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DRUG SALES WEB-BASED INFORMATION SYSTEM AT DILA FARMA PHARMACY USING WATERFALL METHOD

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ABSTRACT The volume of data and information that must be handled makes manual processing impossible. A tool with a high degree of computation speed and data delivery is necessary for processing a massive volume of data. These instruments consist of hardware and software, Dila Farma Pharmacy is a pharmacy that still uses manual techniques to calculate the sale of medications, such as documenting pharmaceuticals and their pricing in a ledger. This manual technique requires considerable time and effort and is prone to error. This project aims to develop a medicine distribution system that can facilitate data processing computations. This study's objective is to build and develop a web-based application for processing drug data and comprehensive information on the sorts of pharmaceuticals used at Dila Farma Pharmacy.

KEYWORDS pharmacy; medicine; information; waterfall method

I. INTRODUCTION

The advancement of information and communication technology has become essential for technological progress in all industries, including the pharmaceutical industry. In compliance with Decree Number 922/ Menkes/PerX/993 of the Minister of Health of the Republic of Indonesia (Permenkes Republic Indonesia) on the Provisions and Procedures for Issuing Pharmacy Permits. This increases the amount of rivalry in the business sphere, such as among pharmacies. In addition to serving the general public's health, pharmacies are profit-driven organizations. Every day at Dila Farma Pharmacy, the number of sales transactions, types of medications, and other pharmacy data processing are still controlled conventionally, with each medicines and prescriptions data record and sales transaction documented using a ledger.[1] The medicine sales calculation procedure employs only a calculator counter to calculate and process sales transactions, and there are difficulties in generating reports for the evaluation of pharmacy performance because the data maintained is still in paper form and therefore cannot be generated instantly.[2] This approach reduces the effectiveness and efficiency of pharmacies, allowing for the recording of erroneous transactions, the loss of documentation, and the failure to provide accurate and timely information when required.

By understanding the issues at Dila Farma Pharmacy, it is vital to improve the management of medicine sales data. A good computerized system is required in order to reduce the number of difficulties at Dila Farma Pharmacy, which will be one of the enhancements. With this context in mind, the author proposed the title "Drug Sales Information System at Dila Farma Pharmacy". [3]

II. RESEARCH METHODS

This study employs a waterfall approach for software design and development so that the research is more directed based on various stages consisting of:

A. System needs analysis

System needs analysis aims to identify problems in the system to be developed which includes system specifications, user specifications and operating environment.[4]

B. System design

The following diagram depicts the research design for the system of drug sales at the Dila Farma Pharmacy.:

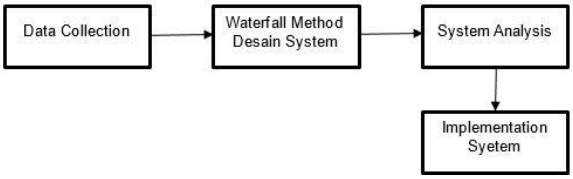

Figure 1. System Design

C. Data collection

1. Observation
   Observe the Pharmacy's current system in action to gather data and a clear image of the item of inquiry.
2. Interview
   Performing direct question-and-answer sessions with pharmacy officials discussing the data-data required to develop this system.
3. Bibliographic
   Research Using many books as sources, get theoretical explanations pertaining to the issue under investigation.

D. Software Development Methods

The Waterfall technique offers a systematic and chronological progression through the System Development Life Cycle (SDLC) stages while developing software. This technique is commonly known as the "classical life cycle" or waterfall model. This model initially debuted about 1970, hence it is frequently seen as outdated. However, it is the most used model in Software Engineering (SE). This methodology employs a sequential approach beginning with the level of system requirements and continuing through analysis, design, coding, testing/verification, and maintenance. It is referred to as a waterfall because each successive phase must wait for the completion of the preceding stage before proceeding. The typical waterfall model steps are depicted in the following diagram. [5]

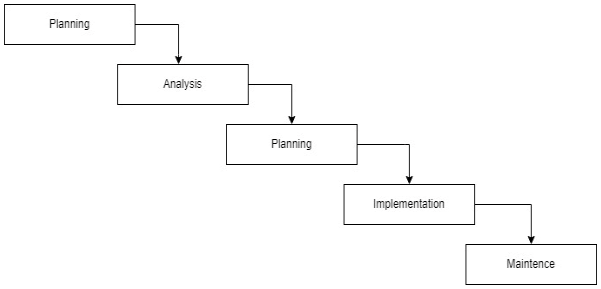

Figure 2. Waterfall Method

1. Planning This planning begins by identifying the requirements of the complete system that will be implemented as software. This is crucial, given that the software must be able to connect with hardware, databases, etc. This phase is commonly known as Project Definition.
2. Analysis The process of identifying needs is amplified and software-centric. To determine the nature of the programme to be developed, software engineers must comprehend the software's information domain, including the required functionalities, user interfaces, etc. One of the two activities (system and software requirements search) must be recorded and presented to the client.
3. Before development can begin, this step converts the aforementioned requirements into a "blueprint" for the software. The design must be capable of meeting the requirements outlined in the preceding phase. As with the preceding two actions, this procedure must also be documented as a software configuration.
4. Implementation The subsequent phase is implementation, where the system is constructed. This is the phase that receives the greatest attention, as it is often the longest and most expensive phase of system development.
5. Maintenance of a software, including creation, is required since the software generated is not always perfect. There may still be minor bugs that were not previously discovered, or there may be functionalities missing from the software. When there are changes external to the firm, such as when the operating system or other devices change, development is required. [6]

E. System coding

The creation of this research system program uses the PHP programming language with the Sublime Text editor.

F. System testing

The purpose of system testing is to determine if the functioning of a built system meets user requirements or whether it still requires maintenance.

III.RESULT AND DISCUSSIONS

A. System Analysis

System analysis may be described as the deconstruction of a whole information system into its component elements for the purpose of detecting and analyzing issues, opportunities, impediments, and anticipated requirements in order to suggest changes. This analysis is conducted to gain a definition of the problem and a description of what the system accomplishes, as well as to discover the system's inner workings.

B. Problem Analysis

Problem analysis was carried out during research at Dila Farma Pharmacy. The problem that occurs is that the system is still not integrated with the computer so that performance becomes slow and makes data security also not guaranteed properly because the system is still manual so that there is often damage or loss of data that is still in the form of archives and records.

C. Analysis of Ongoing Systems

Based on observations made by the author, the following is the workflow of the ongoing drug management process at The Dila Farma Pharmacy as follows:

1. Drug Sales Process
   Sales of drugs based on drug categories, drug sales are still carried out with a manual process where if consumers want to buy certain drugs, the

Administration department immediately confirms the payment price without inputting data in an integrated computer

2. Drug Supply Process
   In the process of drug supply, data management is carried During research at Dila Farma Pharmacy, a problem analysis was conducted. The problem that happens is that the system is not yet integrated with the computer, resulting in sluggish performance and inadequate data security since the system is still manual, resulting in frequent data loss or corruption in the form of archives and records. Out by checking one by one the existing drug stocks. Checking the stock of drugs is usually done by the Assistant Pharmacist and the Administration. If the supply of certain drugs is running low or exhausted, an order will be placed immediately
3. The process of making reports for each month the Administration department will make reports based on the data recorded. The process of making a report is carried out on a paper or book. [7]

D. Activity Diagram System Running

1. Activity Diagram of the Drug Sales Process

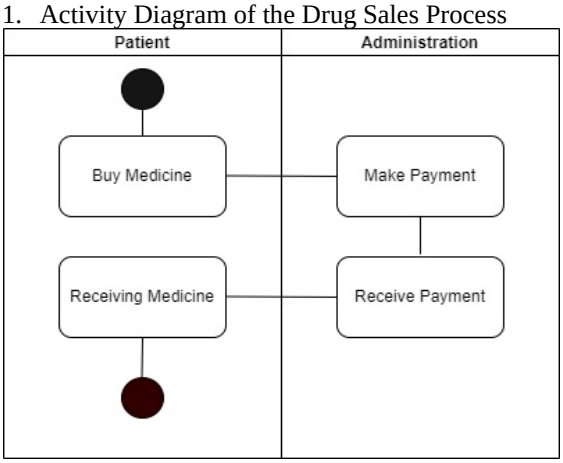

Figure 3. Activity Diagram of the Drug Sales Process

2. Activity Diagram of the Report Creation Process

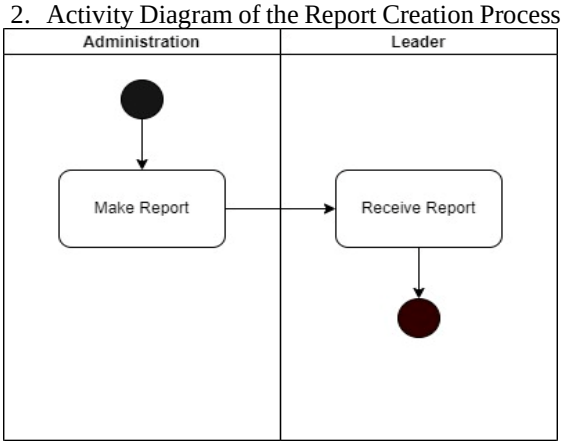

Figure 4. Activity Diagram of the Report Creation Process

3. Activity Diagram of Drug Supply Process

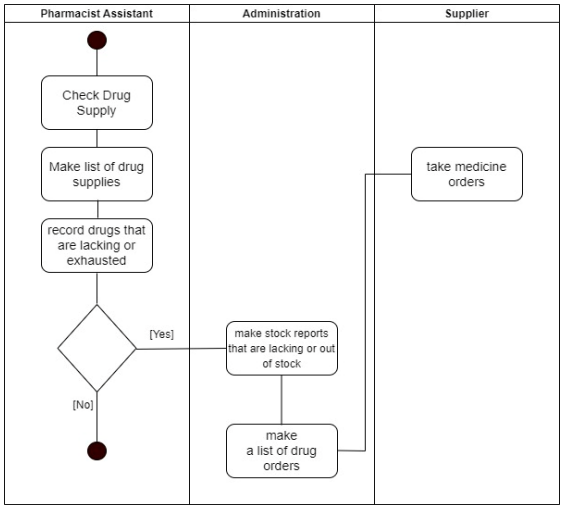

Figure 5. Activity Diagram of Drug Supply Process

E. Usecase Diagram Proposal

The Use Case diagram illustrates the needs of the system from the user's point of view, which shows the relationships that occur between actors and use cases in the system. The following is a use case diagram that will be proposed at the Dila Farma Pharmacy as follows:

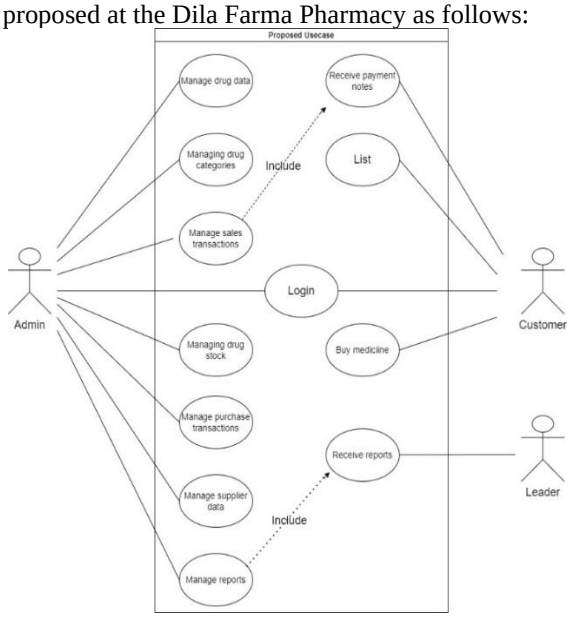

Figure 6. Proposed Diagram Usecase

IV. IMPLEMENTATION AND TESTING

A. Implementation

This Pharmacy application was developed to automate Dila Farma Pharmacy's sales and purchasing operations, eliminating the need for manual processes. At this point in the implementation process, we will describe how the application is implemented in the project, environment, and interface. This web-based application is developed with the Codeigniter Framework and the primary programming language, PHP (PHP Hypertext Protocol), and utilizes a MySQL (My Structured Query Language) database. [8]

1. System Implementation
   The application for Dila Faema Pharmacy utilises a number of system implementations, which are comprised of software and hardware. Here is the system implementation specifications

Table 1. Hardware Specifications

Hardware Specifications	
Monitor	14' LCD
Hard drive	1000GB
RAM	4GB
Processor	Core i3, 2.20 Ghz

Table 2. Software Specifications

Software Specifications	
OS	Windows 10 64 bit
Database	MySQL
Web Browser	Google Chrome

2. Interface Implementation
   The implementation process of the interface utilised by the Dila Farma pharmaceutical application will describe the accessible features. Following is an explanation of the implementation procedure for the application interface.[9]

- Login Implementation

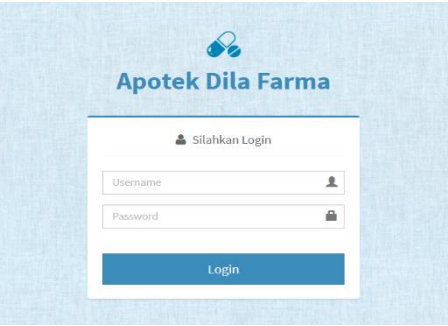

Figure 6. Login Page View

In the form *of a* login form page to enter the *main dashboard page,* in the login *form* display there are *username* and *password* fields and an entry button.

- Implementation of Drug Sales Interface

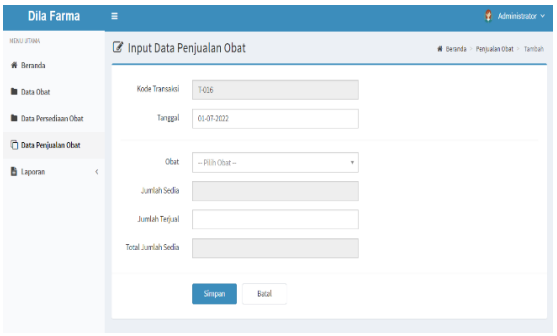

Figure 7. Drug Sales Input Display

In the form of an add transasction page to add drug sales transactions, the data of which is directly taken from the drug data database. This page displays data on the number and name of drugs to be purchased by consumers as well as the total price of the number of drugs that consumers will buy. When successfully making a transaction, the stock of drugs will automatically be reduced from the drug data.

- Implementation of the Procurement Interface

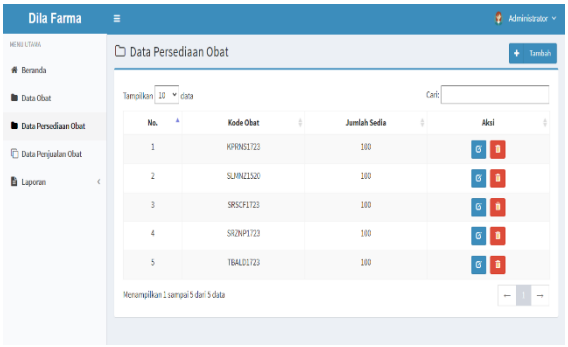

Figure 8. Procurement Interface Display

In the form of a page containing a page for procuring goods data

- Implementation of the Stock Report Interface

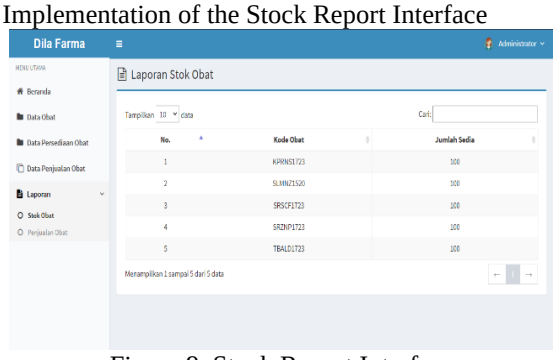

Figure 9. Stock Report Interface

In the form of a drug sales transaction report page display, on this page the admin can search for daily transaction report data or monthly transaction reports as well as the total of all sales from the date of the transaction report sought.[10]

B. Testing

1. Blackbox Testing

According to Sinarmata (2010: 316), the classification of *black box testing* includes several tests, one of which is functional testing.[11] Black *box testing is* used to test directly on the drug sales information system at dila Farma pharmacy whether the system runs well or not in accordance with its function.[12]

Table 3. Black Box Testing

Input	Function	Output	Result
Login button	To enter the main menu	Dashboard page view	Valid
Transaction Button	To enter the transaction page	Transaction page view	Valid
Report button	To get to the report page	Report page views	Valid
Drug Data Button	To go to the Drug Data page	Drug data page view	Valid
User Data button	To log in to the user's halam	User page views	Valid
Add Data button	To add data	Add data form view	Valid
Edit button	To change the data	Edit form view	Valid
Delete button	To delete data	Delete data	Valid
View button	To view details of a record	View data details	Valid
Print button	To print data	Print data	Valid
Log out button	To exit the main page	Login form view	Valid

B. User Testing

At this stage the test is given to the pharmacy owner and pharmacy employees how to assess this information system. Test results of the obat Dila Farma sales information system in table 2

No	Statement	Response					Total Score	Percentage Value
		SS	S	C	K	SKS		
P1	All functions of this information system menu are running well	2	1	0	0	0	14	80.00%
P2	All this information is easy to understand and easy to use	2	1	0	0	0	15	80.00%
P3	The system that can be made has an attractive appearance and is easy to use for users	1	0	2	0	0	11	73.00%
P4	This information system can help the performance of the employee concerned	2	1	0	0	0	14	93.33%
P5	This system is made to speed up the work of employees	3	0	0	0	0	15	100.00%

Answer Description
SS = Strongly Agree
S = Agree
C = Neutral
K = Less Agree
SKS = Strongly Disagree

How to calculate the percentage of values using the calculation formula as follows:

Equation (1)

Information
P : Presentation
N : Value
NMAX : Maximum value

The percentage of category criteria strongly agrees, agrees, is sufficient, less, strongly disagrees

0%-20%	:Verylacking in aim	60% - 80%	:Agree
20%-40%	:Less	80% -100%	:Very sejuju
40%-60%	:Enough		

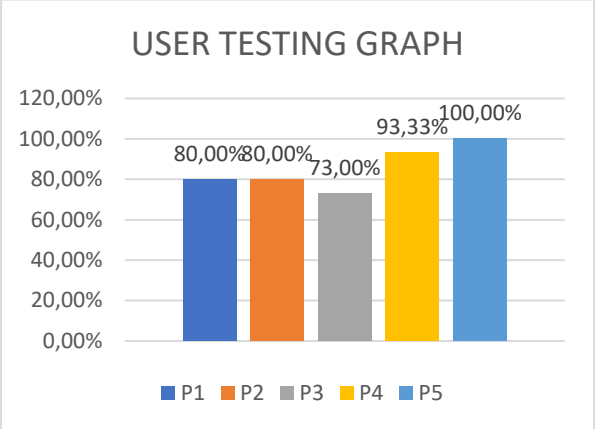

Figure 10. User Testing Graph

V. CONCLUSION

With the accomplishment of all research activities, system analysis, and system design, the information system for medication sales at web-based pharmacies may facilitate the transactional operations of purchasing and selling pharmaceuticals at Dila Farma Pharmacy more efficiently. The web-based sales system gives employees immediate and simple access to handle cashier sales transactions. By adopting a computerized and web-based approach, transaction faults may be reduced. A web-based pharmacy sales information system facilitates the control of medication stockpiles and drug supply by assisting staff and administrators. The safer preservation of transaction data and medicine inventories is facilitated by a centralized database.

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