

## Design of a Drug Inventory Information System at Janji Primary Health Center Using a MySQL Database

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### Abstract

*This research is backgrounded by observation data at the Labuhanbatu appointment health center and uses the MYSQL database system to help support research results. MySQL is also known as a SQL-based open-source relational database management system (RDBMS) that works with a client-server model which functions for data warehousing (data warehouse), which is data collection from various sources, for e-commerce, as well as logging applications. Information systems are an important factor in Indonesia today, supporting operational activities and institutions for companies. An information system is an internal organizational system that meets the needs of day-to-day event management, supports operations, represents the specific management of the organization, and supports strategic operations with the necessary reports. The system design includes drug inventory, Primary Health Center Standards, and Drug Services. The research methods used are a combination of survey research, problem identification, data collection, data analysis, system design, and implementation. This research also aims to make more agencies know how to work quickly and easily using MYSQL databases, researchers hope that in this digital era people will know more and understand more about information systems and their uses to help in work. The result of this research is that the puskesmas is willing to consider the problems that arise from the current system, which is recommended to implement and utilize computerized systems that offer a more effective and efficient data search process. The proposed system is a modification of the ongoing system, namely the Design of the Drug Stock Information System at the Promise Health Center. This system design uses PHP, CSS, Bootstrap Designer, and MySQL. Therefore, the design results obtained include a program interface consisting of Files, Transactions, Reports, and Final Programs (Exit).*

### Keywords

MySQL; database; drug inventory; information system; design



## I. Introduction

Information systems are an important factor in Indonesia today, supporting operational activities and institutions for companies. The development of information technology has brought about information systems that provide solutions for drug inventory data processing. Currently, information systems and technology not only serve as supporting tools for performance improvement but have become essential in daily life, providing fast and accurate information through effective and efficient drug data processing.

Puskesmas is a unit of functional health organization that is a community health development center that also fosters community participation in addition to providing comprehensive and integrated services to the community in their working area in the form

of main activities. Puskesmas is one of the facilities provided by the government to help and support public health, puskesmas is established in every area and even remote areas because puskesmas is the most important and most needed regional facilities, the use of databases, internet and information systems in health centers is needed to help workers in compiling patient data, drugs, and looking for the latest information related to health. MySQL Database is a client-server-king for the latest information related to health.

MySQL Database is a client-server-based database which means that computers that install and run RDBMS software are referred to as clients. In order to access data, the computer must first connect to the RDBMS server. This kind of situation is called client-server. Initially MySQL was made for limited use only, but now this software is compatible with various computing platforms, such as Linux, macOS, Microsoft Windows, and Ubuntu. With this sophistication, it is hoped that the puskesmas will advance again to be able to support public health. Considering that in this digital era there are many health centers that have used social media technology such as Instagram, WhatsApp, and TikTok to provide education about health and provide the latest information about health, information systems that are used and used properly will have an extraordinary impact on their users, such as health centers that are able to use social media and information systems well to support work and public health.

Public health centers, known as Puskesmas, are functional organizational units that are part of community development centers and involve community participation. They provide comprehensive and integrated services in their working areas as part of long-term development processes. The establishment and development of Puskesmas in Indonesia began in 1971. According to the Minister of Health Decree No. 128/MENKES/SK/II/2004, Puskesmas is a technical implementation unit of the district/city health office responsible for health development in a region.

To overcome challenges, Puskesmas Janji requires a system to manage drug data. The design of a drug inventory information system using the MySQL database is proposed. With this system, it is expected to facilitate the search and checking of drug data, reduce stockpile of drugs in the warehouse, prevent stock depletion, and eliminate the need for manual report generation. The system will be computer-based and capable of managing all drug-related information in Puskesmas Janji, generating various reports. Therefore, the author is highly interested in discussing this topic in an article titled "Design of Drug Inventory Information System at Puskesmas Janji Using MySQL Database."

## **II. Review of Literature**

### **2.1 Definition of Information Systems**

A system is a network of interconnected procedures that are integrated to perform a specific activity in order to achieve a particular goal [1]. Information is data that has been processed into a meaningful form for the receiver and is useful for decision-making in the present or future [2]. An information system is an internal organizational system that fulfills the management needs of daily events, supports operations, represents specific management of the organization, and supports strategic operations with required reports [3].

From the above understanding, it can also be concluded that an information system is a system consisting of people, facilities, tools, media and procedures used to build a routine network and help management in decision making and providing information for those who need it.

## 2.2 System Design

Design is the process of defining something to be done using various techniques, including describing the architecture, component details, and constraints faced in the process. Application comes from the word "apply," which means to apply or put into practice. An application refers to a ready-to-use program designed to perform functions for users or other applications and can be used by the intended target. Based on the two definitions above, the author concludes that the concept of application design is the process of doing something differently to create a user interface screen for a program. System design can also be defined as the depiction, planning, and sketching or arrangement of several separate elements into a whole and functioning whole.

## 2.3 Drug Inventory

Inventory refers to products or resources that have storage capacity within a company's system and are intended to be sold over a specific period of time. Therefore, the author developed an inventory system that can be used to improve and support employees in receiving accurate, timely, and efficient stock reports in the warehouse [6].

Drug inventory is one of the factors that influence the quality of service in primary health centers (Puskesmas). The availability and accessibility of effective and efficient drug services can eliminate misconceptions about the need for drugs, ensuring that they are easily delivered to the right place at the right time. Therefore, internal control measures aimed at ensuring the availability of these medications are necessary to ensure more accurate inventory information [8].

## 2.4 Primary Health Center Standards and Drug Services

Drug information services involve sharing and distributing independent, accurate, complete, and up-to-date information from the primary health center to patients and the community. The goal of drug services is to improve treatment success, maximize the effectiveness of medication, and minimize the risk of side effects. The benefits of drug services for primary health centers include maintaining the profession's reputation as part of healthcare services, ensuring the provision of responsible drug services, avoiding medication errors, and attracting patients to the healthcare facility [9].

The Drug and Food supervision system organized by BPOM is a comprehensive process, including pre-market and post-market supervision. The system consists of:

1. Standardization which is a function of preparing standards, regulations, and policies related to the supervision of Drugs and Food.
2. Assessment (pre-market evaluation) which is a product evaluation before obtaining a distribution permit number and finally can be produced and distributed to consumers, The assessment is carried out centrally, intended so that products that have distribution permits apply nationally
3. Supervision after circulation (post-market control) to see the consistency of product quality, safety and product information carried out by sampling the circulating Drugs and Food products, as well as checking the means of production and distribution of Drugs and Food, monitoring pharmacovigilan and monitoring labels/markings and advertisements
4. Laboratory testing. Products that are taken based on risk are then tested through the laboratory to find out whether the Drugs and Foods have met the safety, efficacy/benefit and quality requirements.
5. Law enforcement in the field of Drug and Food supervision. Law enforcement is based on evidence of test results, examination, or initial investigation

### III. Research Method

#### 3.1 System Design Method

The research method used in this study is a combination of survey research and qualitative research. Survey research involves investigating cause-and-effect relationships using controlled tests conducted by the researcher. The research consists of several stages: Identifying the Problem, Data Collection for Drugs, Data Analysis, System Design, and Implementation.

#### 3.2 Identifying the Problem

In this stage, the researcher is required to identify the issues currently faced by Puskesmas Janji in managing drug inventories.

#### 3.3 Data Collection for Drugs

At this stage, the author has collected data on drugs that will be used to design the drug inventory system. Library Study This technique involves collecting and studying data, including theories from references and scientific journals related to the case study. Field Survey By conducting a survey on the research object, it is easier to obtain the necessary information.

#### 3.4 Data Analysis

In this stage, the drug data obtained from Puskesmas Janji will be analyzed, and the results will be used for designing the system according to the requirements.

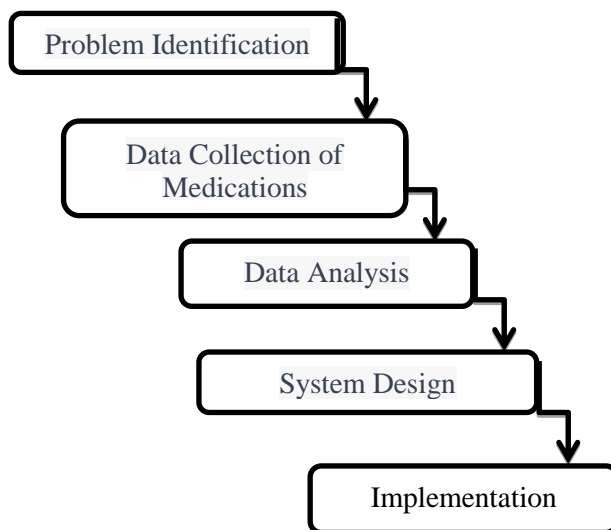
#### 3.5 System Design

The system design will be created using web-based programming, tailored to the specific needs.

#### 3.6 Implementation

Implementation involves translating the design into software programs. The outcome of this stage is a computer program that aligns with the design created by the researcher.

#### 3.7 Research framework



*Figure 1. Waterfall method*

### **3.8 Programming Tools/Supporting Tools**

#### **a. PHP**

Scripting programming languages are designed for server-side web development. Additionally, PHP can be used as a programming language for designing information systems and inventory management systems for medications. PHP was developed in 1995 by Rasmus Lerdorf. It is referred to as a server-side programming language because PHP is processed on the server computer. This is different from client-side languages like JavaScript, which are processed directly by the browser.

#### **b. CSS**

Cascading Style Sheets (CSS) are a set of rules used to modify the appearance of a website, making it look more structured online. CSS can also be used for designing information systems for medication inventory management.

#### **c. BootstrapDesigner**

It is a place to design the appearance of a design system (website) and is responsive, fast, and easy. Currently, Bootstrap is used by more than 27% of websites worldwide, mainly due to the consistency it offers compared to other frameworks. The advantage of Bootstrap is that it eliminates the need to write website code from scratch. This framework consists of a collection of CSS and JavaScript files in the form of classes that can be used by programmers. [11].

#### **c. Mysql**

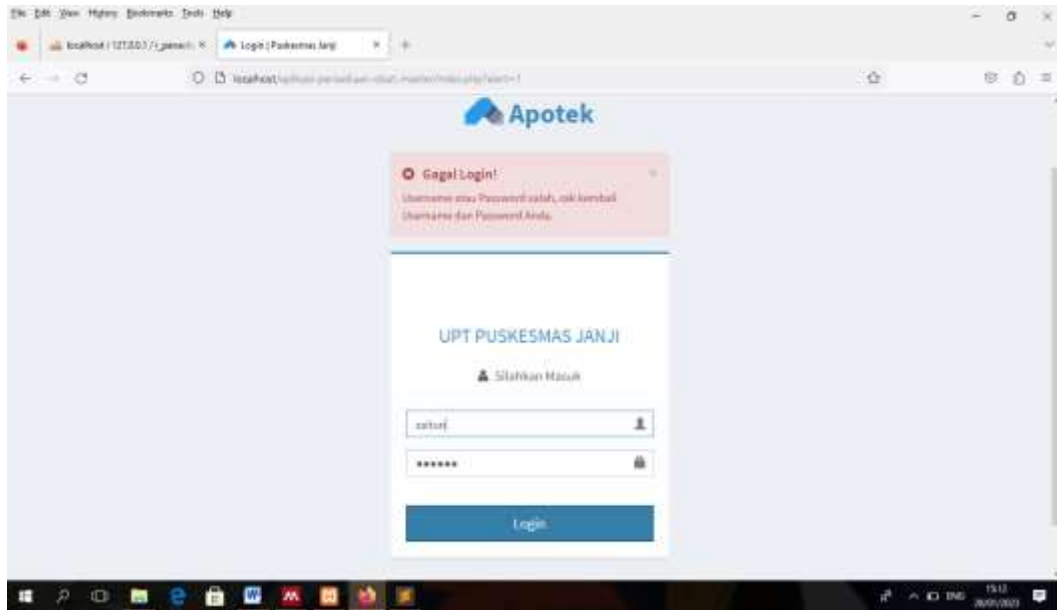
The type of database server is well-known as MySQL and it is a type of RDBMS (Relational Database Management System). MySQL supports the programming language PHP and structured query language (SQL) because there are certain rules when using SQL standardized by an association called ANSI. MySQL is an RDBMS (Relational Database Management System) server. An RDBMS is a program that allows users to create, manage, and manipulate databases using data in a relational model. Therefore, tables are included in the database, and there are relationships between one table and another. [12]

## **IV. Result and Discussion**

This system is designed to facilitate employees in viewing of drug reports or operational activities, aiming to save time. It is expected that with the design of the drug stock inventory information system at Puskesmas Janji, the required information can be obtained quickly at any time during drug data input. Based on the design and considering the issues arising from the current system, it is recommended to implement and utilize a computerized system that offers more effective and efficient data search processes. The proposed system is a modification of the current system, namely the Design of Drug Stock Inventory Information System at Puskesmas Janji. This system design uses PHP, CSS, Bootstrap Designer, and MySQL. Therefore, the obtained design results include the program interface, which comprises Files, Transactions, Reports, and the Final Program (Exit).

### **4.1 Form Admin Login**

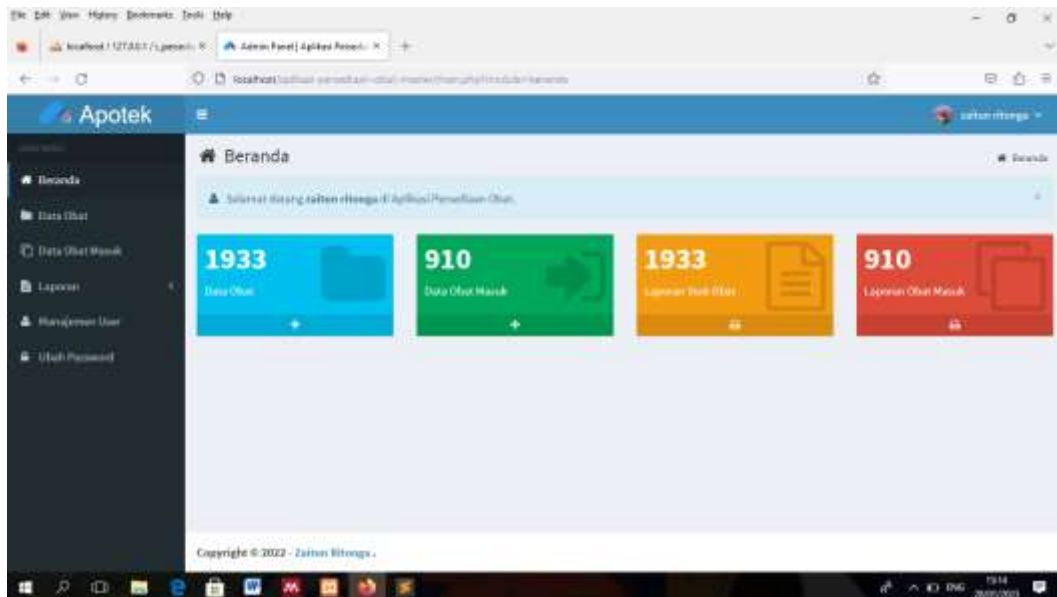
Menu to access the admin menu, the user needs to correctly fill in the username and password in the Login form. Please refer to Figure 1 for a visual representation.



*Figure 2. Form Login*

#### 4.2 Main Page

The Main Page is a page that contains the main menu of the system. Please refer to Figure 2 for visual representation.



*Figure 3. Main Menu Interface*

#### 4.3 Drug Data

It is the interface for entering detailed drug data, as shown in Figure 3.



No.	Kode Obat	Nama Obat	Harga Beli	Harga Jual	Stok	Satuan
1	8001975	Air injeksi amp 25 ml	Rp. 11.000	Rp. 18.000	0	Pis
2	8001974	irihakileridil tablet 2mg	Rp. 5.000	Rp. 7.000	100	Tablet
3	8001973	Clarexim injeksi 5mg/ml	Rp. 17.000	Rp. 26.000	10	Ampul
4	8001972	wing catheter with injection port 24 G x 1.1/8	Rp. 17.000	Rp. 26.000	0	Pcs
5	8001971	wing catheter with injection port 22 G x 1	Rp. 15.000	Rp. 17.000	0	Pcs
6	8001970	wing catheter with injection port 20 G x 1.1/8	Rp. 13.000	Rp. 16.000	0	Pcs
7	8001968	urine bag	Rp. 12.000	Rp. 14.000	10	Pcs

Figure 4. Drug data

#### 4.4 Entered drug data

It represents the display of data that is entered in the drug list.

No.	Kode Transaksi	Tanggal	Kode Obat	Nama Obat	Jumlah Masuk	Satuan
1	TM-2023-000947	12-10-2022	800222b	antibiotik cordi klem steril nikon	50	Pcs
2	TM-2023-000946	12-10-2022	8001980	r pilin 30 amp 2 met, 3/8 cutting 15mm 75 cmrupti	60	Kotak
3	TM-2023-000945	12-10-2022	8001405	t handrub 250 ml	10	Botol
4	TM-2023-000944	12-10-2022	8001958	t handrub 100 ml	30	Botol
5	TM-2023-000943	12-10-2022	800395b	sarung tangan steril no. 7.1	25	Pasang
6	TM-2023-000942	12-10-2022	8007717	sarung tangan steril no. 6.5	20	Pasang
7	TM-2023-000941	12-10-2022	8001946	sach 0,9 % larutan 500 ml	15	Botol
8	TM-2023-000940	12-10-2022	8001886	govidon iodida 1000 ml	1	Botol
9	TM-2023-000939	12-10-2022	800143b	kapas 500 gr	2	Box

Figure 5. Entered Drug Data

#### 4.4 Drug Stock Report

Attachment of the names of drugs that must always be reported during drug checking.

No.	Kode Obat	Nama Obat	Harga Beli	Harga Jual	Stok	Satuan
1	000003	Alendronat tab 400 mg	Rp. 5.000	Rp. 7.000	300	Tablet
2	000001	Akr injeksi amp 25 ml	Rp. 12.000	Rp. 15.000	10	Fla
3	0001975	Akr injeksi amp 25 ml	Rp. 12.000	Rp. 10.000	0	Fla
4	0000403	Akr injeksi amp 25 ml	Rp. 12.000	Rp. 15.000	10	Fla
5	0000253	Akr injeksi amp 25 ml	Rp. 12.000	Rp. 15.000	6	Fla
6	0001471	Akr injeksi amp 25 ml	Rp. 12.000	Rp. 15.000	5	Fla
7	0001477	Akr injeksi amp 25 ml	Rp. 12.000	Rp. 15.000	0	Fla
8	0001732	Akr injeksi amp 25 ml	Rp. 12.000	Rp. 15.000	0	Fla
9	0001234	Akr injeksi amp 25 ml	Rp. 12.000	Rp. 15.000	14	Fla
10	0000942	Akr injeksi amp 25 ml	Rp. 12.000	Rp. 15.000	0	Fla

Figure 6. Drug Stock Report

#### 4.5 Print Drug Stock Report

Display when printing the drug stock report.

Figure 7. Display for printing the drug stock report

### V. Conclusion

Based on the results and discussion of this research, it can be concluded that the drug inventory information system at Puskesmas Janji can be designed as a user-friendly, more effective, and more efficient information system. This study provides a solution to the problems that occur at Puskesmas Janji. Information about drug inventories can be easily and quickly obtained. The process of generating reports will be faster and more accurate, making it easier for pharmacists and other employees to view and examine the generated reports.



Puskesmas janji use and utilize technology and information systems well, the work of pharmacists and other employees is getting easier and faster by using systems and databases, data collection of patient visits is also easier to do with computers and information systems in them, puskesmas janji will be more advanced with the use of databases and information systems to improve the health of the local community.

My advice as a researcher for puskesmas to be more thorough in handling patients, and in carrying out services it is expected to always smile and be friendly to all patients, researchers also expect progress for health centers in each region so that they can always provide the best service for the community.

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