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Design Of A Debit And Credit Financial Information System Prototype Method

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Keywords

Financial information system, debits, credits

Abstract. The absence of an available financial information system makes it difficult to record financial records and prepare financial reports, making it difficult for company leaders to understand their company's financial condition and make decisions. The legal entity company which was founded in 2018 has not yet utilized technology in carrying out financial records and preparing financial reports, especially debits and credits. This research aims to design a debit and credit Financial Information System using the Prototype Method at PT Bangkit Mulya Prakoso Teknik. The results include relational database design, activity diagrams, use case diagrams, and interface displays. It is hoped that this system design can improve corporate financial governance, make a significant contribution, and become a role model for other companies facing similar challenges.

1. INTRODUCTION

Technological developments are currently growing rapidly, many systems that use physical documents are switching to digital data management, using digital data has proven to be more easily accessible and can present information more quickly (Syarif & Pratama, 2021). The use of information technology in an organization or company can take the form of using computers, the internet and software (Hakim & Handayani, 2023). Information technology has had a significant positive impact on various aspects of human life. Overall, information technology has become a key driver of positive transformation in everyday life, bringing innovation, efficiency and connectivity that provide broad benefits to global society (Priandika & Setiawansyah, 2023). Technology has become an inseparable part of human life (Rahmansyah & Darwis, 2020). Increasing business needs have an impact on business competition in many companies that utilize technology to manage company finances (Rahmansyah & Darwis, 2020). A superior company must of course have good management and accounting information systems so that it can provide fast and accurate information for information users that is useful as a decision-making tool to achieve the company's main goals (Rahmansyah & Darwis, 2020).

Based on previous research, the development of the author's research is that this research was developed on database design, UML, and prototypes. "The design and creation of a desktop-based financial information system at PT XYZ carried out by Yustus Eko Oktian concluded that the client server-based financial information system at PT The application created can help companies in the process of recording and maintaining all financial data that occurs in the company. Apart from that, this system can manage the required data such as chart of accounts, opening balance, batches, transactions. Apart from that, monitoring the company's financial expenses and income can be done easily by viewing each transaction grouped based on the batch that has been created. With this financial information system, companies will not be able to input transaction data that is not balanced between debit and credit balances, thereby reducing errors in transaction input. Making financial reports is done quickly and only needs to be generated and can display all financial processes that occur at PT XYZ(Oktian, 2023).

PT Bangkit Mulya Prakoso Teknik is a legal entity company which was founded in 2018 and until now has not utilized technology in carrying out financial records and preparing financial reports, especially debit and credit. The tool used to determine financial performance is the Financial Report (Hastiwi et al., 2022). The basic nature of prepared financial reports is as a communication tool for interested parties (Dharma et al., 2023). In general, the function of financial records is to understand business developments in detail, determine the financial condition of the business, and sources of decision making (Soejono et al., 2020). Financial reports are the main means of providing financial information to other parties outside the scope of the company or organization to describe the financial

condition and results of operations of the company or organization (Fauzan Navaro et al., 2022). Business financial reports are important for every business because they can provide an overview of the company's performance and the health condition of the business being run (Soejono et al., 2020). Financial reports are records that contain financial information about a company/business in a certain accounting period (Soejono et al., 2020). For the income statement all expenses and losses are debited, however, all income and profits are credited (Senastri, 2020). Debit is a recording of a reduction in the nominal amount of money while credit is a recording of an increase in money (Abdi, 2023). An information system is a unit of interconnected components that collects (or retrieves), processes, stores and distributes information to support decision making and control within an organization (Frisdayanti, 2019).

Companies face challenges because there is no financial information system available. This situation makes it difficult to record finances and prepare financial reports, making it difficult for company leaders to understand their company's financial condition and make decisions. Based on the problems above, the author created the research title, namely "Designing a Prototype Method of Debit and Credit Financial Information Systems". It is hoped that this design can reduce difficulties in carrying out financial records, compiling financial reports, making it easier for company leaders to understand their company's financial condition and make decisions.

This design can manage debit and credit data collection and reports with the hope that it can become a means or media that helps the Company in developing an information system which will later be created by the Company with information system developers. Meanwhile, the limitation of the problem in this research is to only design a debit and credit financial information system that contains a database design, UML, and prototype.

2. METHODS

Several stages are carried out to design a debit and credit financial information system using the prototype method, namely:

1. Data collection
   a. Observation, researchers saw directly the condition of the Company regarding the Company's financial recording and reporting
   b. Interview, researchers with company leaders conducted interviews regarding the design of a financial information system that suits their needs.
2. Designing databases
   A database is a collection of data that is managed in such a way based on certain interconnected provisions so that it is easy to manage (Intern, 2020). In designing the database the author used ERD (Entity Relationship Diagram), tables and relational database relations. The following is the explanation
   a. ERD, ERD (Entity Relationship Diagram) or entity relationship diagram is a diagram used to design a database and shows the relationships between objects or entities and their attributes in detail (Setiawan, 2021).
   b. Tables, Databases consist of tables consisting of rows and columns. Each row in a table represents an entity or object, while each column represents an attribute or characteristic of that entity (Prayoga et al., 2023).
   c. Table Relationships, Table relationships are relationships or connections between one table and another in the database. In a database, a relationship is connected to two tables which are connected via a foreign key column in the first table with the primary key of the second table (Ma'arif, 2020).
3. Designing UML
   UML (Unified Modeling Language) is a method of visual modeling that is used as a means of designing object-oriented systems. UML is expected to be able to simplify software development (RPL) and meet all user needs effectively, completely and precisely (Intern, 2021). In designing this UML modeling, the author used use case diagrams and activity diagrams. The following is the explanation

4. Use Case Diagram is a type of UML (Unified Modeling Language) diagram that describes the interaction relationship between systems and actors (Intern, 2021).
5. Activity diagram or in Indonesian means activity diagram, is a diagram that can model various processes that occur in the system. Like the sequence of processes running a system and depicted vertically. Activity diagrams are an example of a UML diagram in the development of a Use Case (Intern, 2021).
6. Designing a prototype
   A prototype is a form of system design scheme that forms a model and size or scalability standards which will then be worked on into a product (Adani, 2021). In designing this prototype, the author designed a login prototype, main menu, management of debit and credit financial data, and financial reports. The following is the explanation
   a. Login, this prototype includes matters related to the process of entering the system.
   b. Main course, this prototype is a link to access the main features available in the information system
   c. Debit and credit financial data management, this prototype includes how the system will manage and store information related to debit and credit financial transactions.
   d. Financial reports, this prototype presents financial information that is relevant and useful to users.

3. RESULTS AND DISCUSSION

Data collection

Based on the results of observations and interviews conducted by researchers, it is true that the company has not utilized information technology, especially information systems, in recording and preparing financial reports, especially debits and credits. The company only has one Company account for all activities that occur at the Company. Therefore, the researcher decided to create a financial information system design needed by the company, which includes database design, UML, and prototype.

Designing databases

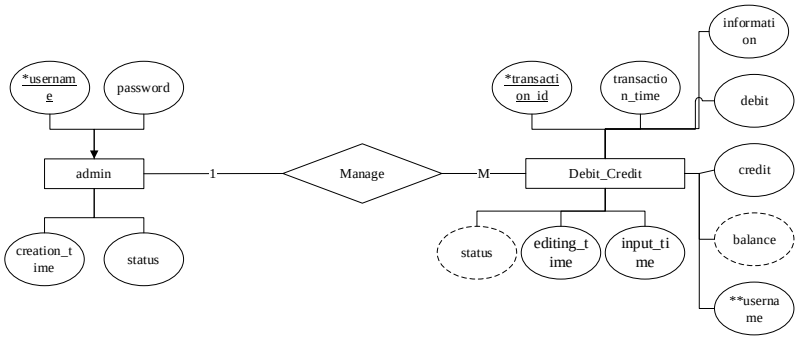

Figure 1 ERD Design

In the ERD Design drawing, it is clearly visible that there are 2 (two) strong entities and their attributes, and 1 (one) relationship. The first strong entity is "Admin" which has attributes such as "username", "password", "creation_time", and "status", with the primary key being "username". Meanwhile, the second strong entity is “debit_credit” with attributes such as “transaction_id”, “transaction_time”, “information”, “debit”, “credit”, “username”, “input_time”, and “editing_time”, the derivative attribute is “balance” and “status”, with the primary key being “transaction_id”, and the foreign key being “username”. These two strong entities are connected through a relationship, creating an ERD relationship design where the admin strong entity manages the debit_credit strong entity. This relationship clearly shows the relationship 1 (one) to Many.

Table 1: Admin Table

Column	Size	Type	Not null	Information	Key
username	10	Varchar	Yes	Identity	PK
password	10	Varchar	Yes	Password	
creation_time		datetime	Yes	Account created	
Status	1	Enum('1','0')	Yes	Active/Not	

The “admin” table is designed to store system administrator related information. The "username" column acts as a Primary Key (PK), ensuring that each username is unique and cannot be null. Security information, such as passwords, is stored in the "password" column. The time of account creation is recorded through the column "creation_time", which is of type datetime. The status of the administrator account, which can be either active or inactive, is indicated through the "status" column which uses the Enum ('1', '0') data type. With this structure, this table supports management and maintenance system administrator account with relevant and structured information.

Table 2: Debit_Credit table

Column	Size	Type	Not Null	Information	Key
transaction_id	12	char	Yes	ddmmyyhhmmss	PK
transaction_time		datetime	Yes	A transaction occurred	
information	20	Varchar	Yes	Information	
debit		Double	Yes	Money out	
credits		Double	Yes	Admission fee	
username	10	varchar	Yes	Input identity	FK
input_time		Datetime	Yes	Data input occurs	
editing_time		Datetime	Yes	Data editing occurred	

The “debit_credit” table has a structure with relevant columns for recording financial transactions. The primary key of this table is the "transaction_id" column with a 12 character format that reflects the timestamp. In addition, the "username" column functions as a foreign key, indicating the relationship to the user's identity, in relation to other user tables. Information related to transactions, such as the time it occurred, the amount of money going out (debit), the amount of money coming in (credit), as well as the identity of the user input, is explained through columns such as "transaction_time", "information", and "input_time". Apart from that, there is also an "editing_time" column which records the time when the data edit occurred. Overall, this table is designed to support financial data management with detailed and structured information.

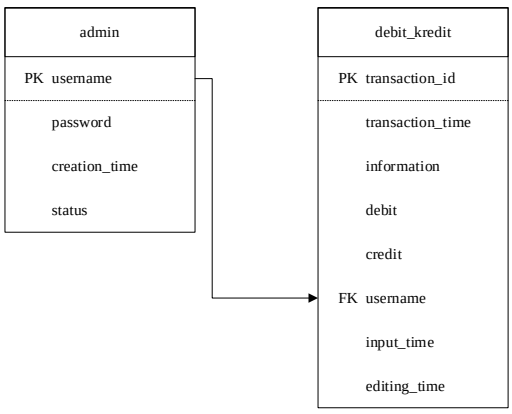

Figure 2 Design of Relationships Between Tables

After the admin table and debit_credit table were created, a relationship design between the tables was created which can be seen in Figure 2. In this figure, it can be easily seen that the database structure that has been designed, as depicted in Table 1 and Table 2, produces clear relationships in database relations. The admin table, which has a primary key in the form of "username", is connected

to the debit_credit table via a foreign key which is also the "username" field. In this way, every transaction that occurs in the debit_credit table will be clearly recorded, allowing identification of who is responsible for data entry in that table. This concept ensures a tight link between the information in the two tables, providing clarity regarding the transaction actors in each activity in the debit_credit table.

Designing UML

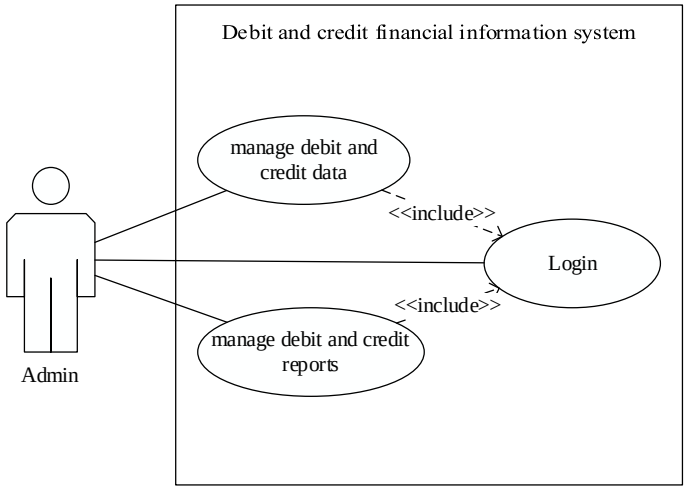

Figure 3 Admin Use Case Diagram

This debit and credit financial information system only uses one actor who plays the role of admin, which can be seen in Figure 3. The following is an explanation, which can be seen in Table 3.

Table 3: Explanation of Admin Use Case Diagram

No	Activity	Actor
1	Before managing data, actors must log in	Admin
2	Actors can manage debit and credit financial data	Admin
3	Actors can manage debit and credit financial reports	Admin

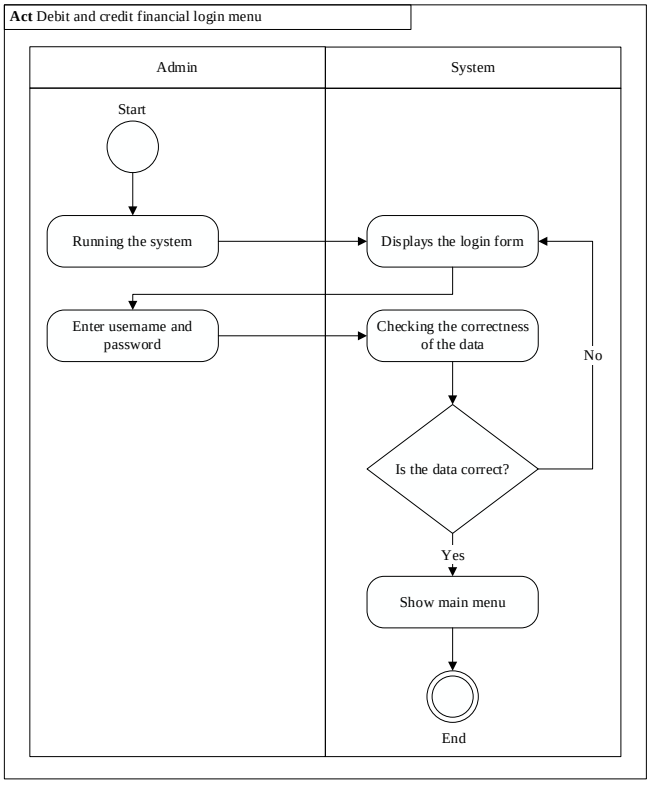

Figure 4 Design Activty diagram Login Debit and Credit System

The activity diagram for the login process to the debit and credit system begins with running the system and displaying a login form to the user. The user is asked to enter a "username and password", and the system checks the correctness of the data with those in the database. If the data matches, the diagram shows the steps to display the main menu to the user, providing access to the main features in the system. However, if the data does not match, the system will display the login form again, giving the user the opportunity to re-enter the correct login information. The completion of the process is marked by the last activity on the diagram. This diagram provides a clear visual representation of the login flow, understanding the interaction between the user and the system from start to finish.

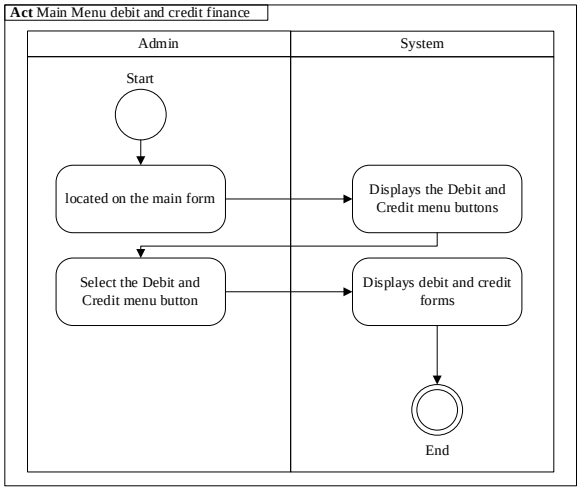

Figure 5 Activity diagram design of Debit and Credit System Main Menu Form

The activity diagram for the main menu of the debit and credit system starts with the user in the main menu form, which displays the Debit and Credit menu buttons. The user selects one of the menu buttons, namely Debit and Credit, then the system responds by displaying a form related to the selected feature. The completion of the process is marked by the last activity on the diagram. This

diagram provides a clear visual representation of the interaction between the user and the system when selecting and using the main features of the debit and credit system, from the main menu to the associated forms.

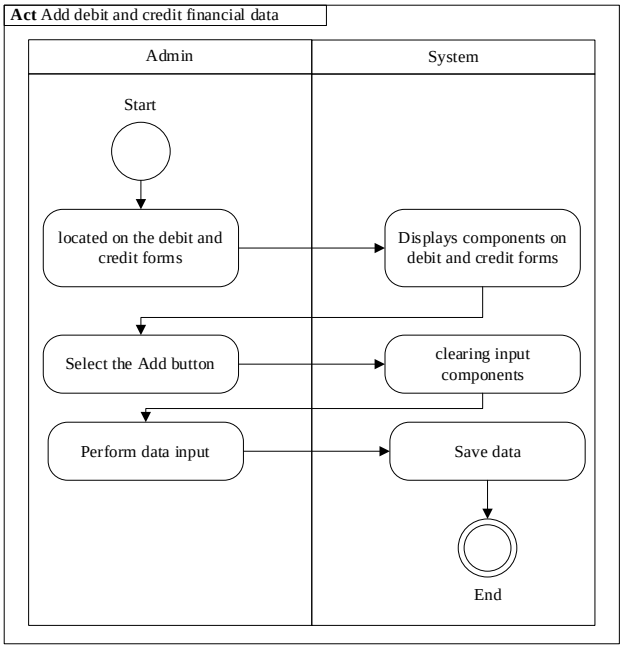

Figure 6 Activity diagram design adding debit and credit data

The activity diagram for the process of adding debit and credit data starts with the user on the debit and credit form, which displays the related form components. After selecting the add button, the system clears the input, preparing the form for new data input. The user then inputs data, and after that the system stores the entered information in a database or data storage area. With the completion of the process, the diagram marks the end of the steps for adding debit and credit data. This diagram provides a comprehensive visual depiction of the interactions between the user and the system during the data addition process, involving data input, storage, and processing actions.

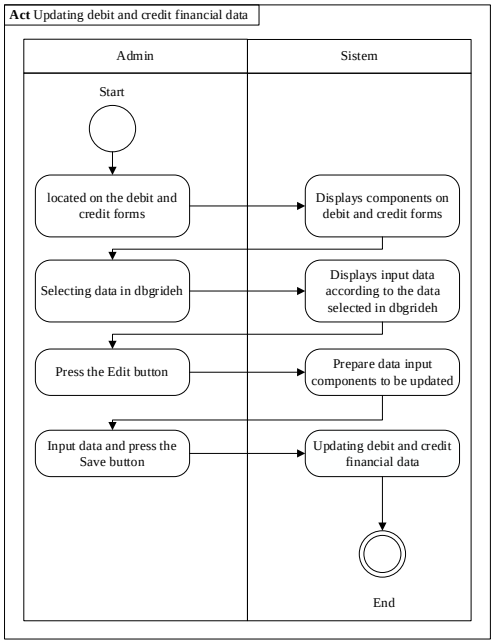

Figure 7 Activity diagram design updating Debit and Credit data

The activity diagram describes the workflow between the admin and the system in managing debit and credit data. The process begins when the admin is on the debit and credit form, followed by the system displaying the components on the form. The admin selects data from the database, and the system displays the data in the input form. After that, the admin presses the "Edit" button, which triggers the system to prepare the change data input component. The admin inputs the data, presses the "Save" button, and the system finally updates the debit and credit data. The process is complete, and the interaction between the admin and the system successfully updates the data efficiently.

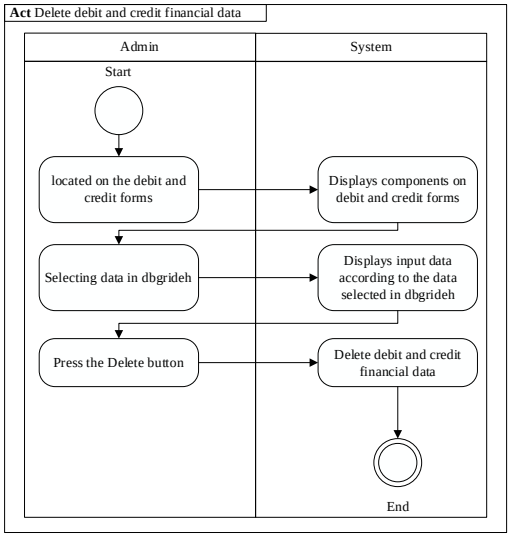

Figure 8 Activity diagram design for deleting debit and credit data

The activity diagram for deleting debit and credit data starts with the user on a debit and credit form that displays related form components. The user then selects data from the DBGridEh, and the system displays the selected data in the form input. After that, the user presses the “Delete” button to confirm data deletion. The system then processes data deletion according to user input, marking the completion of the debit and credit data deletion process. This diagram provides a clear visual depiction of the interaction between the user and the system in the data deletion steps, involving selection, confirmation, and deletion execution.

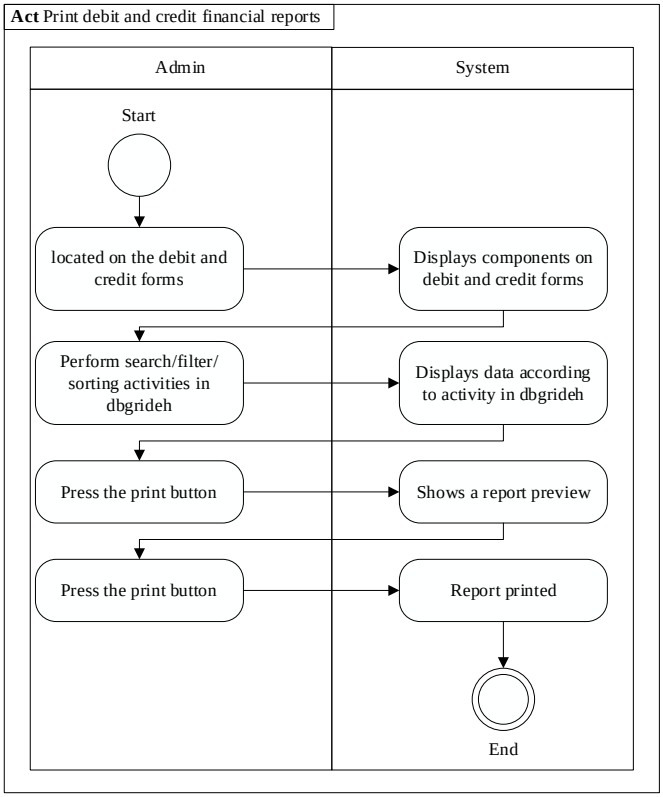

Figure 9 Activity diagram design for printing debit and credit reports

The activity diagram for printing debit and credit reports starts with the user being on the debit and credit form, carrying out search, filtering or sorting activities on the DBGridEh to determine the data to be printed. After pressing the "Print" button, the system displays a preview of the report, giving the user the opportunity to check the layout and content of the report before printing. After viewing the preview, the user presses the print button, and the system automatically prints the report according to the settings and choices that have been made. The completion of this process is marked by the last activity on the diagram. This diagram provides a clear visual representation of the interaction between the user and the system during the steps of printing debit and credit reports.

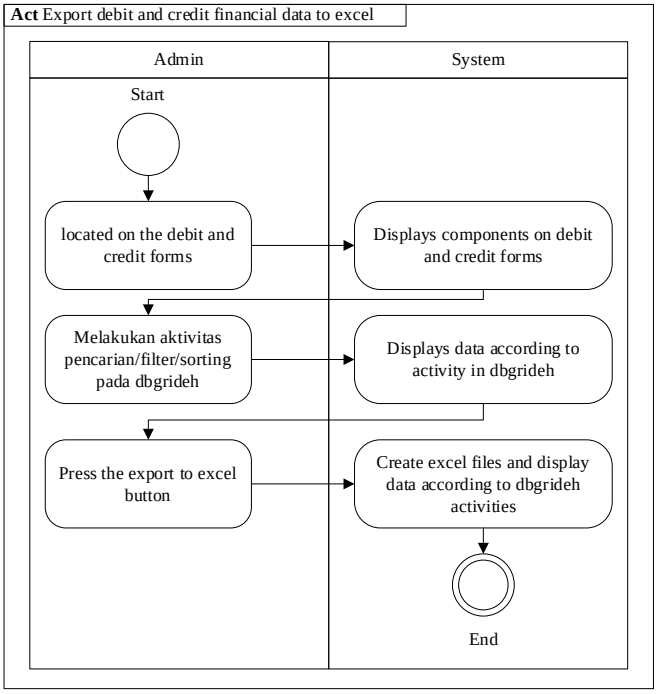

Figure 10 Activity diagram design Export Debit and Credit data

The activity diagram for exporting debit and credit data to Excel starts with the user on a debit and credit form that displays related form components. Users carry out data search activities, filter data, or sort data in DBGridEh to determine the data to be exported. After that, the user presses the export to Excel button, and the system responds by creating an Excel file and displaying data according to the activity in the DBGridEh in that file. The completion of the process is marked by the last activity on the diagram. This diagram provides a clear visual depiction of the interactions between the user and the system during the steps of data export to Excel, involving data selection, file creation, and completion of the export process.

Designing a Prototype

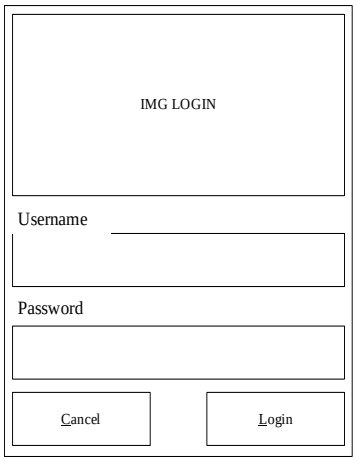

Figure 11 Login Prototype

In this image there is 1 image component, namely IMG Login which functions to display the login image. There are 2 text inputs, consisting of "username" input to accommodate "username" input, and "password" input to accommodate "password" input. Apart from that, there are 2 buttons, the "login" button which functions to continue the process of entering the system, and the "cancel" button, which functions to exit the system.

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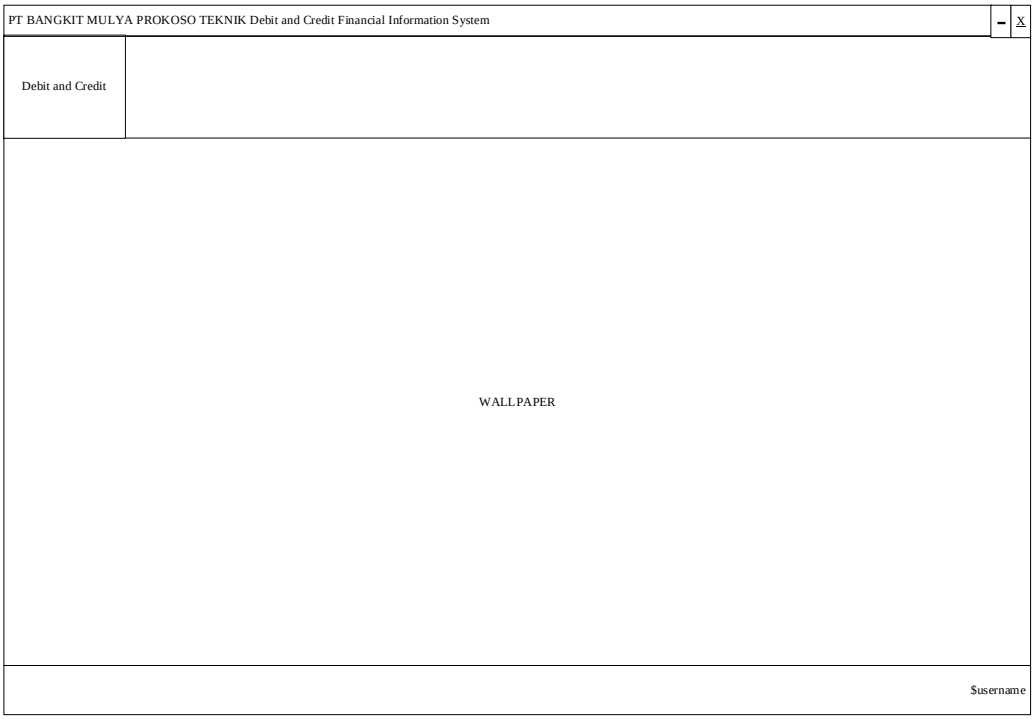


Figure 12 Main Menu Prototype

In this image, there is a Debit and Credit menu button which functions as a guide to the debit and credit forms, a wallpaper image which is used to display the background image on the system and also as media for the debit_credit form, and the $username variable which is useful for displaying successful accounts. log into the system.

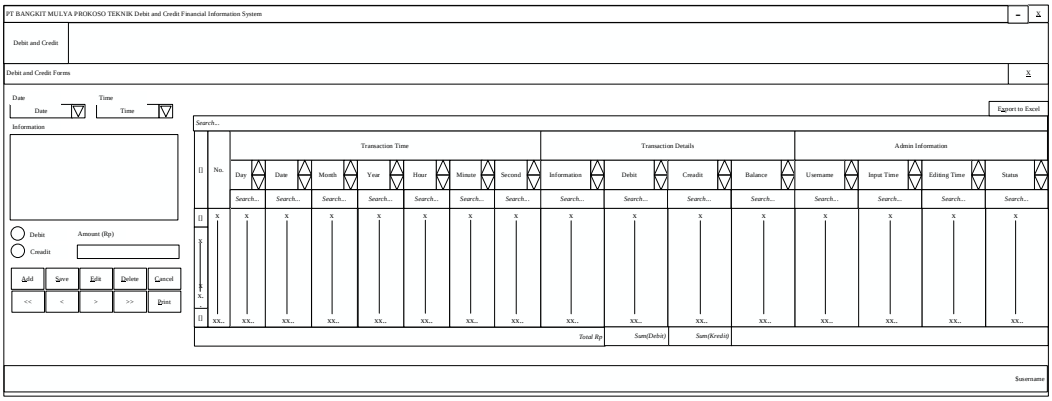
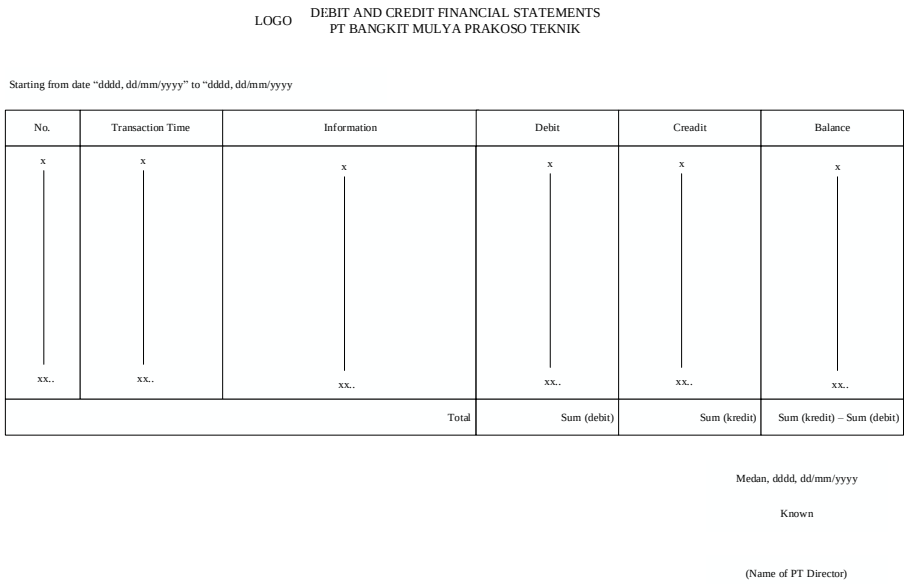


Figure 13 Prototype of debit and credit financial data management

There are several components in the form, namely 1 date input, 1 time input, 1 text memo for information, 2 radio buttons (debit and credit) for financial status, and 1 nominal money input. There are also 6 buttons, namely the "Add" button to clear input, the "Save" button to save data, the "Edit" button for the editing process, the "Delete" button to delete data, the "Cancel" button to cancel all button operations, the "Print" to print the report, and the "Export to Excel" to export data from DBGridEh. In addition, there is 1 (one) DBGridEh which displays debit and credit data with global search capabilities, local search, data filtering, data sorting, totals (debit and credit), as well as check boxes for selecting special data.



LOGO DEBIT AND CREDIT FINANCIAL STATEMENTS
PT BANGKIT MULYA PRAKOSO TEKNIK

Starting from date "dddd, dd/mm/yyyy" to "dddd, dd/mm/yyyy

No.	Transaction Time	Information	Debit	Creadit	Balance
x xx..	x xx..	x xx..	x xx..	x xx..	x xx..
		Total	Sum (debit)	Sum (kredit)	Sum (kredit) – Sum (debit)

Medan, dddd, dd/mm/yyyy

Known

(Name of PT Director)

Figure 14 Prototype of debit and credit financial reports

Figure 14 displays the design of a debit and credit financial report with the following components: logo displaying the Company's logo image, report title, date range ("dddd, dd/mm/yyyy" to "dddd, dd/mm/yyyy") which shows report information based on debit and credit transactions from a certain day, date, month, year to a certain day, date, month and year, label No. to display the serial number of the report line, transaction time to display the time when debits and credits occurred, information to clarify debit and credit activities, Debit column to display the nominal amount of debit money, Credit column to display the nominal amount of credit money, Balance column to display the balance calculation from debits and credits, total labels to clarify calculations in the debit and credit columns, Sum (debit) to calculate the total amount of debits, Sum (credit) to calculate the total amount of credits, and the expression Sum (credit) – Sum (debit) to calculate the remaining available balance . Apart from that, there are columns Medan, dddd, dd/mm/yyyy to show the date the report was printed, a known label to emphasize that this report must be known, and PT director name to display the name of the PT director.

4. CONCLUSION

The company PT BANGKIT MULYA PRAKOSO TEKNIK, which was founded in 2018, faces challenges in financial management because it has not utilized information technology, especially debit and credit financial information systems. Preparing financial reports is crucial in the competitive business world, and information technology can be a solution for keeping company finances organized and transparent. By designing a Financial Information System using the prototype method, it is hoped that it can overcome difficulties in recording finances, compiling financial reports, and making it easier for company leaders to understand financial conditions and make decisions. Companies are advised to immediately implement this Financial Information System design so that they can make optimal use of technology in managing finances, debits and credits. This step will help companies provide fast and accurate financial information, support decision making, and increase transparency and operational efficiency. In addition, companies can involve information system developers to help with implementation and ensure compliance with company needs. By adopting good information technology, companies can be more competitive and responsive to market changes.

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