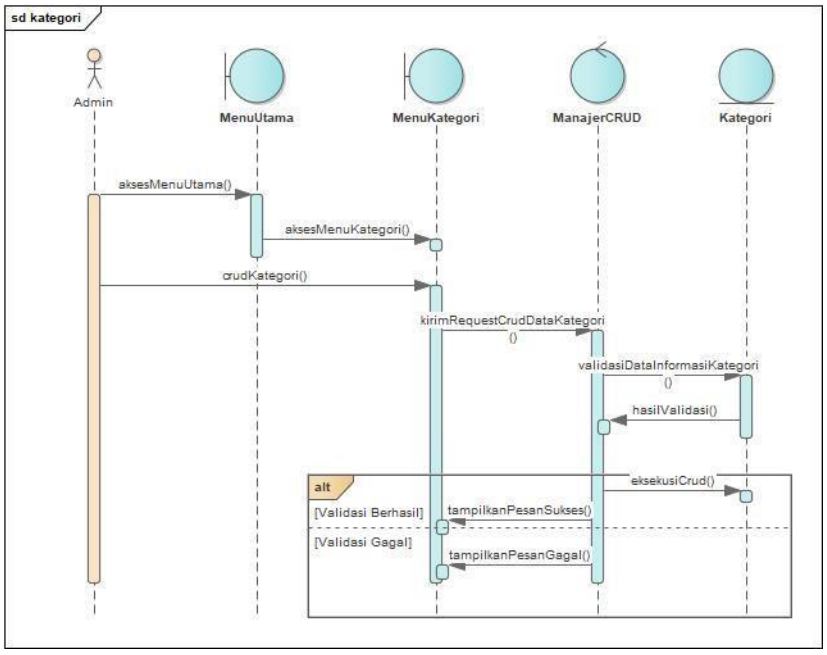

Figure 3. Sequence Diagram
Source: Personal Documentation

4. Class Diagram

   Class Diagrams describe the relationships between classes in a system design model and provide a detailed explanation of each class in the model, including the rules and responsibilities of entities that govern system behavior. Class diagrams are depicted using classes that contain attributes and methods. Each class will be connected by a line called Association [5]. Class Diagram of PT Satya Abadi Visimed inventory application can be seen in Figure 4.

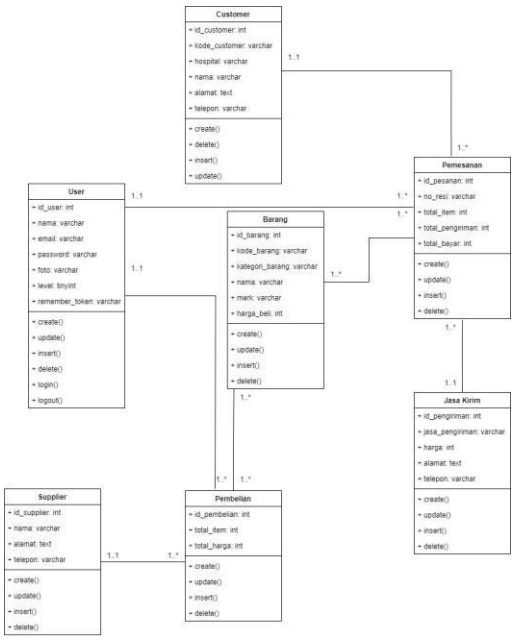

Figure 4. Class Diagram
Source: Personal Documentation

2.4 Logical Database Design

Database design in program creation is in each entity until the ERD (Entity Relationship Diagram) is depicted [6]. A logical database is a conceptual database that has been normalized in third stage normal form (3NF). The third stage of normalization (3NF) is that it has reached the second level of normalization (2NF) and there are no attributes that are not primary keys that have a dependency on attributes that are not other primary keys [7]. The design of the PT Satya Abadi Visimed inventory application database can be seen in Figure 5.

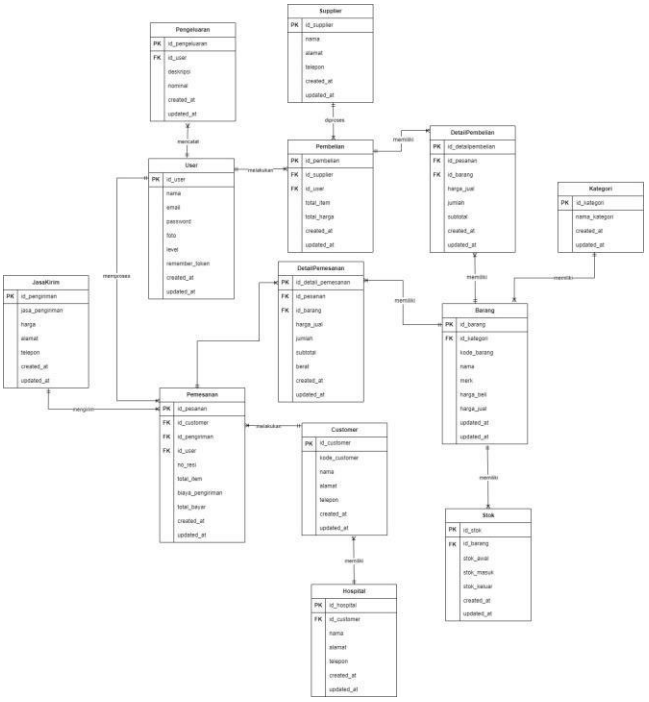

Figure 5. Logical Database Design
Source: Personal Documentation

3. IMPLEMENTATION

3.1 Personnel

Personnel or users involved in using this application program include purchasing, sales, and admin. Purchasing is a user who can process goods purchase transactions to suppliers. Sales are a user who can process goods orders transactions with customers. An Admin is a user who has all access to the goods procurement process in the PT Satya Abadi Visimed warehouse.

3.2 Database Implementation

At this stage, the database applied follows the design contained in the previously designed ERD (Entity Relationship Diagram). All tables and attributes that have been created will be connected according to the specified relationships. The migration feature provided by the Laravel framework can simplify the process of creating and modifying databases with data without the need to rewrite queries every time there are additions or changes to the database.

3.3 Program Implementation

On the program implementation stage there will be an admin role in the application program where the admin can access and modify all data contained in the system and cannot be accessed by ordinary users. Meanwhile, other users will be given limited access rights for each feature.

3.4 System Maintenance and Schedule

This system maintenance process is carried out with the aim of preventing and correcting problems that may arise in application programs, such as errors and program problems (bugs) by checking that all features contained in the application can operate properly, carrying out database maintenance by means of carry out regular backups to avoid data loss if problems occur with the database, and add features if necessary.

4. CONCLUSION

Conclusions that can be drawn from designing the inventory application at PT Satya Abadi Visimed to produce an inventory application program that can be accessed by the warehouse, purchasing, and sales departments to find out detailed stock information, incoming and outgoing goods transactions, suppliers, and customers.

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