DESIGN AND DEVELOPMENT OF A WEBSITE-BASED INVENTORY MANAGEMENT SYSTEM: A CASE STUDY OF AL-MARDLIYAH BAHRUL ULUM ISLAMIC BOARDING SCHOOL CANTEEN

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ABSTRACT

The development of information technology in the digital era is very rapid and influences various aspects of life, including stock management. The Al-Mardliyah Bahrul Ulum Islamic Boarding School canteen, as a business unit that provides food and drinks for students, currently still uses a manual stock recording system that is prone to errors and inefficiencies. This research aims to design and build a web-based stock application to increase efficiency and accuracy in managing stock in the canteen. Using the waterfall software development model, this application is designed to have features such as automatic stock recording, low stock notifications, and automatic reporting. System test results show that this application can reduce stock processing errors, make reporting easier, and increase security and ease of data access. By implementing this web-based stock application, it is hoped that canteen operations will become more efficient and effective, better supporting the needs of students.

1. INTRODUCTION

Advances in information technology in the digital era are developing very quickly, affecting various aspects of life, including the operations of companies, business entities and agencies. Advances in information technology in the digital era are developing very quickly, affecting various aspects of life, including the operations of companies, business entities and agencies (Bagus Setiawan *et al.*, 2021). The use of information technology allows previously manual systems to become computerized. For example, inventory systems that were previously managed manually can now be improved with computer-based stock information systems (Solehudin *et al.*, 2023). Involving computer technology in work will increase the effectiveness and efficiency of companies, business entities and agencies. This system collects and maintains inventory data, converts it into useful information, and reports it to users (Adi Swasono and Tri Prastowo, 2021). In this context, the Al-Mardliyah Bahrul Ulum Islamic Boarding School Canteen

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faces challenges in managing stock which is still done manually, causing various operational problems.

Management of stock of goods in the canteen of the Al-Mardliyah Bahrul Ulum Islamic Boarding School still uses manual methods, which causes several errors that often occur, such as, discrepancies in recorded stock of goods with existing physical stock, loss of stock records, risk of human error, delays in stock reporting goods, inefficiency in procuring stock of goods. This problem results in excess or shortage of goods in stock, which ultimately affects students' consumption.

To overcome this problem, it is necessary to design and build a website-based stock application system. This system is expected to provide an effective solution to increase efficiency and accuracy in stock management in the canteen.

The website-based stock application system that will be designed and built will have several features to support canteen operations, such as automatic stock recording, stock recording is carried out automatically every time goods come in or out, low stock notifications to provide information regarding the type of goods that have reached minimum stock limit so that procurement of goods can be carried out on time, providing reports regarding stock availability, as well as incoming and outgoing goods periodically and automatically, which can be downloaded and used for further analysis.

By implementing this website-based stock application system, it is hoped that the canteen operations of the Al-Mardliyah Bahrul Ulum Islamic Boarding School will become more efficient and effective in overcoming existing problems, and improving services to the students.

2. METHOD

This research uses the Research and Development (R&D) method, namely the process of creating or improving products so that they can be accounted for (Arsyam and M. Yusuf Tahir, 2021).

In system development, the Waterfall Model is used. This model was the first method in software development that was simple and structured. Each phase is completed before the next phase begins, with no overlap between phases (Rianto, 2021), as shown below:

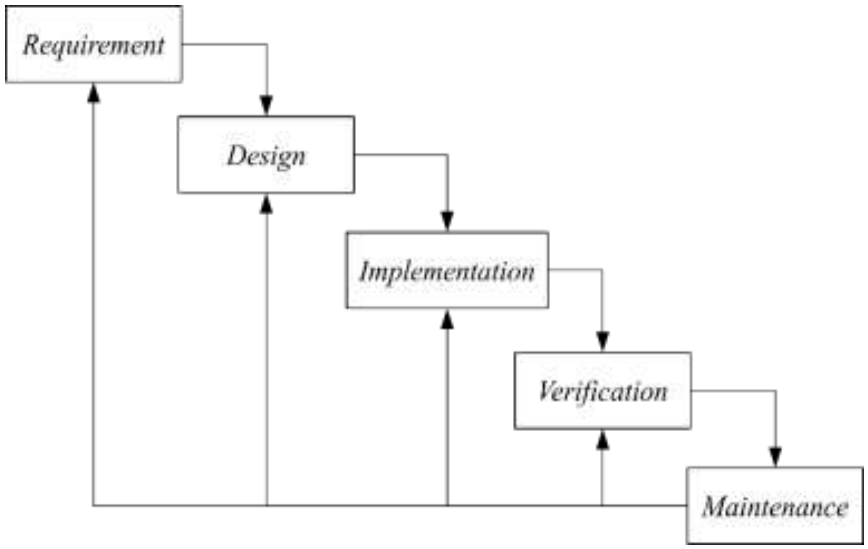

Figure 1. Waterfall Method

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The picture above can be explained through the following points about what needs to be done, which are:

a. Requirement

The first step in software development is understanding user needs. This is done using methods such as discussion, observation, and surveys. The collected data is then analyzed to determine the specifications of the software to be developed.

b. Design

The system design developed in this research involves creating UML models, including Use Case Diagrams, Activity Diagrams, and Class Diagrams.

c. Implementation

This stage involves building a system based on the design that has been created. This includes creating the program, building the database, and integrating all the components.

d. Testing

Once the system is built, the next stage is to test the system to ensure that it functions according to the desired specifications. This includes testing the suitability of functionality, and system performance.

3. RESULT AND ANALYSIS

This chapter addresses the planning and development of application systems. Upon completing the development stage, the application's system performance is tested.

3.1 System Modeling

Application design in this research involves creating UML modeling which includes Use Case Diagrams, Activity Diagrams, and Class Diagrams based on the data obtained, as well as designing the application UI.

1) Use Case Diagram

Use case diagrams are models that describe actor behavior with the system (Rusdi, Sri Mulyani and Herlina, 2020), Below is an overview of the use case diagram.

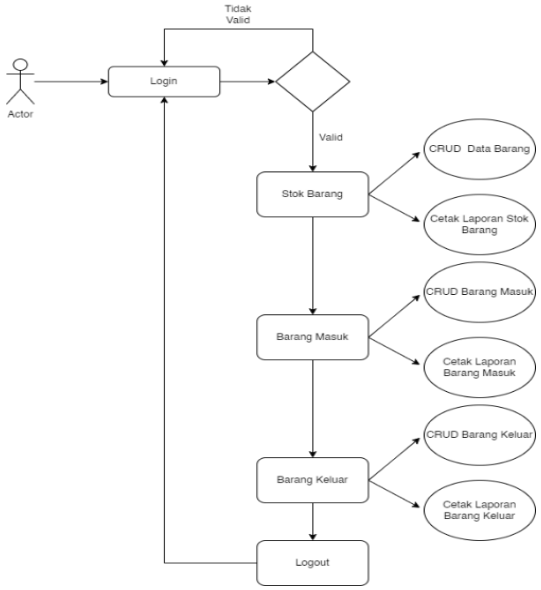

Figure 2. Use Case Diagram

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2) Activity diagram

Activity Diagram Activity Diagram is a diagram that can display logical procedures and business processes in an information system (Wulandari and Nurmiati, 2022), The following is an overview of the activity diagram.

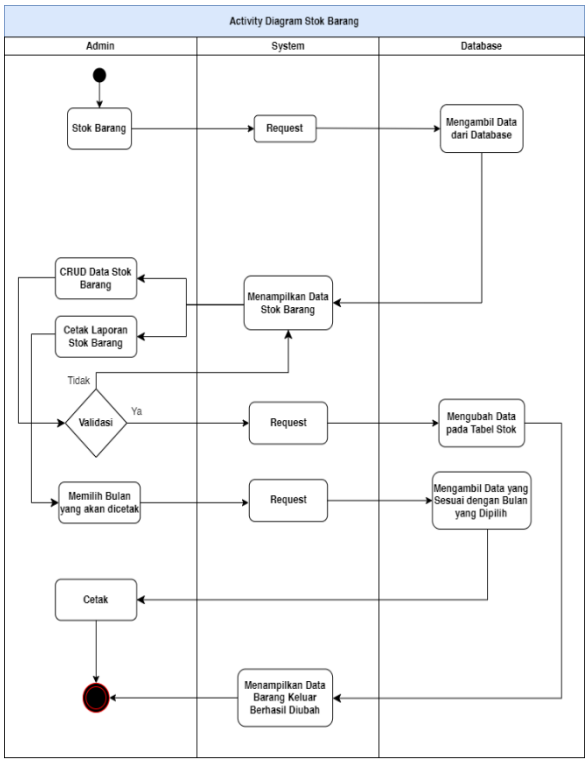

Figure 3. Activity Diagram

3) Class diagram

Class Diagram is a description of the system structure in terms of defining the classes that will be designed to build the system (Wulandari and Nurmiati, 2022), following is an overview of the class diagram.

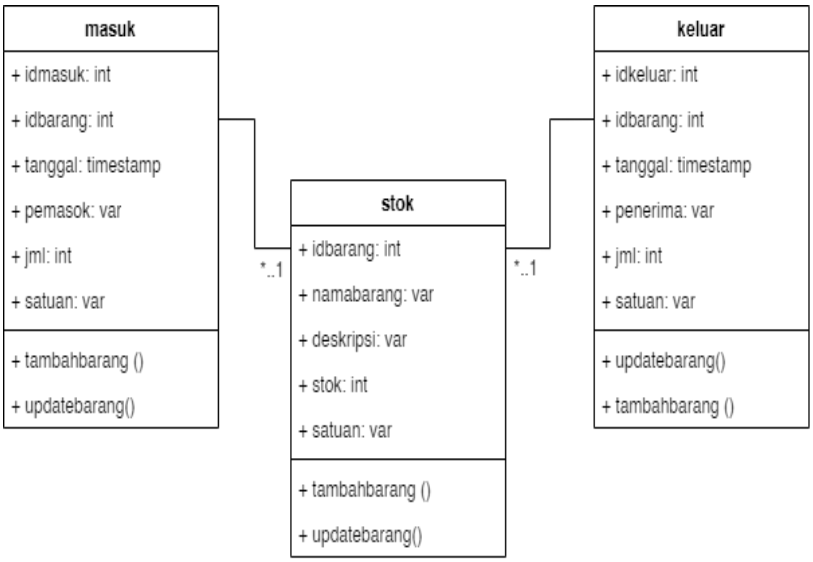

Figure 4. Use Case Diagram

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3.2 Result

1) Stock Page

The stock page displays data on the availability of all stock items in a table, notifications regarding stock for each type of item, print reports, and CRUD features.

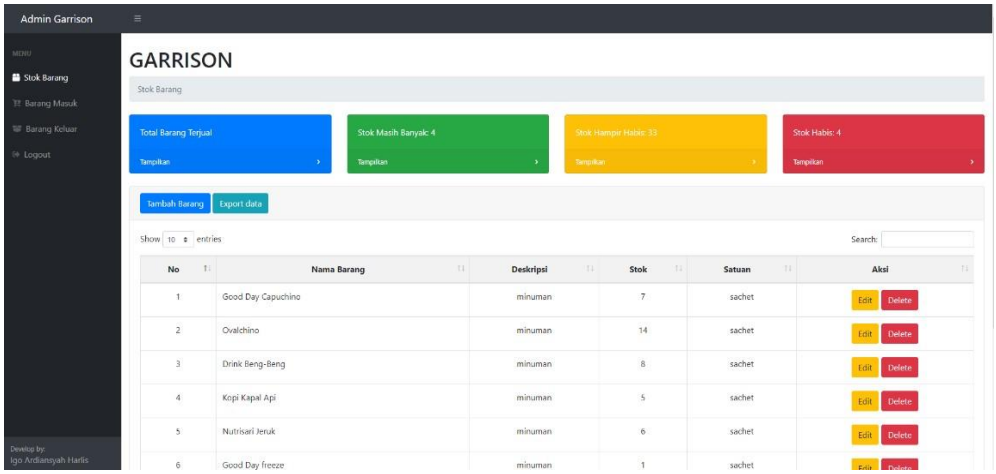

Figure 5. Stock Page

2) Incoming Items Page

The Incoming items page is a page that displays all data related to incoming items data. Admin can do CRUD, and print incoming items reports on this page.

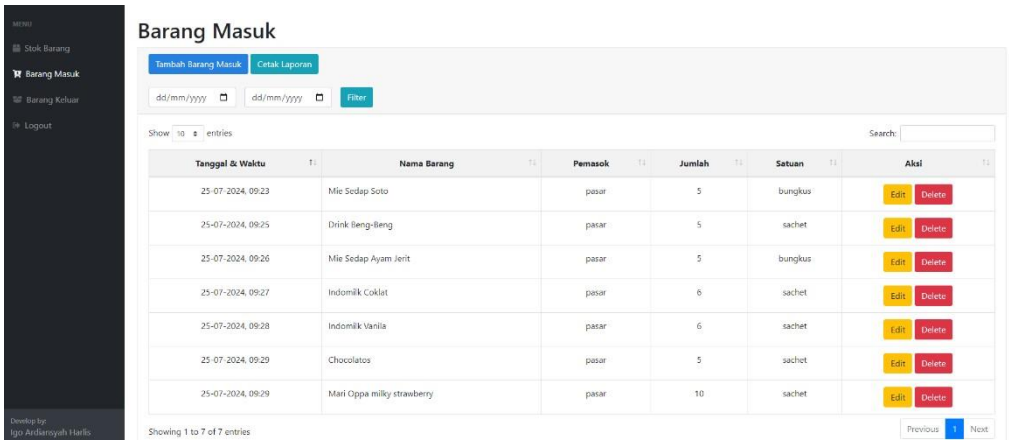

Figure 6. Incoming Items Page

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3) Outgoing Items Page

The Outgoing items page is designed to display all outgoing items data. On this page the admin can do CRUD, and also print outgoing items reports.

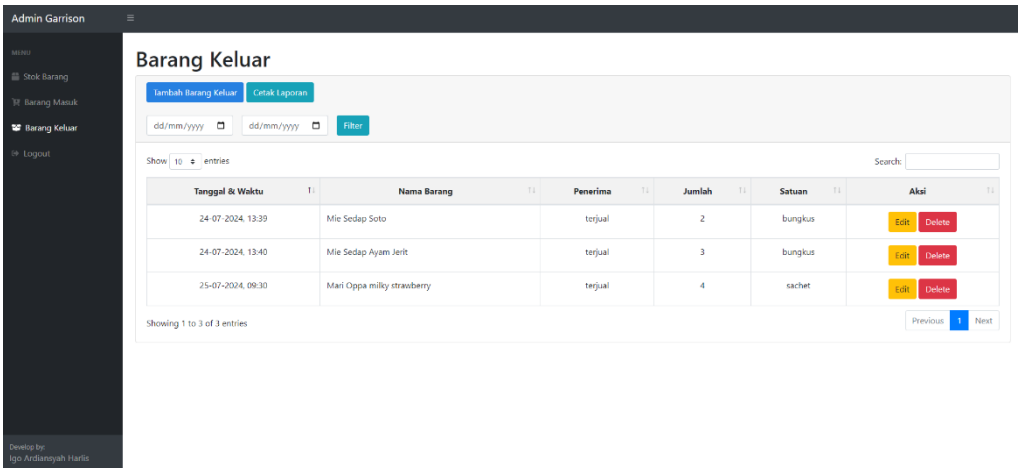

Figure 7. Outgoing Items Page

4. CONCLUSION

Based on the results of research, analysis, system design and program creation until the final stage of application completion, the researchers concluded that the website-based stock application in the Al-Mardliyah Bahrul Ulum Islamic Boarding School canteen succeeded in reducing stock processing errors, making management easier with CRUD features, providing information notifications. stock, makes it easier to create reports, speeds up data searches, increases data security, and is designed to be easy to use by admins for more efficient and effective stock management.

5. ACKNOWLEDGEMENTS

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6. DECLARATION OF COMPETING INTEREST

We declare that we have no conflict of interest.

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