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Design of Inventory Information System at CV. Graha Raya Consultant Company

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Abstract

Efficient inventory management is crucial for companies to enhance operational effectiveness. CV. Graha Raya Consultant faces challenges in recording and managing inventory, which is still done manually, leading to risks of recording errors, asset loss, and delays in item availability. This study aims to design and develop a web-based inventory information system to improve the efficiency and accuracy of inventory management within the company. The software development method used is the Waterfall model, consisting of analysis, design, implementation, and testing stages. The system is developed using PHP and MySQL as the database. The results of the study show that the system can support more accurate inventory recording, reduce the risk of data loss, and accelerate the monitoring and reporting process. With the implementation of this system, the company is expected to enhance operational efficiency and asset management effectiveness.

Keywords: *Information System, Inventory, Waterfall, CV. Graha Raya Consultant.*

1. Introduction

The advancement of information technology today is experiencing rapid development and continues to grow over time. This progress is inseparable from the demands of the era, which requires speed, accuracy, and efficiency in accessing and managing various types of information. Information technology has become an essential part of society's life—not only in the field of communication, but also across various other sectors such as education, health, government, and the economy.
Computer technology, as a component of information technology development, plays a very vital role. Computer systems are used as supporting tools in carrying out various activities and functions within organizations or institutions. With computerized systems, organizations can more easily plan, implement, and evaluate every activity conducted. This certainly adds value by increasing work effectiveness and efficiency[1].

Today, almost every area of life requires the support of computer-based information systems. From administrative processes and customer service to business strategy formulation and decision-making, all increasingly rely on technology that can deliver data and information quickly and accurately. The use of manual tools or traditional systems is gradually being phased out, as they are no longer considered sufficient to meet the demands of an increasingly complex and dynamic era.

However, not all institutions or organizations are able to immediately adopt this technology comprehensively. Many still face obstacles, whether in terms of limited facilities, a lack of human resources with adequate technological knowledge, or budget constraints. These limitations result in suboptimal implementation of information technology and hinder the effectiveness of the existing information systems in supporting organizational goals.
Therefore, it is crucial to develop a deeper understanding of the importance of information technology in daily life. Computer technology is not merely a supporting tool, but a fundamental component in modern work systems. Its presence helps overcome various limitations and enhances competitiveness in a globalized era full of challenges[2].

By using technology wisely and optimally, various issues in information management can be minimized. Furthermore, computerized systems can open up opportunities for new innovations that bring positive changes across different sectors of life. Hence, the development and utilization of information technology should be prioritized in supporting sustainable progress and development[3].
CV. Graha Raya Consultant is a company engaged in the field of consulting and project management. One of the crucial aspects of the company's operations is inventory management, which includes the recording, monitoring, and distribution of goods and project equipment. Currently, the inventory recording process is still done manually, which often leads to problems such as data loss, recording errors, and delays in processing goods requests. The impact of this manual system is felt not only by the inventory management team but also by the project team that needs quick access to item availability. Delays in procurement can hinder project progress and reduce work efficiency. Therefore, an effective solution is to develop a web-based inventory information system that can be accessed anytime and anywhere, enabling real-time item monitoring and reducing recording errors caused by human error.

2. Research Methodology

This study uses the Waterfall software development method, which consists of five main stages[4]:

1. Requirement analysis involves identifying user and system needs through literature review and interviews with the company.
2. System design includes creating workflow diagrams, database structures, and user interface layouts.
3. Implementation refers to developing a web-based system using PHP and a MySQL database.
4. Testing ensures that the developed features function according to user requirements.
5. Maintenance includes fixing bugs and updating the system based on user feedback.

The Waterfall method is chosen for its systematic and sequential approach, ensuring each phase is completed before proceeding to the next. This helps ensure that the system's requirements are fully met before implementation[5]. It also supports thorough documentation, which is useful during both development and maintenance.

3. Result and Discussion

3.1. Requiretment Analysis

Based on the conducted requirement analysis, the system is designed to include several key features:

1. **Inventory Data Management**: Automatic recording of incoming and outgoing items.
2. **Stock Monitoring**: Real-time tracking of item availability in the warehouse.
3. **Item Search**: Simplifies the search for items based on category and storage location.
4. **Inventory Reporting**: Automatic generation of stock and item movement reports.

In addition to these main features, the system is also designed to support role-based access, allowing users with different access rights to view and manage data according to their responsibilities[6]. Administrators have full control over the system, while employees can only access certain features. This ensures that each user can perform their tasks more efficiently without role overlap or missing critical information.

The use of this system also enhances the accuracy of inventory records and reduces the potential for data manipulation. In manual systems, records often rely on physical documentation that is prone to errors and loss. With a computerized information system, each transaction is instantly recorded and stored in a database, making it easier to track and audit data.

3.2. System Design

The system design process involves developing system flow diagrams and database structures. This system is web-based, allowing access from various devices with an internet connection [7]. The user interface is designed to be simple and user-friendly to ensure that users can quickly adapt to the system [8].

The database structure is built to accommodate inventory recording needs, with primary tables including item information, suppliers, incoming transactions, and outgoing transactions. The system also includes user authorization features to restrict access based on each user’s access level. The database structure is designed with flexibility in mind, allowing for future enhancements in case new features or modules need to be added [9].

Additionally, the system is equipped with a notification mechanism that alerts users when stock levels approach the minimum threshold. This feature ensures that necessary items remain available and helps prevent delays in the procurement process. Notifications can be sent via email or displayed directly on the system dashboard.

3.3. Implementation

The system implementation is carried out using a combination of the following technologies:

1. **Backend**: PHP is used as the server-side programming language to process data and serve as the bridge between the system and the database.
2. **Database**: MySQL is utilized to store inventory data in a structured format, allowing quick access to the required information.
3. **Frontend**: HTML, CSS, and JavaScript are used to create an interactive and responsive user interface.
4. **Framework**: Bootstrap is implemented to speed up interface development with a more flexible and mobile-friendly design.

3.3.1 User Interface

During the implementation stage, the login page serves as the main gateway to access the system. Users are required to enter a username and password to access the system’s features. This ensures that only authorized users can log in and utilize the system functionalities.

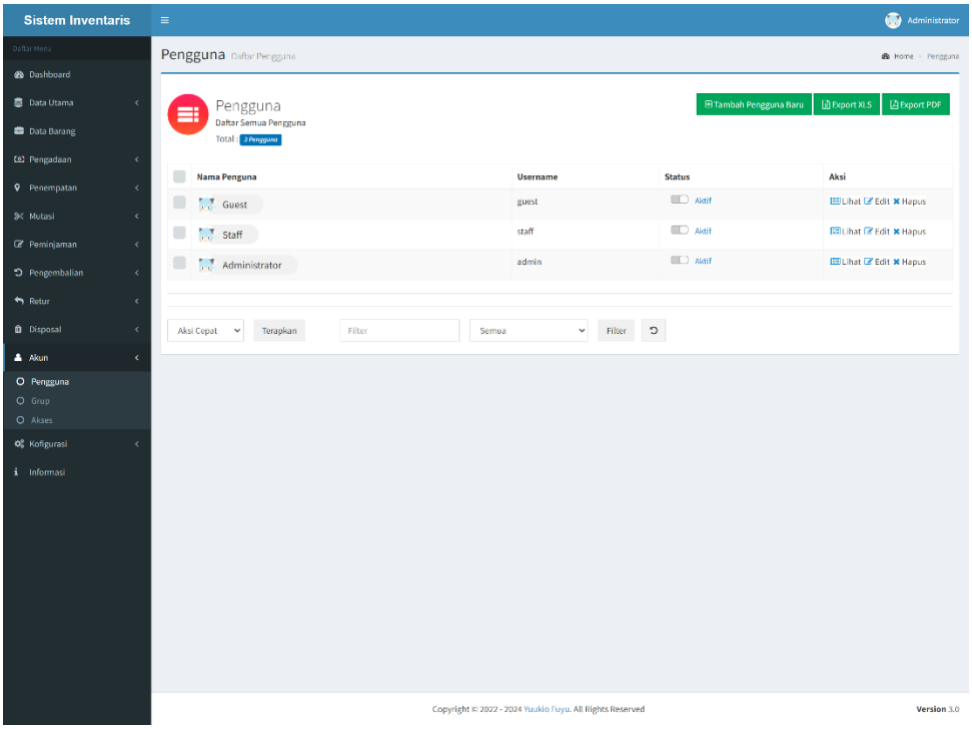

Figure 1: User Page Display

3.3.2 Main Dashboard

After logging in, users are directed to the main dashboard, which displays a summary of key information such as the total number of items, low-stock alerts, and recent activities. The dashboard is designed to present information in a clear and accessible manner using interactive charts and tables.

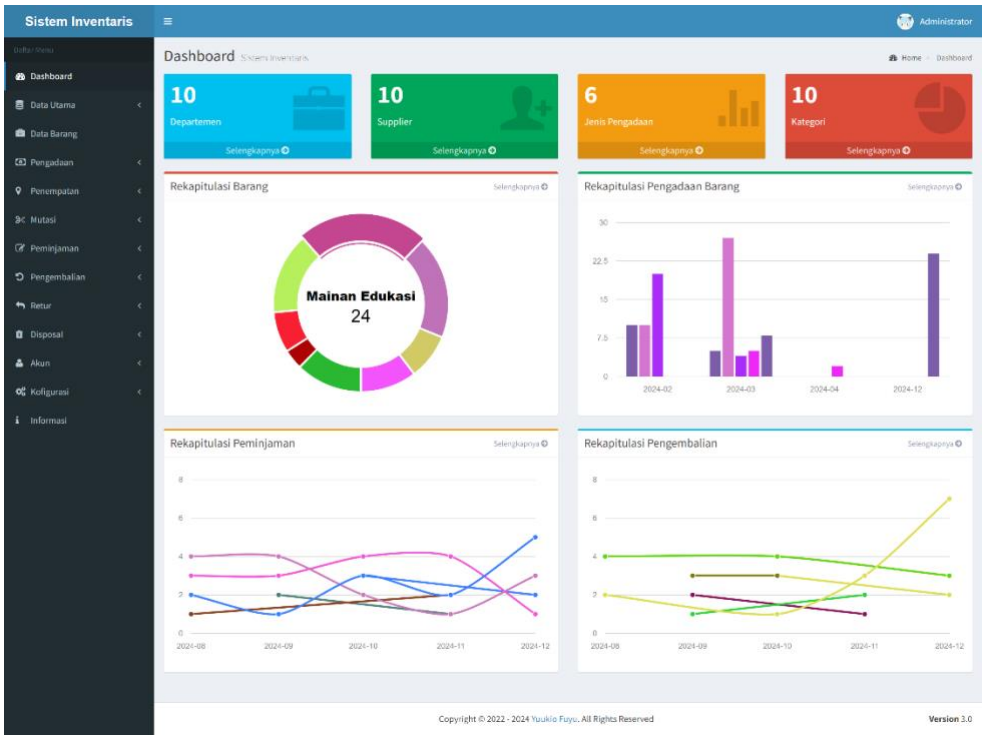

Figure 2: Main Dashboard Display

3.3.3 Inventory Data Management

This module allows users to add, edit, and delete inventory data. Users can also search for items based on specific categories. The system is designed to ensure that the search process remains fast and efficient, even as the volume of data increases.

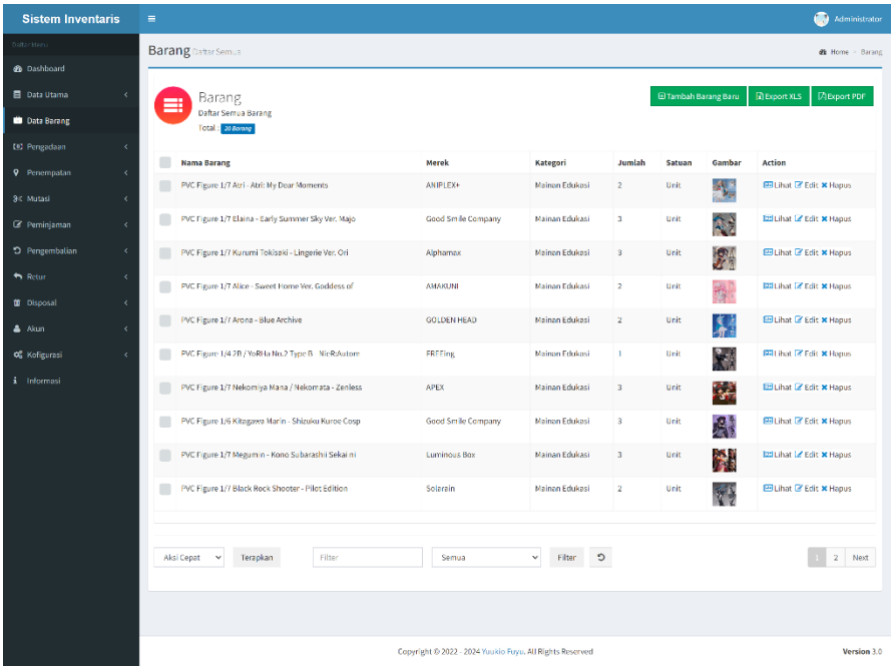

Figure 3: Inventory Management Display

3.3.4 Item Transactions

This module records incoming items from suppliers and outgoing items for project needs. Each transaction is documented in detail, including the date, item quantity, and the user who performed the transaction. The system also allows the generation of transaction reports, which can be downloaded in various formats such as PDF and Excel.

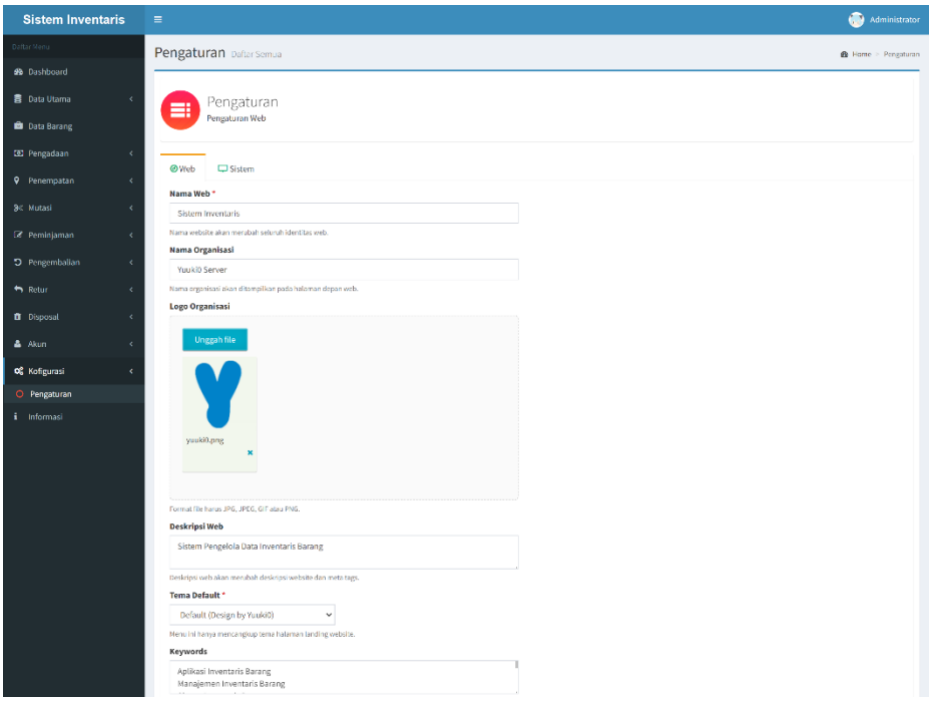

Figure 4: Item Transactions Display

3.4. System Testing

System testing was carried out using the Black Box Testing method, which focuses on evaluating the main functions of the system[10]. The test results show that:

1. The system accurately records inventory data, ensuring each transaction is captured in real-time without data duplication.
2. Stock monitoring functions optimally, allowing users to view item availability directly through the dashboard.
3. The item search feature works effectively, enabling users to quickly find items based on category or storage location.
4. Inventory reporting operates automatically, generating reports that can be downloaded in PDF or Excel format for further analysis.

4. Conclusion

With the implementation of the web-based inventory information system at CV. Graha Raya Consultant, the company can enhance the efficiency of goods management, minimize the risk of data loss, and accelerate the processes of inventory recording and reporting. This system also supports real-time stock monitoring, enabling management to make quicker and more accurate decisions. For future development, the system can be improved by integrating barcode scanning features for faster and more precise data entry, as well as automated notifications to alert users about low or expired stock.

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