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# Implementation of Waterfall Method Cooperative Saves Loans KMK Mekar Jaya Web-Based

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ABTRACK

Cooperative Saves Loans KMK Mekar Jaya requires a good and integrated data processing system to facilitate decision making and create good service standards. Especially if the data is related to finances and customers. Data and information that is easily accessed by the Simpan Pinjaman KMK Mekar Jaya Cooperative, employees, and customers are needed to support the performance of the cooperative concerned. This research discusses the savings and loan application program consisting of member input forms, lending forms, payment forms, member forms, and payment reports, the programming language used for this application program is the PHP programming language and MySQL Database with servers. This research is made through stages (1) Identification, namely identifying problems, (2) Understand, namely understanding the work of existing systems, (3) Analysis, namely analyzing the system, (4) Report, which is making a report on the results of the analysis.



## 1. Introduction

For progress at this time, the use of information technology for cooperatives as a business entity is essentially what needs to be considered is how to choose the right institutional system to support the development of economic activity with the aim of partiality for the welfare of the larger community for all business fields, small, medium, and large.[1]. Many mistakes are made when searching for data or information concerning savings and loans, as well as other business fields. In the search for information on members, such as member savings and loan data, a system is utilized that can assist cooperative employees with their jobs, which can have substantial consequences in order to change formerly slow work into speedier work.[2].

Thus, a savings and loan cooperative information design system was created, with the expectation that any current flaws would be addressed or realized appropriately. This system is extremely beneficial to the financing process at the Simpan Pinjaman KMK Mekar Jaya Cooperative. As a result, the Mekar Jaya KMK Savings and Loan Cooperative need this system to relieve and disinfect performance. Cooperatives are a type of economic structure that is run by business organizations made up of several people for the common good, which means that cooperative activities play a role in achieving a prosperous economic life for those who are members of the organization as well as communities all over the world.[3].

A system life cycle strategy is required when designing a management information system (system development life-cycle)[4]. In the industrial environment, UML is a standard language that is frequently used to explain requirements, analyze and design, and define object-oriented programming structures. UML is a computer modeling and visual communication language that employs diagramming and text support. use of UML is thus not limited to a single approach, but it is most commonly employed in object-oriented methodologies. Application of the UML Model to a Savings and Loan Cooperative KMK's Information



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Systems Mekar Jaya discusses the importance of information systems in assisting system analysis to satisfy the needs of software engineering implementation.[5].

Using Winston Royce's software development model, which is a simple classic model with a linear system flow, which he established in the 1970s. Involves a waterfall method, which is the sequential development of software.[6]. In application system research, black box testing is a trial or test undertaken to check for flaws or problems. Testing is carried out with the goal of determining whether application frameworks meet the design objectives of the application system.[7].

Cooperative is a business entity consisting of one person or cooperative body by basing its activities on the cooperative principle as well as a people's economic movement based on the principle of kinship. In general, the system applied in a cooperative is the same[12].

## 2. Method

The use of computer devices to process, present, and manage data and information, aided by communication equipment, is known as information technology, and it is a system used by people to communicate messages or information through the incorporation of computers.[8]. Information systems are made up of information technology collaboration and users who are linked together to support work operations and management so that decision-making, coordination, and control may take place.[9].

According to Roger S. Pressman, the research approach used was the waterfall method, which is a research method that tries to define a condition that exists in the firm.[10]. Waterfall is a software development approach that provides a systematic and sequential software development process that starts at the system level and continues through analysis, design, code, testing, and maintenance.[11].

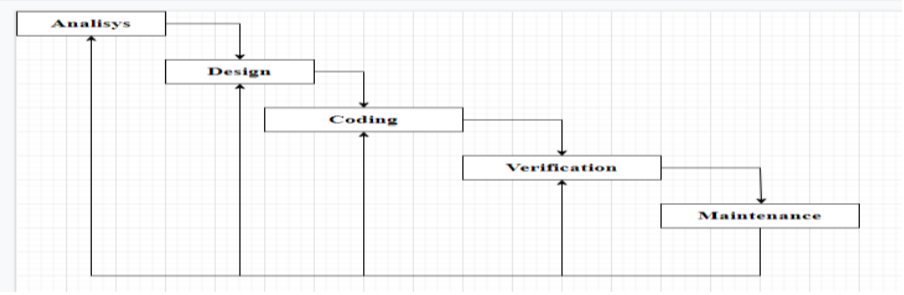


**Figure 1.** Research Methods

### 2.1 Analisys

The process of assessing existing problems arises from the research process, where the results of the research are analyzed, as well as how to manage the data, solve the problem in order to handle it, and what systems are capable of handling and may be utilized to solve it.

### 2.2 Design

The results of the system analysis are poured in the form of design. The design process includes database design, interfacing and output this design process can be a form of following representations that can be evaluated before coding is done.

### 2.3 Coding

The design outputs are then entered into the coding phase, where they are encoded or translated into computer-readable code, and the program is then tested to find and eliminate any existing problems. So that the software performs as it should.

### 2.4 Verification

After the software has been thoroughly tested and shown to be functional, the next stage is to put it into practice.[13].

### 2.5 Maintenance

The maintenance stage includes mistake correction operations and software completion of



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environmental changes that occur in the field, refinement and preventative efforts.

## 3. Result and Discussion

### 3.1 Analisys

**a. System Requirements Analysis**

At this point, the analysis is based on research completed at the CU. KMK Mekar Jaya Savings and Loan Cooperative office, which is located in the tax village region. The requirement for this savings and loan cooperative information system is critical in order to minimize mistakes in customer data and to make it easier for the administrator to verify and make reports to the "Saving and Loans" KMK Mekar Jaya Cooperative's owner.

**b. Information Systems Flow**

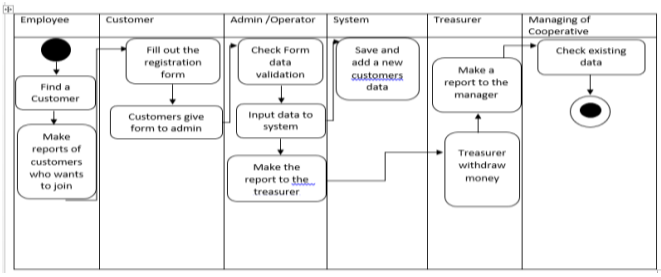


**Figure 2.** Information Systems Flow

The Customer Information System Flow sends a loan request to the administrator, where a customer can submit a forward request and wait for confirmation before proceeding with the transaction.

**c. Context Diagram**

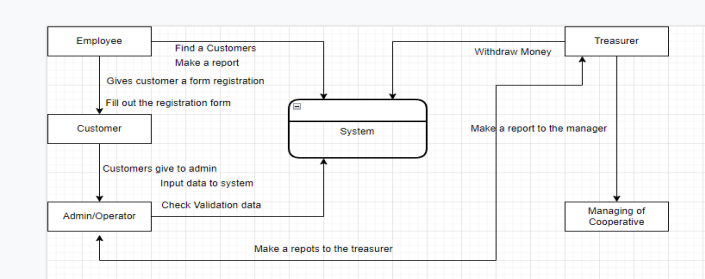


**Figure 3.** Context Diagram

The context diagram is a single diagram at the top level (Diagram 0) according to the Data Flow Diagram definition. The Context Diagram documents the domain of study by showing the set of data flows that cross into and out of the domain. Diagram of Context Customer enters information for savings and loan submissions into the system, which generates an output, Transactions, as well as explanations for other entities, based on the results of the previous inputs. [15]

**d. Data Flow Diagram Level 0**

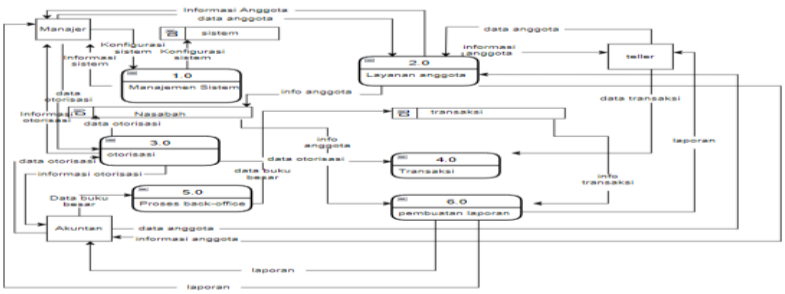


**Figure 4.** Data Flow Diagram Level 0



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Data Flow Diagram Level 0 KSP business process provides Customer data to admins or Tellers who have been done the previous savings and loan application process , then the admin inputs member data where later this member data input will be generated approved transaction data information, then there will be transactions between KSP and Customer.

**e. Entity Relational Diagram (ERD)**

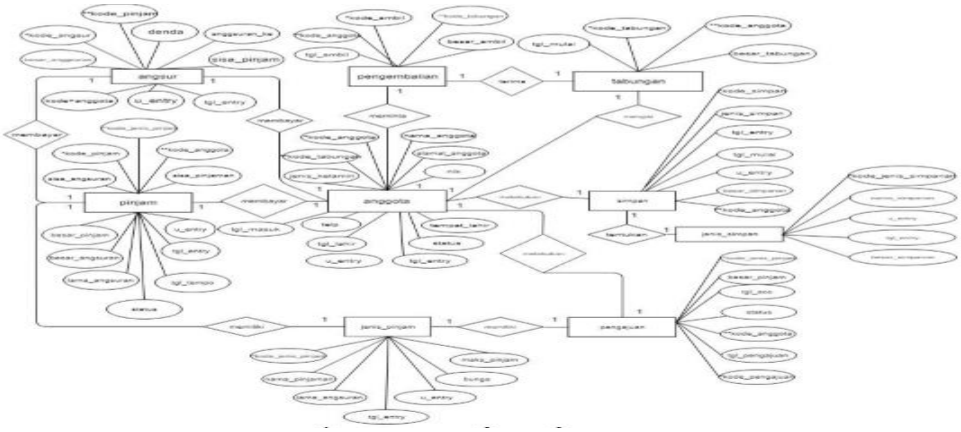

**Figure 5.** Entity Relational Diagram (ERD)

Entity Relational Diagram (ERD) When one customer uses an entity relational diagram to create a loan savings application, that savings and loan process can have many terms and conditions, and that many terms and conditions can be used to create a transaction process, and that transaction process will have many purposes and transactions. There will be a variety of ways to generate transaction reports.

**3.2 Design**

**a. Login Page Design**

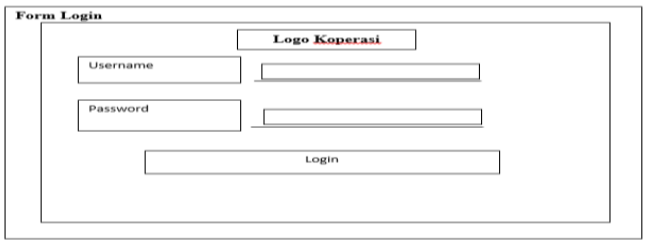


**Figure 6.** Login Page Design

The appearance of the login page on the web will look like the one in the design table, namely, there will be a cooperative logo at the top and a form to fill in the Username and Password below that form, and after that form, we will find a Login Button to join the Cooperative application.

**b. Login Page View**

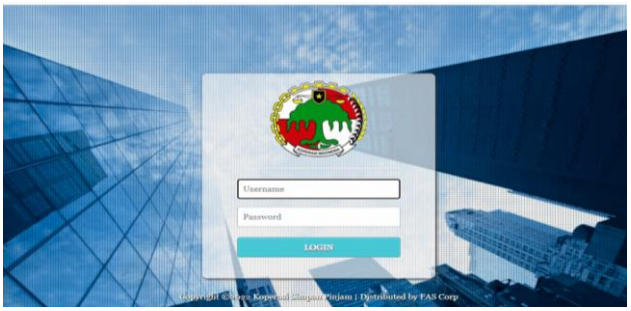


**Figure 7.** Login Page

**c. Successful Login Page Design**

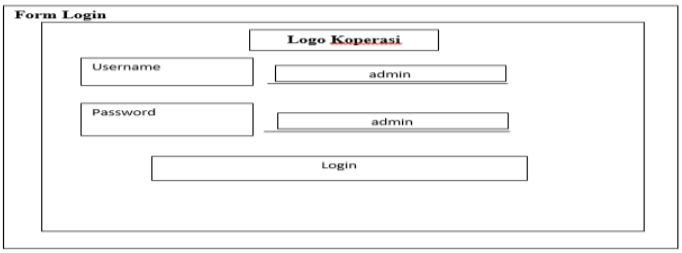


**Figure 8.** Login Page Design

By entering a username with "admin" and entering a password with "admin". And after that we will be taken to the "Admin Dashboard" page.

**d. Admin Dashboard View**

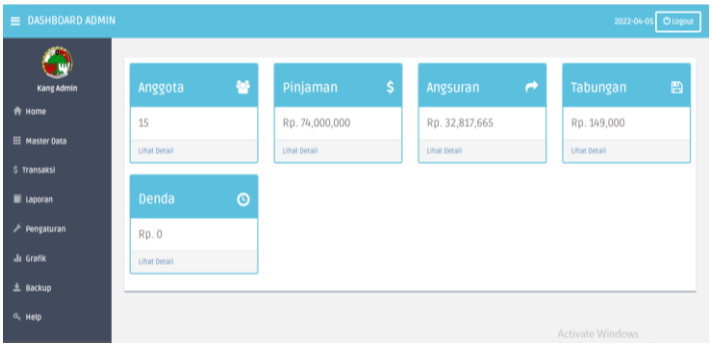


**Figure 9.** Admin Dashboard View

The display will look like this when we enter the Username and Password correctly.

**e. Design When Login Fails**

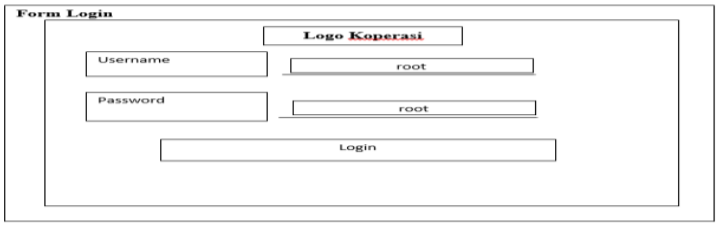


**Figure 10.** Login Plan Failed

**f. Login Page View Failed**

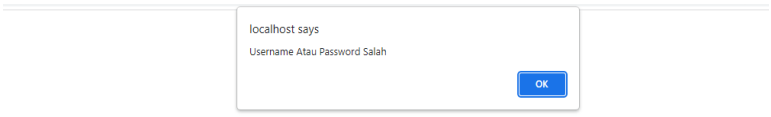


**Figure 11.** Login page view failed

In Figure 11, a username or password notification will appear incorrectly when entering username and password incorrectly.

### 3.3 Codeing

This code was written in the Visual Studio Code programming language, with databases written in the PHP and mySQL programming languages. HTML is a programming language for creating web pages that



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can be viewed using a set of basic syntax or tags in a file. HTML is a current Internet standard that is established and controlled by the World Wide Web Consortium (W3C) (W3C). PHP (HyperText Prepocessor) is a script server-side web programming language. PHP is a script that combines HyperText Markup Language (HTML) and lives on the server. Because PHP offers advantages in connectivity with a strong database system, web maintenance will be easier if you use it. PHP code is wrapped in special start and final processing instructions that allow you to switch between "PHP mode" and "normal mode." [14]

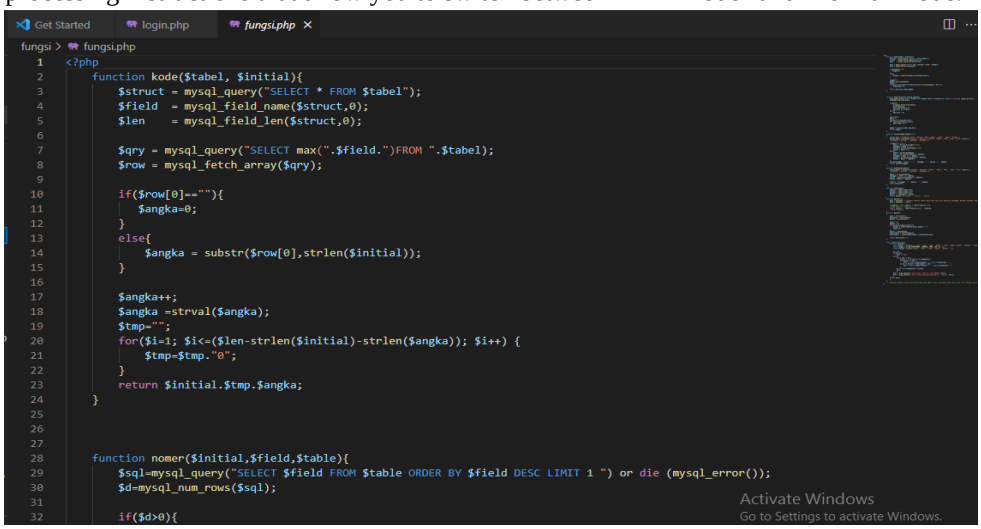


**Figure 12.**Coding

### 3.4 Verification

At this stage the test is carried out using the BlackBox method.

**Table 1.**
Black Box Testing

| Unit Test | Test Description | Model Testing | Test Results |
|---|---|---|---|
| Menu Login | Verify Email and Password | Black Box | Valid |
| Main Menu Page | Navigate the Main Menu Page | Black Box | Valid |
| Add Data Member and Save Data Member | Input Data | Black Box | Valid |

### 3.5 Implementation

Implementation is an action taken to find out what if the application that has been built can be implemented into a system, whether this application is able to provide good benefits for its users. Implementation is also carried out to determine the system limitations needed to run this application. [16].

#### a. Login Page View

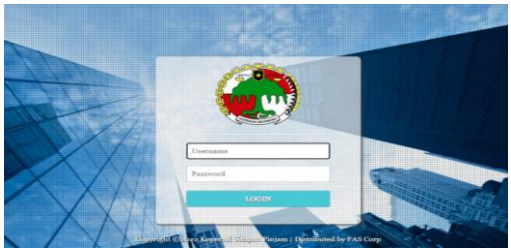

**Figure 13.** Login Page View



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The Login Page view is the initial view at the time the app is running. In the appearance of this login menu there is a username and password that must be filled in to enter the system.

**b. Main Menu View**

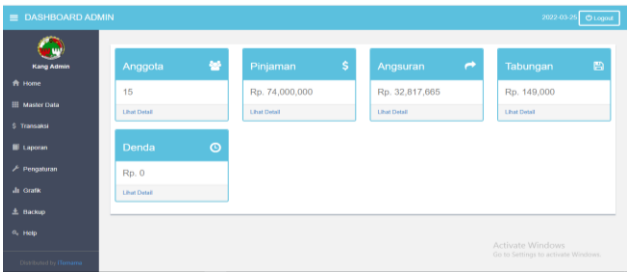


**Figure 14.** Main Menu View

Home menu view of the start page after logging in. In this main menu there are several options for activities on the system such as File Menu, Data Input Menu, Report Menu and Exit Menu.

**c. Save Loan Submission Form Page View**

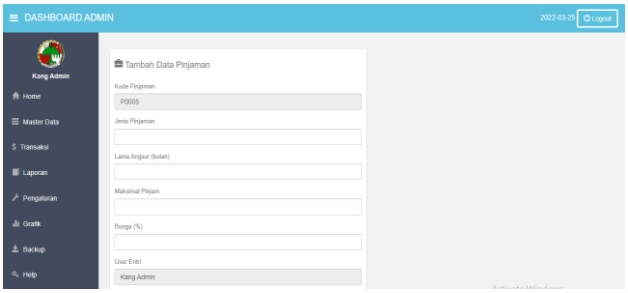


**Figure 15.** Loan Application Form View

View of the Deposit Submission Form for handling loan data such as input, update, and deletion.

**d. Member Data Report View**

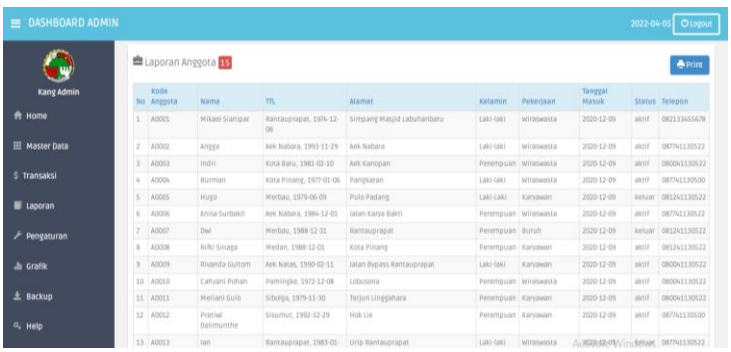


**Figure 16.** Member report data form view

On the implementation of this page will be displayed the entire data from customers of the Simpan Pinjaman KMK Mekar Jaya Cooperative. Be it the Name, Address, Place / Date of Birth, Occupation, Hp No, Gender, and Status of the Customer.

## 4. Conclusion

This application can assist the Cooperative in saving and borrowing KMK Mekar Jaya in order to provide the finest service to clients. This program can aid in the management of customer data, loans, and deposits, making it easier for the Cooperative to operate. Making it easier for cooperatives to compete in business by building a system that allows them to create inventory reports. This web-based savings and loan cooperative application can help the cooperative carry out the numerous transaction processes that will be



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carried out. The use of a MySql database as a data storage location will make it easier for the Cooperative to view various data outcomes that have previously been processed and stored.

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