Web Implementation as Guitar Inventory Management at Almoon's Guitar Shop Gombong

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ABSTRACT
This rapidly developing technology makes companies continue to make various efforts and strategies to stay in business. The company's role in managing the availability of goods (inventory) is one of the success factors for the company to maintain its business so that customer demand can be met as much as possible. Almoon's Guitar Gombong shop uses a manual recording system. The weakness of the current manual system is the inefficiency of time to find out the stock of goods when consumers come. In addition, the calculation of incoming goods data and outgoing goods data is still manual which is likely to cause errors or inaccuracies in calculations so that store performance is hampered. In making the reports needed to be submitted to the leadership, it will take a long time and there is even a possibility that the archive will be lost or damaged. Therefore, the author wants to create a system to facilitate the collection of goods and the preparation of reports on incoming goods and outgoing goods, so that the system to be built is expected to facilitate the work of the Almoon Guitar Shop in managing goods. The inventory system that has been produced in this design can manage incoming and outgoing goods data, stock data in one web-based application.

General Terms
VS Code, Javascript, PHP, Bootstrap, MySQL

Keywords
Web Application, Item, Inventory, Guitar

1. INTRODUCTION
Almoon's Guitar shop is a musical instrument shop from Gombong, Kebumen which is engaged in the sale of guitar instruments, to provide services to musicians or musicians in finding a set of guitar instruments. Music evolves in society over time, while artists' music gets influenced by personal experiences, external events, and inspirations from predecessors [1]. The guitar is one of the most popular musical instruments around the world that is played by plucking. The guitar has been referred to as both one of the principal instruments in music therapy and an instrument of motivation, preference, and choice, partly because clients may express preference for the guitar or seem attracted to or motivated by it [2]. It has been used in almost every musical style since the XX th century and is often the first choice for musical learning [3].

Online networks and digital platforms have become increasingly essential in our everyday lives [4]. The goods management system is an important factor in developing a business because inventory information requires accuracy as a report in the final bookkeeping. The profitability of a company relies heavily on effective stock volume management through proper inventory planning to minimize costs while meeting client needs [5]. Therefore, this research introduces a web-based goods management application that functions to manage incoming goods and outgoing goods so that the calculation of the final report can be done quickly and effectively. This web-based application is designed and built using PHP, CSS, Javascript and HTML programming languages. This system is designed simply and focuses on maximizing its main function, which is the optimal and accurate management of goods.

2. RESEARCH METHOD
This application is used by 2 users, namely Admin and Owner. The system design is visualized in Figure 1 below.
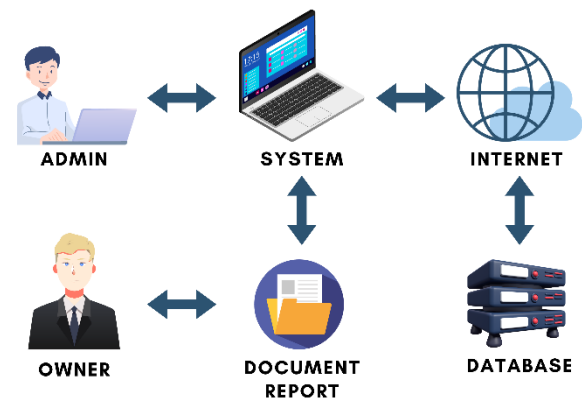

Fig 1: Architecture Model

This web-based system can manage incoming and outgoing goods data via the internet network. Web applications (or web apps) have been the mainstream technology for providing information and services over the Internet [6]. By using the internet, data on goods in the Almoon Guitar Shop can be stored in the MySQL database. MySQL is an open-source (RDBMS) developed by Oracle and used to manage databases on a website. In MySQL you pre-define your database schema based on your requirements and set up rules to govern the relationships between fields in your tables [7]. By utilizing these tools will help data base engineer in designing a good and normaldata base [8]. The stored data can be managed optimally by the admin so that to do routine reports to the shop owner the data is ready to be printed and given. Efforts in conducting routine reports aim to analyze problem solving and improve activities for the better.

2.1 Data Collection Procedure
The data collection process in this study went through 3 stages, namely observation, interviews, and literature studies.

2.1.1 Observation
The researcher conducted direct monitoring at the store location. Every employee activity was observed and recorded

to find out the problems or weaknesses that exist, so that researchers can design ideas to solve these problems.

2.1.2 Literature Study
Literature study aims to find out the basic concepts of a problem in the object of research. Researchers collect information sourced from scientific journals and books available on the internet. Theories that have been made by previous researchers are useful as research material in designing this system.

2.1.3 Interview
At the interview stage, researchers met the owner of the Almoon guitar shop in Gombong to ask permission to design an inventory system. After obtaining permission, the researcher conducted a direct interview with one of the store employees regarding the details of the activity or process of recording goods. The information obtained will be recorded and studied as a problem formulation that must be resolved.

2.2 System Design Logic
The system design logic in this system uses (Data Flow Diagram) DFD which functions to describe each process in the system. A Data Flow Diagram (DFD) is a modeling notation, which focuses on essential, functional aspects of such early software designs [9]. Then there is also a hierarchy diagram which functions as a tool to describe the elements of the system in an organization such as the highest to lowest position. Through connecting lines to display the role and authority of each element in an organization.
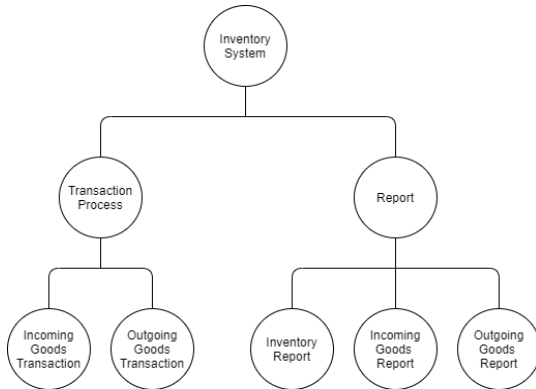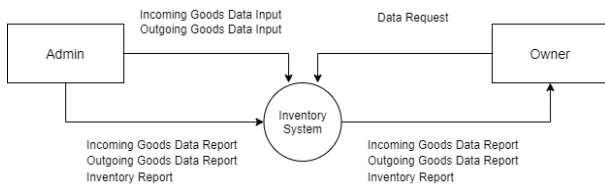
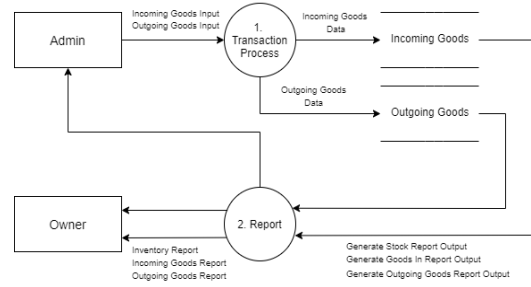**Fig 2: Hierarchy Diagram**

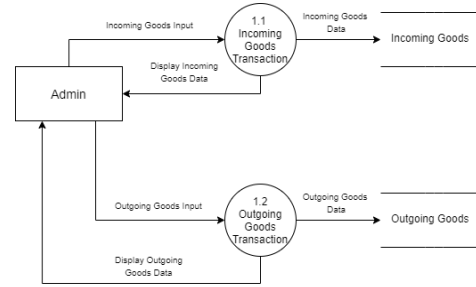**Fig 3: Context Diagram**

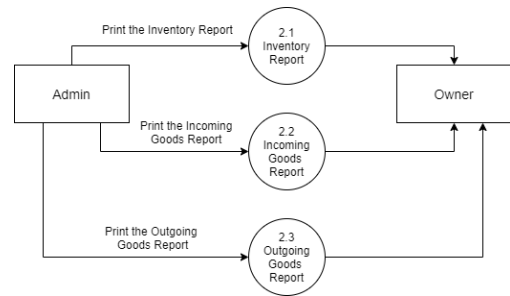**Fig 4: DFD Level 1**

Fig 5: DFD Level 2 Process 1

Fig 6: DFD Level 2 Process 2

2.3 Physical Design
This research uses Entity Relationship Diagram (ERD). Entity relationship diagram (ERD) is one of the main diagrammatic representations of a conceptual data model that reflects users' data requirements in a database system [10]. In Figure 7 this system has 3 entities namely admin, incoming goods, and outgoing goods. Each entity has its own attributes and the three entities are interconnected with each other.
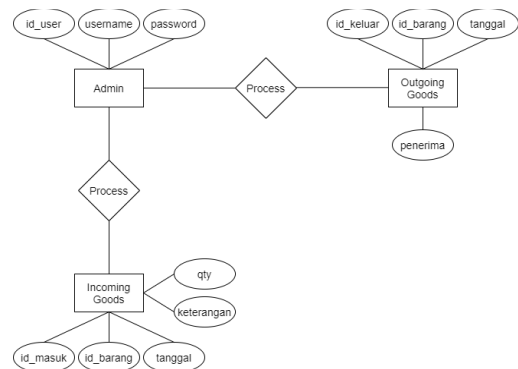
Fig 7: Entity Relationship Diagram

The relational model and relational database management systems have been the de facto industry standard for organizing and managing data in most computer-integrated manufacturing environments [11]. A table relation is the relationship between one table and another in a database. By using table relations, data processing becomes more efficient because data can be sorted and categorized according to its function.
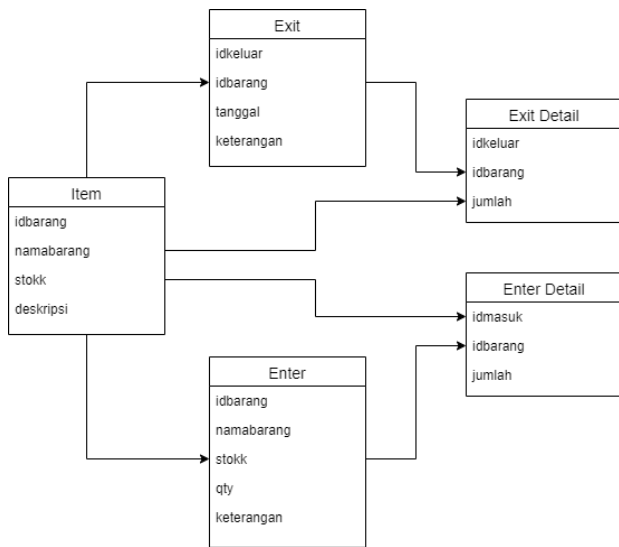

Fig 8: Table Relationship

2.4 Interface Design

The interface design of this system is made using Figma. An interface design framework is proposed for effectively identifying an optimal interface structure and its assembly sequence to minimize assembly system complexity [12].

2.4.1 Stock Item Page

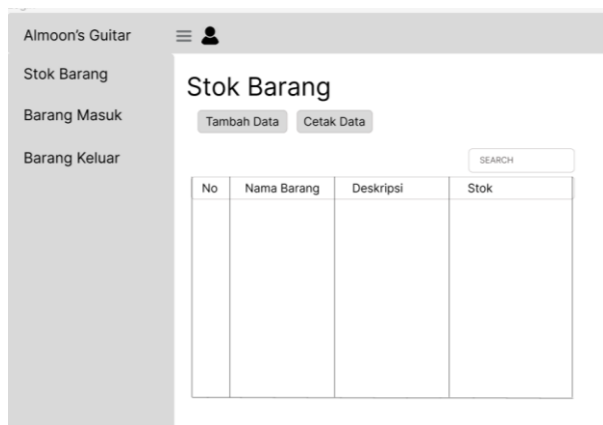The Stock Item page contains a list of various items that are being managed by the admin.

Fig 9: Stock Item Page

2.4.2 Login and Add Item Page

The Login page contains text input of user data, while the Add Item page contains text input to add items.
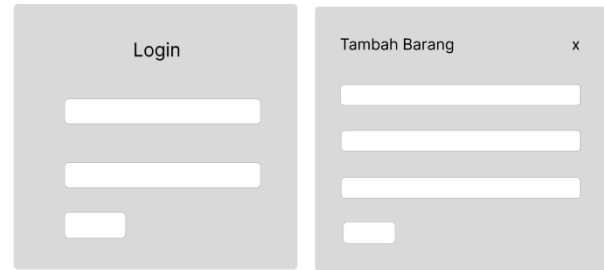

Fig 10: Login and Add Item Page

2.4.3 Incoming Goods Page

The Incoming Goods page contains a list of newly entered items as an accurate data recap.
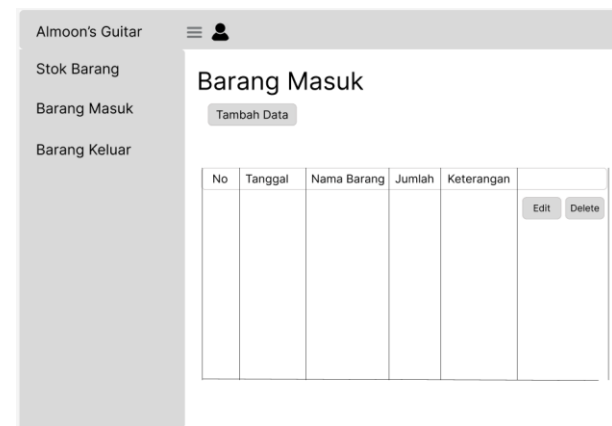

Fig 11: Incoming Goods Page

2.4.4 Outgoing Goods Page

The Outgoing Goods page contains a list of items that have come out as an accurate data recap.

Fig 12: Outgoing Goods Page

3. DISCUSSION AND RESULT

3.1 Assumptions

The assumption in this application is that the admin can use this application to manage data in the store. Admins can also carry out other activities such as adding, deleting, editing incoming and outgoing goods data.

3.2 Hypothesis

This hypothesis is made based on the assumptions obtained and proven in the research stage. The hypothesis of this research is "This item data inventory application can help more effective and accurate store management".

3.3 Feature

This system is web-based and designed using the PHP programming language and MySQL as a database. The flow of using the system can be explained in the Flowmap which explains the system workflow from start to finish in full.
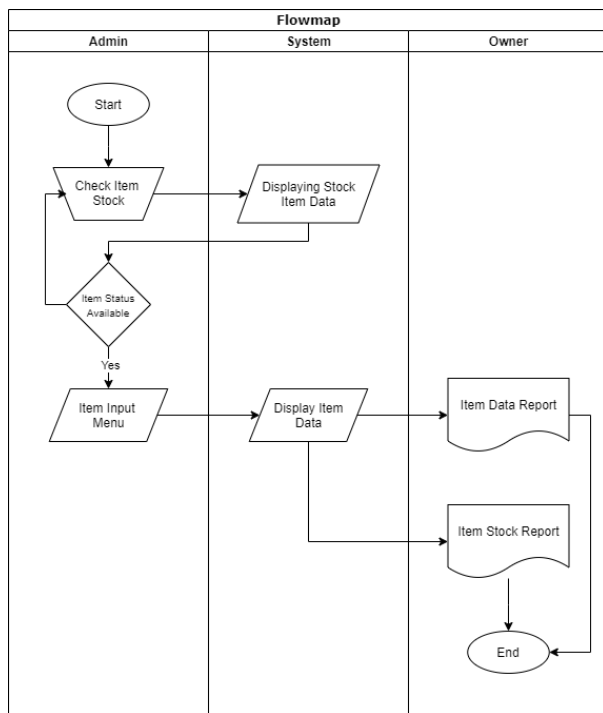

Fig 13: Flowmap

3.4 Run an Experiment

With the rapid development of web technology, more and more web applications have been developed and applied in various fields [13]. With the effect of developing technology and digital transformation, the services offered on the web are gaining more and more importance, affecting our lives more [14]. This implementation is the process of building applications based on the results of analysis and design in the previous chapters. PHP is an open-source scripting language widely used in website programming and development, generally executed in server-side communication, and currently supported by almost all systems. PHP in particular has been widely employed in servers around the world as part of the LAMP (Linux-Apache-MySQL-PHP) platform [15]. MySQL is the world's most popular and widely used open source relational database, MySQL acts as a bridging language between the application software and the database server. The function of MySQL is to manage the information in the database on the server side with the SQL programming language. With the help of PHP and MySQL a computer-assisted software we developed [16] a web-based application that functions to manage inventory data at Almoon Guitar Shop in Gombong.

3.5 Implementations

Implementation aims to apply the results of system analysis and design into an application that can be used by Almoon Guitar

Shop. The final result at the implementation stage is an inventory management system that can be used by admins in the store and help make accurate reports to store owners.

3.5.1 Stock Item Page

The Stock Item page is a page that displays all items available in the store. On this page the admin can view stock items, add item data and print monthly reports.
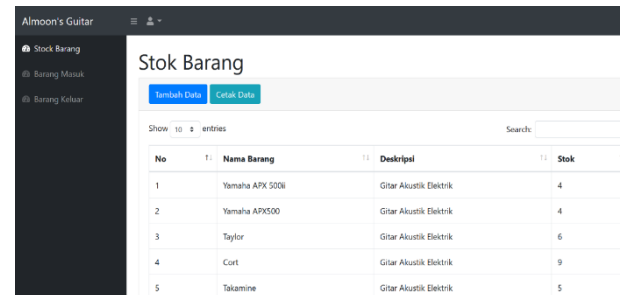

Fig 14: Stock Item Page

3.5.2 Login and Add Item Page

The Login page is a display for users (admins) when they want to enter the application. This serves to maintain data on the system so that it is not manipulated by just anyone. Then the Add Item Page functions for the admin when he wants to add data on incoming, outgoing, and stock items.
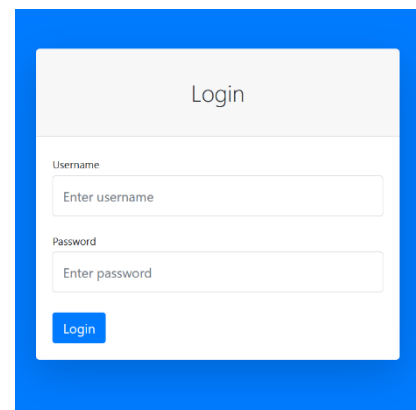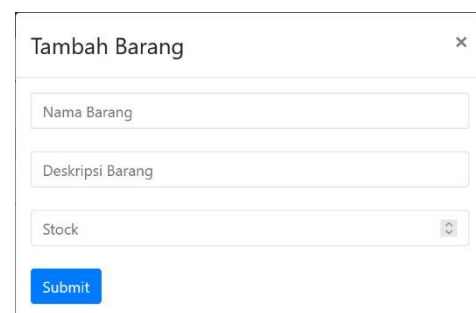

Fig 15: Login Page

Fig 16: Add Item for Stock Page

Fig 17: Add Data for Incoming Goods

Fig 18: Add Data for Outgoing Goods

3.5.3 Incoming Goods Page

The Incoming Goods page displays data on incoming goods so that the number of incoming goods is safer and the data on the number of goods is more accurate.

Fig 19: Incoming Goods Page

3.5.4 Outgoing Goods Page

The Outgoing Goods page displays outgoing goods data so that the number of outgoing goods will be recorded accurately and safely.

Fig 20: Outgoing Goods Page

3.6 Discussion of Result

System implementation has been completed, so the next step is to test the application. Testing is essential for ensuring the reliability of software systems [17], Therefore, in testing this application, researchers used the White-box Testing method. White-box test generation is a technique used for automatically selecting test inputs using only the code under test [18]. Additionally a more powerful white–box testing method is developed, through which inherent limitations and not yet exhausted possibilities of white-box testing are made clear [19]. A white box testing strategy, which involves integrating a previously validated module into a software system is described [20].

Table 1. Testing Goods-In Transactions

No	Name	Add Data	Edit Data	Delete Data
1	Nur Rohman	✓	✗	✓
2	Listia Wiji Winasti	✓	✗	✓
3	Emillia Paraningtias	✓	✓	✗
4	Muhammad Hidayat	✗	✓	✓
5	Destia Mustikassari	✓	✓	✗
6	Pandu Bayu Pinandita	✓	✗	✗
7	Juli Hendra	✓	✓	✗
8	Retno Widayanti	✗	✗	✓
9	Nanda Putra	✓	✓	✗
10	Fahmi Hidayat	✓	✗	✗

Table 2. Testing Goods-Out Transactions

No	Name	Add Data	Edit Data	Delete Data
1	Nur Rohman	✓	✓	✗
2	Listia Wiji Winasti	✓	✗	✓
3	Emillia Paraningtias	✓	✗	✗
4	Muhammad Hidayat	✗	✓	✓
5	Destia Mustikassari	✓	✓	✗
6	Pandu Bayu Pinandita	✓	✓	✗
7	Juli Hendra	✓	✓	✗
8	Retno Widayanti	✗	✗	✓
9	Nanda Putra	✓	✓	✗
10	Wawan Hidayat	✓	✓	✗

4. CONCLUSION

Based on the results of research in the manufacture of this goods management inventory system was built to make it easier for admins to manage stock items at Almoon's Guitar Gombong Store to be more systematic and computerized, so as to avoid miscalculations when collecting data on goods, besides that it also makes it easier for admins in the process of making reports on goods data that will be submitted to shop owners.

The system that has been built has menu functionality that can be used by the admin to manage item data optimally. The available menus include admin login, transactions consisting of incoming goods transactions and outgoing goods transactions, and there is also a report menu, namely incoming goods reports, outgoing goods reports, stock reports.

5. REFERENCES

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