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Designing a Web-Based Management Information System in the Kerupuk Puli Dua Bintang Cracker Industry in Tulungagung Regency

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ABSTRACT

Nowadays, there are many changes in the field of Information Technology, from simple communication to electronic communication. This development affects several sectors of the world. The industrial world today is influenced by the development of information technology and makes the management information system in the management of information in the industry. A management Information System is a collection of information systems that are willing to interact and responsible for processing and collecting information data so that they can assist and manage at all levels when planning and managing activities. The Kerupuk Puli Dua Bintang Cracker Industry is in Tulungagung Regency, a small, micro, small, and medium enterprise (MSME), and still mandates data management in manual management. The use of manual management can cause various problems that should not occur. For example, data loss due to lost or torn books. As well as log data searches due to extensive production activities, inaccurate calculations, incorrectly entering data related to the production process, and other unlucky things that can interfere with production in the Kerupuk Puli Dua Bintang Cracker Industry. This research designs a Management Information System to facilitate information management and solve the errors caused by UML (Unified Modeling Language) diagrams. The research method used in the study uses a descriptive method. Namely, using this method to comprehensively depict the Kerupuk Puli Dua Bintang Cracker industry to find problems. The result of this research is the design of a Web-based Management Information System to assist in managing and developing businesses in the Kerupuk Puli Dua Bintang Cracker Industry. Research can for building a web-based Management Information System by design.

Keywords: Management information system, information technology, MSMEs, website

Introduction

In this modern era, Information Technology give a big revolution for the industry. These changes are seen in the management system sector within the company, with the dynamic system so that technology can manage various aspects of the company such as finance, employee, production, administration, and others, this will beneficial for the company because the activities carried out will run smoothly. faster, and more integrated. Thus, businesspeople engaged in the industrial world must take the relationship between technology and industry seriously.

The concept of management information systems is a collection of interacting information systems that are responsible for processing and collecting information data to help manage all levels when planning and managing activities (Hartono, 2000).

Puli Dua Bintang Cracker Industry is one of the Usaha Mikro, Kecil, Menengah (UMKM) in Tulungagung district. In a previous study, the use of a web-based management information system

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has been researched by Kustanto and Ghavinkson (2021) with the title "Designing a Web-Based Management Information System Case Study: PT Einhorn Intertrans" and the results of this research are that making a company management information system can give an impact positively and to improve the effectiveness of the company's performance, with the integrated system can minimize human error, becoming a separate asset for the company. Meanwhile, the research by (Ruliyanto et al., 2021) with the title "Web-based drug inventory management information system with the prototype method in pharmacies" tells the problems faced by pharmacies in managing medicine inventory assets in the process of data collection orders, purchases, unrecorded sales. accurately and well-integrated so that in the search process you have to look for drug stock data one by one, and are slow in knowing drugs that will expire, with an information system it is very helpful to know drug stocks in pharmacies, facilitate management in reporting drug supplies every month, knowing the drug data that will expire and being able to produce valid data, namely the drug data has conformity with the reality in the inventory at the pharmacy.

Therefore, from the description and previous research, research was carried out related to the design of Web-Based Management Information Systems: Case Study of the Puli Dua Bintang Cracker Industry in Tulungagung District. The results obtained from this study are the design of a Web-Based Management Information System to be able to assist in managing and developing the business of Juli Dua Bintang Cracker in Tulungagung District. This research is structured as follows: Part 1 contains an introduction. Part 2 contains the methodology. Section 3 contains the results and discussion. Finally, Section 4 describes the conclusions and further research.

Material and Methods

The research method used is descriptive or can be called an analytical research method. In this descriptive research method, literature studies and observations of problems related to research.

Management information system

A management information system is a collection of interconnected information systems responsible for processing and collecting data, providing helpful information for all levels of management in planning and controlling activities (Hartono, 2000).

Architecture

MVC architecture on code igniter

MVC is a Model View Controller. MVC is a separation of business logic (school of thought), data logic (data storage), and presentation logic (application interface) or just design, data, and processes. It is a programming pattern or technique to perform (Daqiqil, 2011). The MVC components include a Model, View, and Controller.

Model

Unified Modelling Language (UML)

UML (Unified Modeling Language) is one of the most language standards in the industry to define requirements, perform analysis and design, and describe architecture in object-oriented programming (Rosa & Shalahuddin, 2015).

Flowchart

A flowchart is a graphical depiction of a program's steps and sequence of procedures. It usually affects the resolution of problems that need to be studied and evaluated further (Indrajani, 2011).

Results and Discussion

Management information system design

Management Information System Flowchart

The first stage in the design is to make a flow chart. This stage will produce a requirement document for representing the system, including the work plan to be carried out (Kustanto & Chernovita, 2021). The planning of the company's management system can be represented by the flowchart in Figure 1.

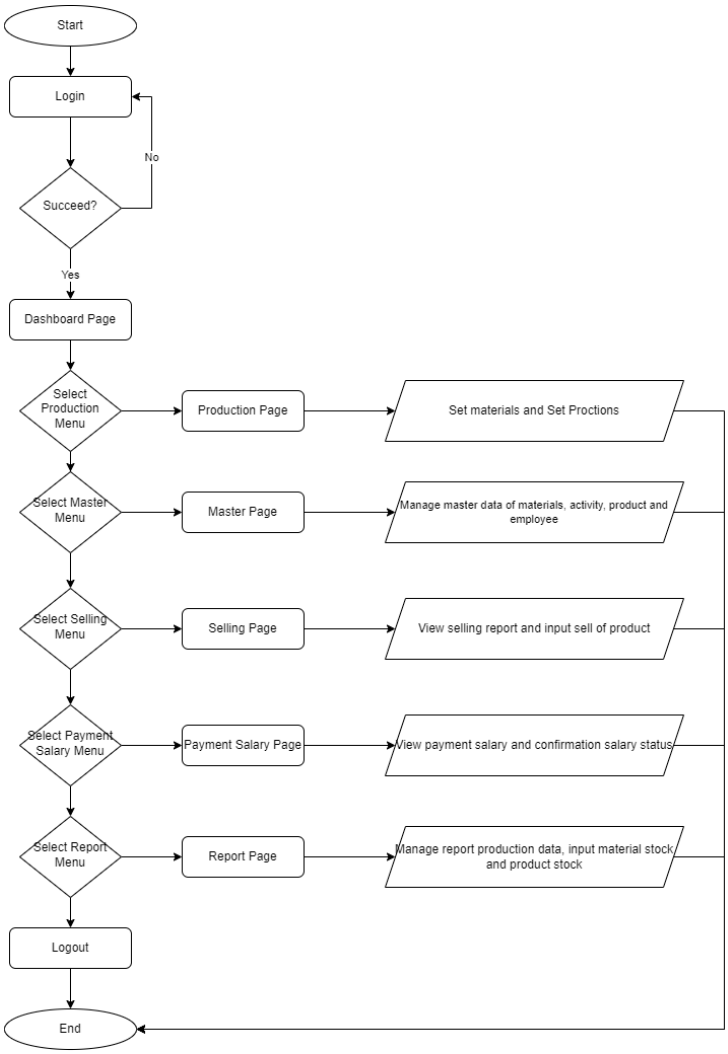

Figure 1. Flowchart management information system

Based on Figure 1, is the stages of the application that will be built, the user must log in to the application first, and if successful, the system will display the main page or dashboard. On the main page, the user can access the production menu, master menu, sales menu, payment salary menu, and report menu. If the user selects the production menu, and on the production page, the user can set the materials to be used in production, input the results of the employee's work, and calculate his total salary based on the results obtained from his work activities. If the user selects Master Menu, the system will display a master page. On this page, the user can manage fundamental data that will be used in production and sales activities, such as material data, activities, products, and employees. If the user selects the sales menu, the system will display a sales page where the user can input sales data and manage sales reports. Suppose the user chooses the pay salary

menu. In that case, the system will display a payroll page, where on that page, the user or business owner can make a salary payment consultation and manage employee salary data. The system will display a report page if the user selects the report menu and on that page, the user can manage the production data report and sales activities, such as production report data, sales, product stock, and material stock.

Unified Modeling Language (UML) management information system

UML (Unified Modeling Language) for designing management information systems and UML to explain how the workflow exists in the system. Unified Modeling Language is a visual modeling method for object-oriented system design tools. UML is a language that has become a standard in system visualization, design, and documentation (Yunus & Rohman, 2018). The UML (Unified Modeling Language) diagram used in this study is a Use Case Diagram and an Activity Diagram. The use case design of the management information system is in Figure 2.

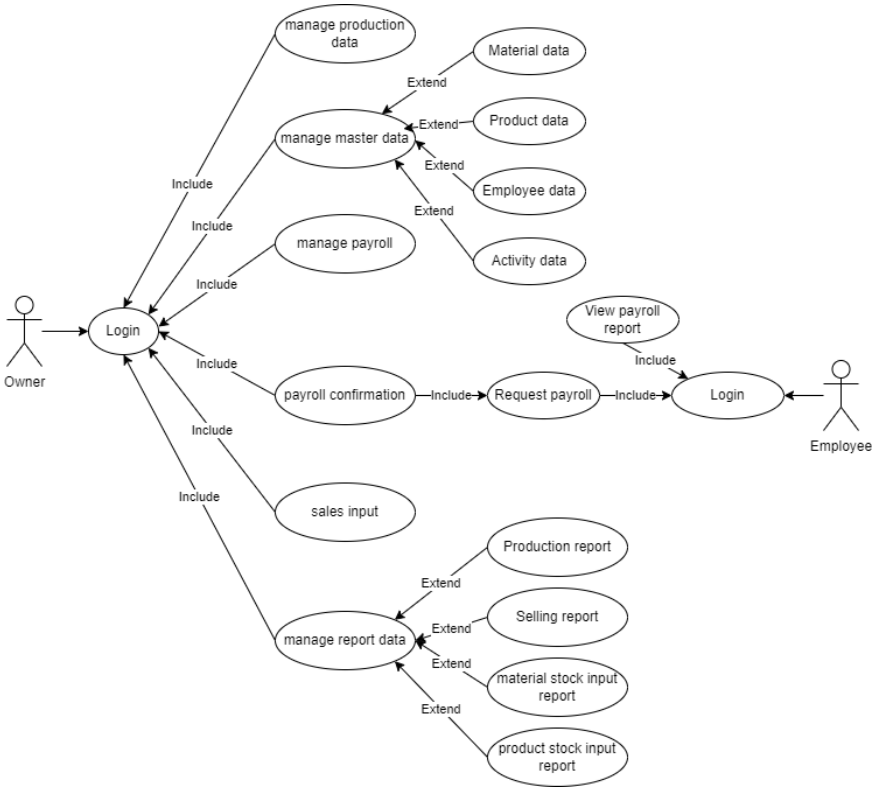

Figure 2. Use case management information system diagram

In the Use case in Figure 2, before the business owner can access the features in the application, the business owner must be login on to the system. After the owner success login in, the business owner can access manage production data, manage master data, manage payroll, payroll confirmation, sales input, and manage report data. In managing master data, business owners manage data on materials, products, employees, and activities. In managing report data, business owners can manage data reports on production, sales, and inputs on the stock of materials and products. As for employees, before employees can access the features in the application, employees must log in to activities. After successfully, employees can carry out activities to view and manage their salary reports and ask for salary payments. The data will be sent to the business owner to confirm salary.

After creating a use case design, the next step is to make a diagram activity design. The activity diagram starts with the user who logged in, and after success, the user will enter the dashboard

page. On the dashboard page, the user will select the master menu. Click on activities to go to the activity page. The activity page will display the input raw material data table. To manage the data, business owners can access to carry out CRUD activities (Create, Read, Update, Delete) on the data table. The trick is to select the button provided in the display. For more details, if the user chooses the create user button, it will be directed to the activity form page, and after that, the user inputs data to add activities. After the business owner fills in all the data, choose the done button. The system will save the data into the database if the user selects the update button, directing to the raw material form page. The user updates the data, selecting the Done button, after all, is done. The system will update the data according to the changes made by the user. If the business owner selects the delete button, the system will execute the delete_aktifitas () function, which in the function contains a query builder to delete the selected data from the database. If the user selects the button for reading, the user will enter the activity, read the page, and see the data details. Figure 3 is the flow of the activity process of managing activity data carried out by the business owner (User).

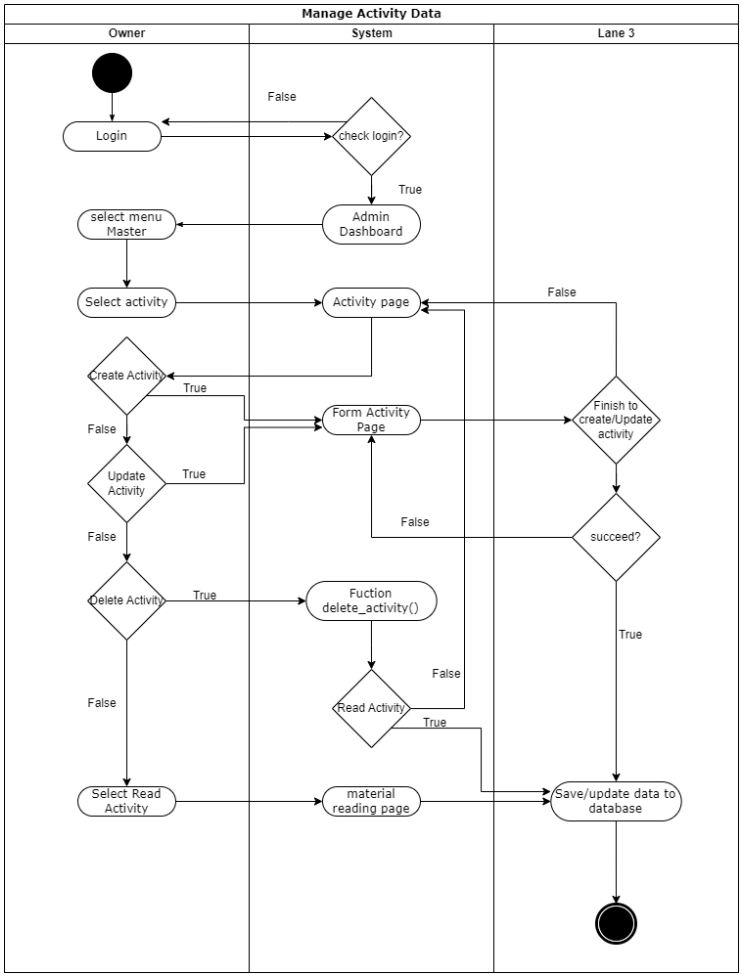

Figure 3. Activity diagrams manage activity data

Management information systems architecture

The MVC architecture to design this management information system. This system consists of several modules. Each module consists of the main components of the application, such as the part that manipulates the data (model), the user interface part (view), and the control section (controller) (Ferdiansyah, 2018).

- *Model*

The MVC Model architecture manages the database, and all user interface needs conveyed to the controller section will be processed inside this information system (Ferdiansyah, 2018).

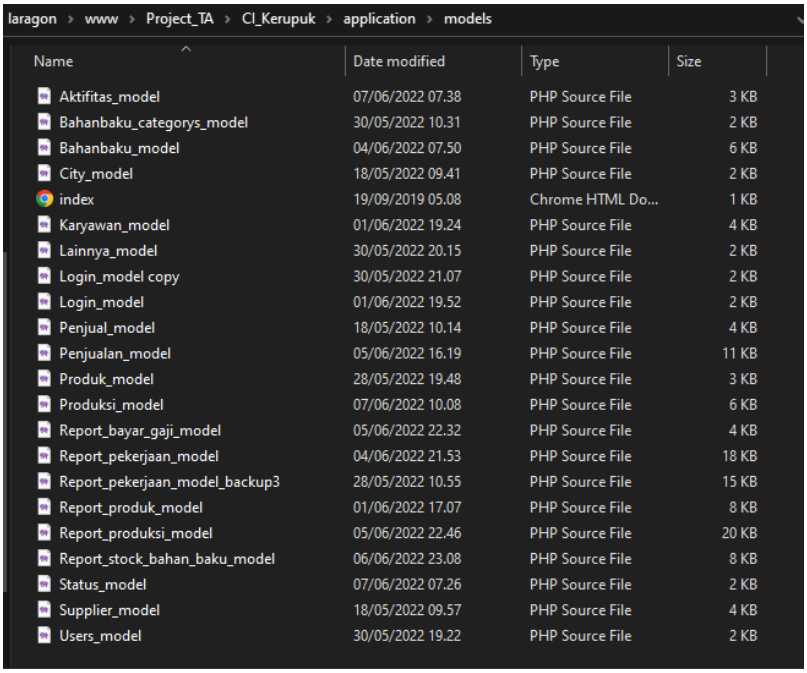

Figure 4. File Structure in The Model Section

Figure 4 is an example of a file that collects in the model directory. The model relates to data and interactions with a database or web service. A web application uses a model to manage database queries. Development application, each field created in the database management in a model file.

- View

The view is an MVC architecture that functions as a user interface. All information obtained from the process results in the controller section that is tapped from the model and then displayed in this section (Ferdiansyah, 2018).

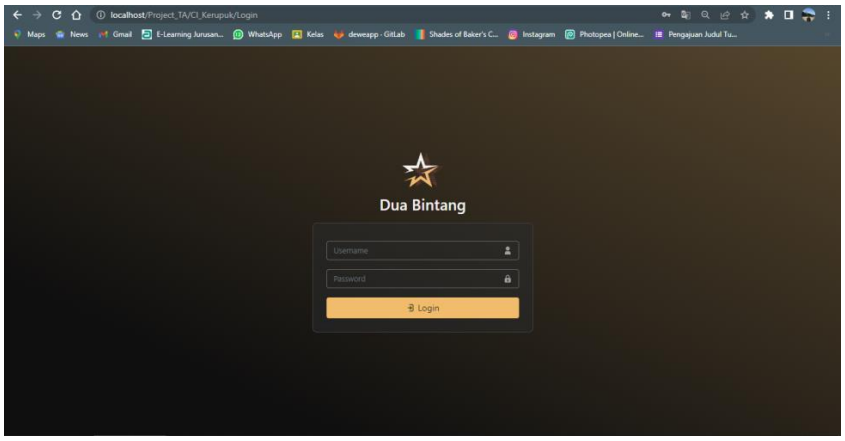

Figure 5. Mockup of the management information system login page

Figure 5 is a display design for the login page. The login page serves to determine user access rights. There are two users in this application: business owners (admin) and employees. On the login page, each user will input their respective usernames and passwords, and the system will check whether the data entered is valid or not. If the data is valid, the user will enter their respective main pages, and each user will get menu restrictions according to their access rights.

- Controller

Use the controller as a link between the View and the Model. Each command in the controller is an object-oriented PHP programming command, in which some functions and procedures regulate the flow of commands requesting data from views to the Model.

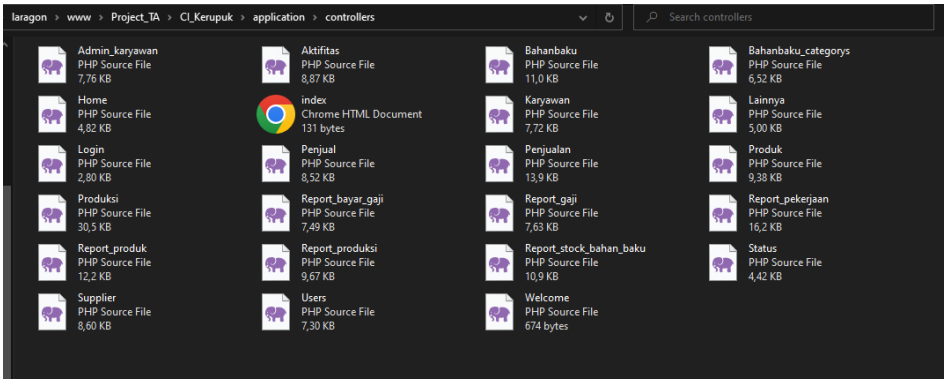

Figure 6. File structure on the controller

Figure 6 is an example of a file structure in the Controller directory. Controllers act as a link between data and views. In the application, each Controller Class created will provide various variables displayed in the view. Each file or controller class name created will manage its view module according to the name of the controller class. For example, the Employee Controller.php will manage activities in the raw material module, such as feature navigation activities and Delete in the index view.php, Create and Update activities in the form view.php, and Read activities in the Read view.php. Each file, such as index.php, form.php, and read.php, is stored in the same directory or module, namely the Employee module.

Conclusion

The development of technology today is no longer unfamiliar. The development of information technology is much faster than in recent years, making it more and more exciting and accelerating the transformation of technology to be more sophisticated. With the rapid development of information technology, there have been many changes in various aspects. One of the aspects that impact the development of information technology is the world of industry.

The industrial world is currently changing due to technological developments in the current modern era. This technological advance makes it easy to manage internal industries, such as finance, staffing, administration, and production. Ease of management in the industry making in the information management system, where the system can manage information related to the industry to facilitate the management and planning of the industry.

The Kerupuk Puli Dua Bintang Cracker Industry is a Micro, Small, and Medium Enterprise (MSME) in Tulungagung Regency. The Two-Star Puli Cracker Industry requires an information management system to manage industry-related information. Thus, based on the results of design tests on business owners and workers of the two-star pulley cracker industry, it is hoped that it can help the management system of the Kerupuk Puli Dua Bintang Cracker Industry. Further research can build a web-based management information system following the design.

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