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## SMARTPHONE SALES INFORMATION SYSTEM DEVELOPMENT USING THE WATERFALL METHOD

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Mobile Sales Information System Development is a sales application for recording sales transaction processes, accessed offline using online, local networks, or computing devices such as PC (personal computer) desktops, laptops, and notebooks. I can do it. smartphone. Previously, the sales process was done manually, so the sales transaction recording process was not well documented and it was difficult to create a report, but by doing this, it is necessary to create an information system. May be resolved. The method applied to the development of mobile sales information system applications is the application of the Waterfall method. A system that analyzes functional and non-functional system requirements, database design, and table requirements in the form of entity relationship diagrams (ERD), logical record structures (LRS), and uses Unified Modeling Language (UML) diagrams. Design coding Process Framework Codeigniter 3, from black box test testing, maintenance to application development. The results of this study are applications for sales applications that support sales transaction processing, data manipulation, and rapid printing or generation of reports for the required time period based on the required month or date.

Keywords: Information Systems, System sales, Waterfall

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### 1. INTRODUCTION.

Many smartphone products and their accessories have sprung up for a variety of important reasons as technology has advanced rapidly. During a pandemic, children, youth, or parents and adults will need to use it in order to learn, work, manage, and live. Smartphones are a necessity for many people, including those who are learning, working, and living their lives in a way that necessitates a constant connection to their devices (Syahril, 2017). Smartphones can serve as more than just a means of communication for college students; they can also serve as a symbol of their generation's fashion sense, way of life, and sense of community (Pertwi, 2020).

Handling the purchase and sale of merchandise is the first source of difficulty in selling this smartphone. Computerized systems are expected to speed up and improve accuracy of the automated sales system. Data recording errors, long data searches, delays in reporting, and data inaccuracies result from the use of traditional systems (Hidayati, 2019). As a result of a lack of data collection at this point, new products will be added in order to make it easier for customers to find empty stores where the product is frequently available. The study by Fitri et al. In order to successfully procure goods, conduct sales transactions, and generate reports while also dealing with the aforementioned issues, smartphone sales require a computerized application. As a result, the author of this information system application chose to use the Waterfall development methodology for its creation. It is imperative that a computerized system be used to support activities so that data collection is more efficient and accurate. Rakhmawati and Adityarini (2021) are the authors. Your time and productivity can be improved by using an information system because you'll learn how to build web-based information systems in PHP and manage databases in MySQL (Sitohang, 2018).

Access to current information is made simple through the use of information systems, which allow users to access that information at any time and from any location (Rahmad, 2019). In order to achieve the best results in the management of fast and accurate data through system development, waterfall software development life cycle (SDLC) (Abdurrahman & Masripah, 2017). Sales information systems can reduce human error and double data entry by using the waterfall method and by displaying sales reports that can be displayed quickly and accurately. (Muthia et al., 2019). The waterfall method, which consists of stages such as analysis, design, coding, and testing, is used in the sale of computer equipment information systems. Unified Modeling Language

(UML) is used with use case diagrams, sequences and unit relationship diagrams (ERD) in the design of database databases (Halim & Arifin, 2018).

## 2. METHODS.

The development method in this study the author applies the use of the waterfall which is divided into several stages, namely:

### 2.1 Analysis of software needs

This software requirements analysis attempts to analyze system requirements, both functional and non-functional, to facilitate program development. Customer data, administrator data, category data, product data, sales transaction data, journal data, sales reports, transaction report journals, customer reports, administrator login to process product reports, and more.

### 2.2 Design

The database in this program design is like database design and table requirements which are described in the form of Entity Relationship Diagram (ERD), Logical Record Structure (LRS) then for system design using UML diagrams

### 2.3 Coding

Coding is the implementation stage of the design. The designs created are processed by the system with coding. The coding process is carried out using the PHP programming language with the Codeigniter framework and mysql database.

### 2.4 testing

At the testing stage of the sales website design that has been made using blackbox testing.

### 2.5 Support

The support phase runs after the program is implemented. Program bugs can be caused by test bugs, so code generation and maintenance updates are required to maintain or repair the application properly.

## 3. RESULT AND DISCUSSION

### 3.1 Planning

This smartphone sales information system requires an administrator role to manage customer data, category data, item data, sales transactions, sales reports, transaction journal reports, and profit and loss reports.

### 3.2 Design

Use Case Diagram on information systems on smartphone sales as follows:

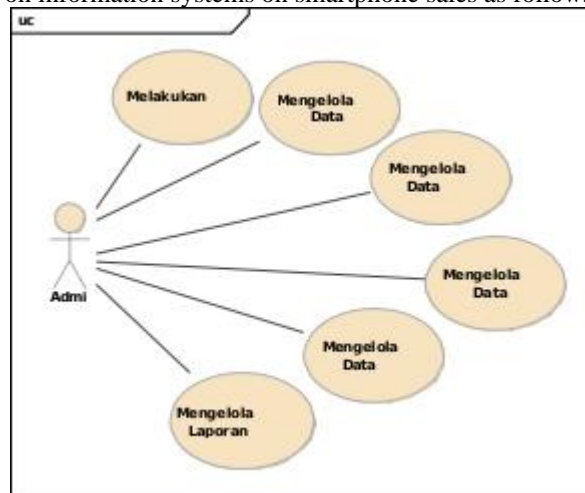
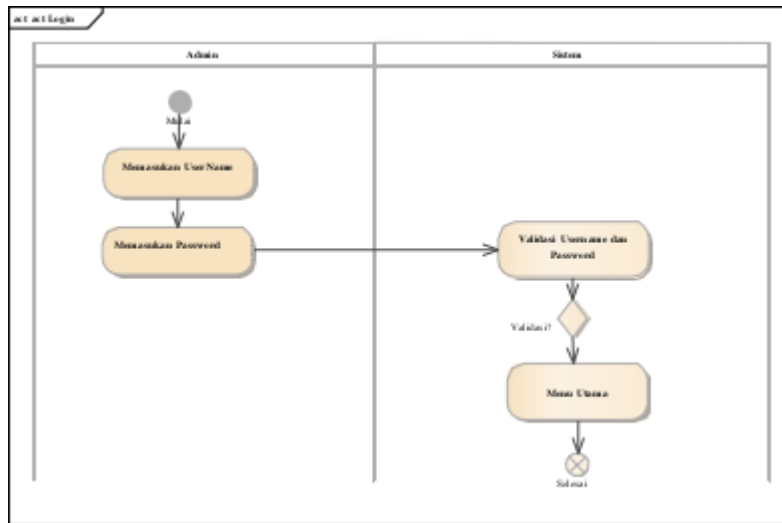


Figure 1. Smartphone Sales Information System Use Case

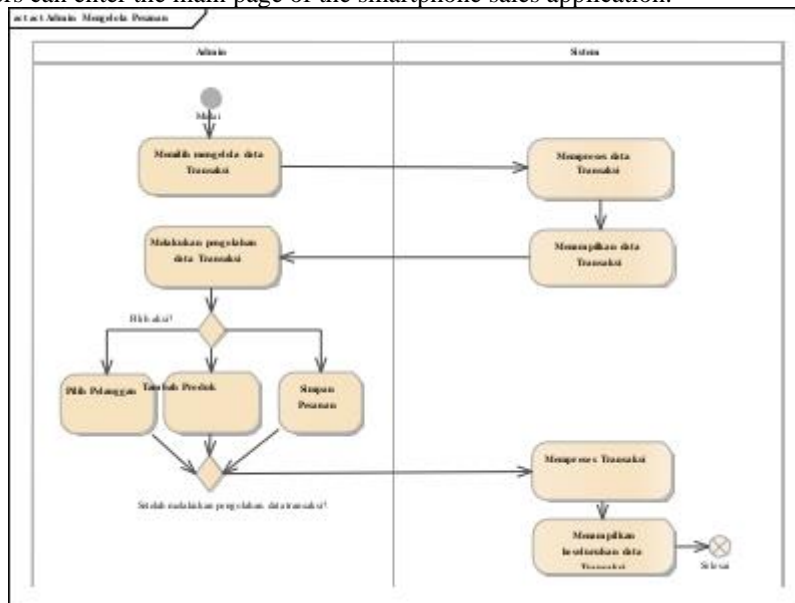
There is picture 1 above, there is one actor, and the actor is the administrator. The administrator actor has a full role in managing the application, managing both master data (management data, customer data, category data, product data), both transaction data (journal and sales transactions), and report data. Represents the managing user. Customer reports, products, journals, sales and more.



Figures 2. Activity Diagram Login Page on Smartphone Sales

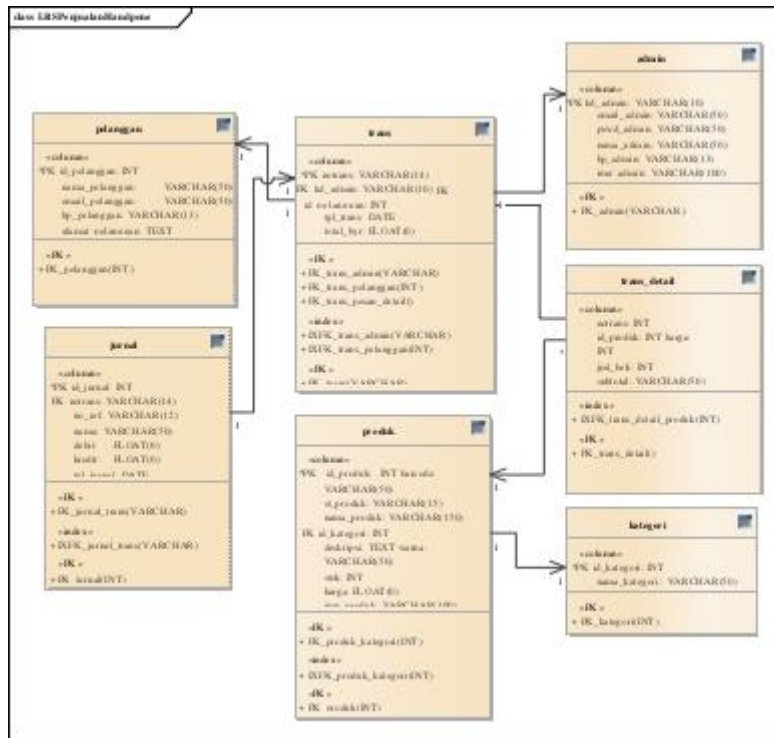
In Figure 2, this is an overview of the Activity Diagram of the login page that functions for security on the system to be built. Where the user here is as an admin by entering a username and password who already has access as an administrator to manage master data, transactions and reports, if the username and password match the database then enter the main admin page.

but if the username and password do not match then it remains on the login page. With this security system, not all users can enter the main page of the smartphone sales application.



Figures 3. Activity Diagram Proses Transaksi pada Penjualan Handphone

Figure 3 shows how the mobile phone sales transaction process begins with the selection of transaction data. If the purchase is more than 1, you will be asked to select a customer on the transaction page and enter product data that matches the product purchased (1) Then click or select Add Product and after purchase enter product data again. Until all the data purchased by the customer is entered into the transaction product data, the next step is to select the Save Order button in the last step to get the transaction data.



Figures 4. LRS (Logical Record Structure) in Databases

Figure 4 shows that the relational database built on top of the mobile sales app consists of seven interconnected tables: Customers, Magazines, Trans, Trans\_Details, Management, Products, and Categories. For customer and admin tables as users of this application, product and category tables for storing sales product data, and trans and trans\_detail tables for processing sales transactions, journal tables for sales reports.

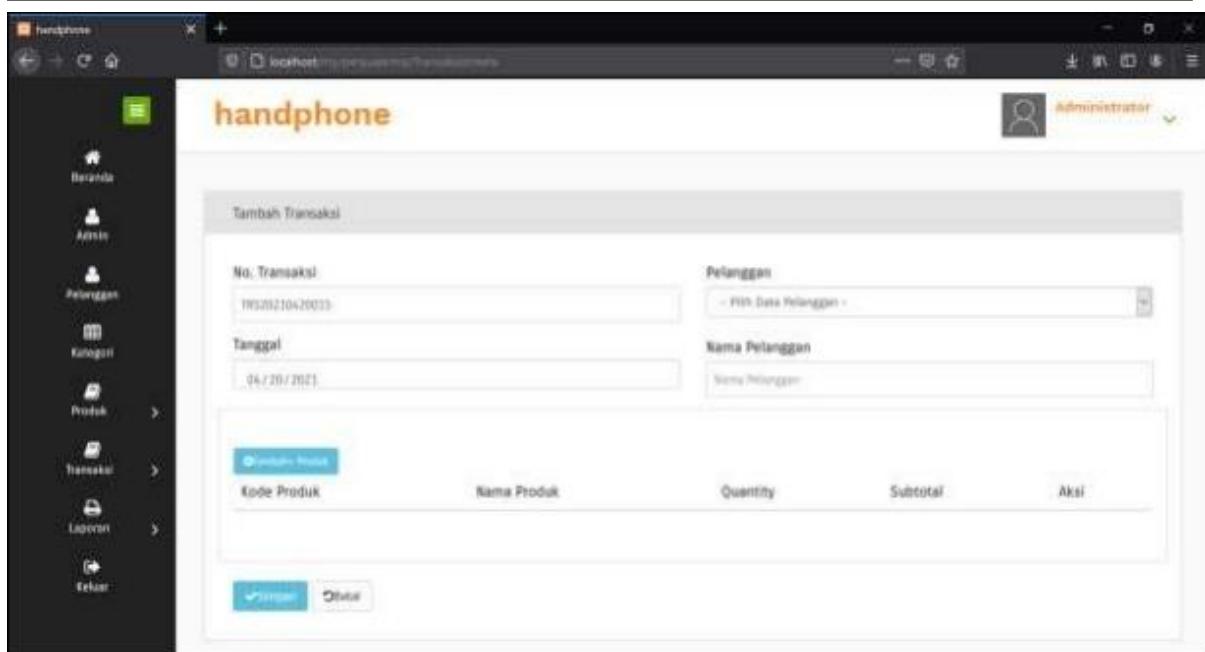
### 3.3 User Interface

When the mobile phone sales application is run, the page that will be displayed is the login page.



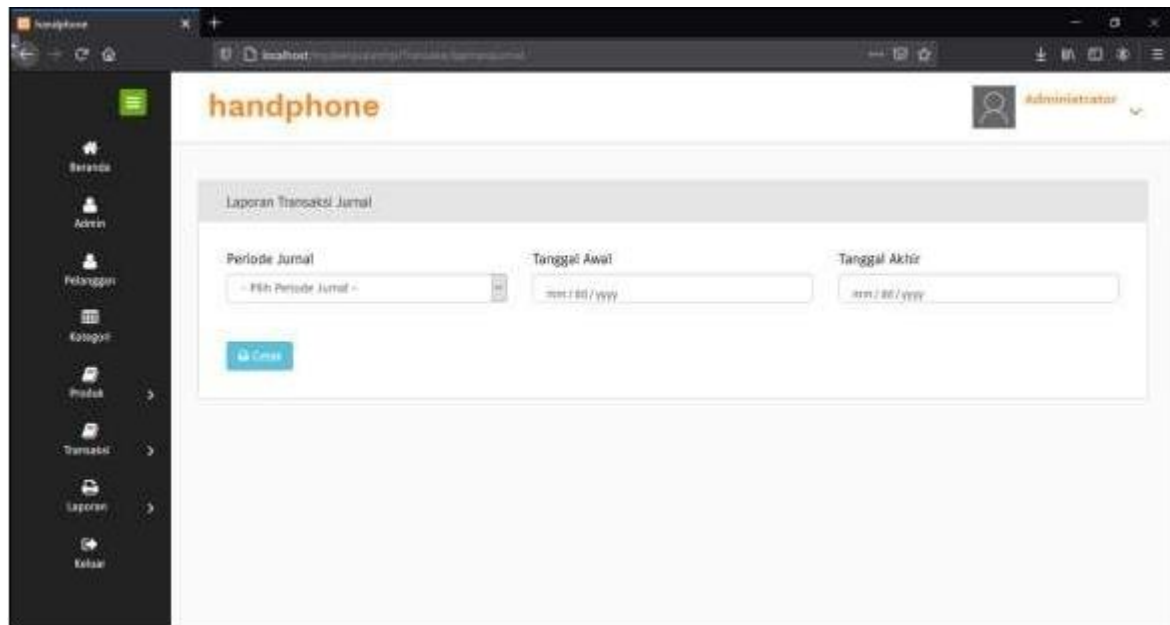
Figures 5. Administrator login page

The admin login page or administrator login page is intended for users who have been granted access rights as admin or administrator. After successfully passing this page, by entering the correct username and password, you can access the next page, namely the main page on the administrator page, but if the username and password are incorrect then you cannot access the next page by displaying a warning that it was not successfully accessed and remains on the login page admin.



Figures 6. Mobile Sales Transaction Page

In Figure 6, this is the page of the mobile phone sales transaction process, on the label No. The available text transactions appear automatically in the order of year-month-date-sequential number and similarly on the text date label displays the date according to the date when the transaction process was carried out. In the customer selection, we select the customer data that corresponds to the buyer's transaction, but if the customer data has not been registered we can add it to the customer master data first. To enter product data or shopping cart, by clicking the add product button on the product menu, we input the product code and the number of products purchased and finally click the save button if the transaction has been inputted.



Figures 7. Journal Transaction Report

On the transaction report page of this journal, we can print reports according to our needs, either per period as needed by specifying the start and end dates to be printed or printing the data as a whole with recorded transactions with data that was carried out when the sales transaction process was carried out.

### 3.4 Unit Testing

The following is one of the tests of the cellphone sales information system contained in the journal transaction report as follows:

No	Testing Scenario	Test Case	Expected results	Test result	Keterangan
1	The reporting journal period is not selected as well as the start date and end date are not selected, then click print	Journal Period: (blank) Beginning Date: (blank) End Date: (blank)	The system will deny access and display the message "Select Reporting Period to be printed".	As Expected	Valid
2	The reporting journal period has been selected but the start date and end date are not selected, then click print	Journal Period: (blank) Beginning Date: (blank) End Date: (blank)	access and display the message "Specify the Start and End date to be printed".	As Expected	Valid
3	The reporting journal period has been selected but the start date is greater than the end date, then click print	Journal Period: All Periods Starting Date: 26/12/2021 End Date: 20/10/2021	The system will deny access and display the message "Start Date must be less than End Date".	As Expected	Valid
4	The reporting journal period has been selected. At the start date is smaller than the end date, then click print	Journal Period: All Periods Starting Date: 20/10/2021 End Date: 26/12/2021	The system will receive report access and display the desired report	As Expected	Valid

### 4. Conclusion

The sales process, especially in the sale of cellphones, in this study the authors observed that if done manually or conventionally, many problems arise such as uncontrolled stock procurement, searching for old data, not recording the sales transaction process and finally difficulties when making reports. By realizing this, the need for making information systems can solve these problems which can reduce errors caused by human factors (human error) and can make an application that has an attractive and dynamic appearance. Software development using the waterfall method makes software development easier for future system development for further development because it can be seen through the stages that must be done.

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