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# Design of a Web-Based Personnel Administration Management Information System at Politeknik Piksi Ganesha

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#### **Abstract**

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Loan information systems at banks have the goal of providing the best loan services to customers and being able to improve bank operations. This study aims to design and create a bank lending information system application with a case study at PT. BPRS HIK Parahyangan West Bandung Branch. The research method was conducted qualitatively by conducting interviews, observation, and literature study. The software development method used is the prototype. The design of a bank information system uses the Unified Modeling Language (UML) and is implemented with the programming language PHP and My SQL as a database. Application test with the black box. With this application as a means of processing banking data, it can run quickly and optimally.

Keywords: Loan, Bank, Information System, Web

Sistem informasi pinjaman pada bank memiliki tujuan untuk memberikan pelayanan pinjaman terbaik terhadap nasabah serta mampu meningkatkan operasional bank. Penelitian ini bertujuan untuk merancang dan membuat aplikasi sistem informasi peminjaman bank dengan studi kasus di PT. BPRS HIK Parahyangan Cabang Bandung Barat. Metode penelitian dilakukan secara kualitatif dengan dengan cara melakukan wawancara, observasi dan studi pustaka. Metode pengembangan perangkat lunak yang digunakan adalah prototype. Perancangan sistem informasi pinjaman bank menggunakan bahasa pemodelan Unified Modeling Languange (UML) serta kode pemograman menggunakan bahasa pemrograman PHP dan database menggunakan My SQL. Pengujian aplikasi menggunakan blackbox. Dengan adanya aplikasi ini sebagai sarana pengolahan data bank dapat berjalan cepat dan optimal.

Kata-kata kunci: Peminjaman, Bank, Sistem Informasi, Web



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#### 1. Introduction

In order to stay competitive in its field, the company has made information technology a key component of its strategic approach. By utilizing information technology, the company will be able to create an information system tailored to meet its customers' needs. The information system is composed of three basic components: data, information, and information systems. By leveraging these components effectively, the company can create a robust and effective information system that will help it stay ahead of the competition. At PT. BPRS HIK Parahyangan, information systems play a crucial role in supporting business operations, particularly in facilitating routine operational activities. The impact of these systems is significant, as they streamline the company's workflows and improve overall efficiency. With the support of information systems, PT. BPRS HIK Parahyangan is able to optimize its operations, reduce costs, and deliver high-quality services to its customers. It also influences the world of banking with time and technological advances. Currently, banks have started using computerized information systems. This is done to facilitate transactions with customs. A bank information system is a system for electronically processing financial data and banking services using computers, telecommunications, and other electronic means. Using bank information systems should increase the effectiveness and efficiency in fulfilling tasks and public service [1]. In today's rapidly evolving banking industry, information systems must adhere to increasingly stringent standards to effectively address complex challenges. These challenges include managing costs, optimizing resource allocation, and maintaining information security. Given the significant impact of these challenges on the industry, banking information systems must be equipped with advanced tools and technologies to ensure optimal performance. By prioritizing high standards and investing in advanced solutions, banks can stay ahead of the curve and effectively navigate the complex landscape of modern banking [2]. Successful implementation of bank information systems requires active supervision by the board of directors and management and robust policies and procedures for using information technology. Additionally, processes for identifying, measuring, monitoring, and controlling risks associated with information technology must be established as part of an internal control system. Ensuring these measures are in place will help mitigate potential risks and safeguard the integrity of the bank's operations. Banks can achieve greater success in implementing and utilizing these critical systems by taking a proactive approach to information technology management and internal control.

Initially, transactions could be conducted by meeting customers in person or visiting customers in branches. The rapid development of information systems in the banking industry has compelled companies to shift their business strategies and prioritize technology as a key driver of product and service innovation. A reliable information system is critical to the operational success of financial institutions such as banks, as customers increasingly rely on online information technology to access banking services. In response, banks must ensure that their information systems are not only dependable but also easily accessible and user-friendly. By prioritizing the development of effective information systems, banks can meet the evolving needs of their customers and stay ahead of the competition in today's digital landscape. The development of telematics technology and infrastructure in Indonesia will greatly assist the development of this branch of the financial sector, such as expanding the scope of business by opening regional offices and sharing information between financial institutions. Information technology product development has greatly influenced Banks and financial institutions, even if they can no longer function without this information technology [3]. This sector requires product development in information technology to provide its services to its customers. This study discusses how a bank information system can be implemented at PT. BPRS HIK to improve banking services for customers.

Research conducted by Sugeng Santoso, Nur Azizah, and Afrilia Astari (2018) on the application of web-based information systems to loan applications in PD. BPR Kerta Raharja Balaraja branch. Loan application system on PD. BPR Kerta Raharja Balaraja Branch still fills in the form manually, namely by making notes on the loan application form, so there are many obstacles, such as the slow process of submitting and entering data that is not controlled that the analyst is slow in making decisions, particularly loan approval. The study conducted by Ganda Wijaya and Melza Sari (2015) on the design of a web-based loan submission information system at PT. BPR Credit Mandiri Indonesia Bekasi Branch. This study explains the loan application system at PT. BPR Kredit Mandiri Indonesia is still done manually, resulting in a slow filing process and less controlled data entry, making analysts slow to make decisions, especially on loan approval, resulting in potential borrowers waiting long times for loan decision information. Study on Customer Loan Information System of Web-based New Prosperous Savings and Loans Cooperative, Ternate City, conducted by Muhammad Samsudin, Muhdar Abdurahman, and Muksin Hi Abdullah (2019). Applying a web-based cooperative credit information system is beneficial for the community in applying for loans where people just need to register by accessing

the cooperative website. In addition, the data handling process becomes more accessible since it is connected to the database, making it easier to search, add, and repair data. Based on several conducted studies, the importance of information systems when applying for credit can be concluded. Hence this study proposes a web-based information system for credit applications at PT. BPRS HIK facilitates customers to apply for credit and assists the administrator or account manager in data processing and decision-making so that the credit application process can be carried out more effectively and efficiently.

#### 2. Method

In collecting data for this work, the author uses a qualitative research method with a descriptive approach. A qualitative research method is used under objective natural conditions in which researchers have located the Key instrument, combining data research techniques, data analysis is inductive, and research results emphasize importance rather than generalization [4]. A descriptive research method was also used in this study. The descriptive method describes all the data, which is then analyzed and compared based on the current reality, and tries to offer different solutions.

At the design stage, the author uses the prototype development method. The prototype model includes processes, namely requirements gathering, prototype design, and evaluation. In addition, the system is tested using the black box method. The black box method aims to check the program after its creation to determine if the application is working correctly and efficiently by determining the required goals and needs, creating a bank loan design built to work well in the implementation phase, and evaluating the created prototype information system design. The resulting design is in the form of a Unified Modeling Language (UML) [5].

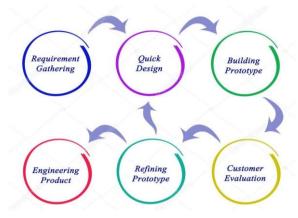


Figure 1. Prototyping Method

#### 3. Results and Discussion

The design of this system served as a preparatory phase for the implementation process and to give users an overview of the system to be developed. The design of this system has several goals, including:

- To meet the required system.
- b. To make it easier for officials to process membership data and savings and loans so that they can see the data more quickly because it is well organized on the computer and can change it if necessary.
- c. To make it easier for officials to create reports.

The general description of the proposed system is intended to give the user an overview or overall system regarding the new information system. The system design can describe the components of the information system to be designed. Determining the system requirements is performed so the system design can be directed toward the goal. In the design phase, the information system is designed to be a communication tool between the user and the programmer to obtain an application system that meets the requirements [6].

#### 3.1 Unified Modeling Language

The use case diagram in Figure 2 illustrates what operations actors can perform on the system. The actors in this use case diagram are the admin and the branch's leader. The admin can manage monthly borrower data, customers in arrears, customers paid off, collateral receipts, loan payment slips, and print reports received by the branch manager. Use case diagram presented on Figure 2.

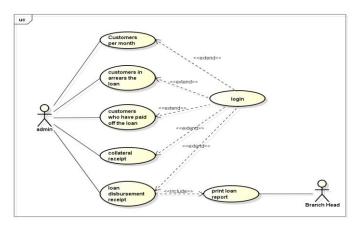


Figure 2. Use Case Diagram

The activity diagram illustrates the workflow (activity) that occurs in the bank loan of a use case (process) can be seen in **Figure 3**.

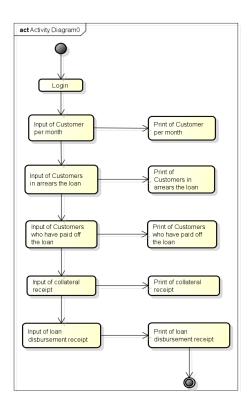


Figure 3. Activity Diagram,

The class diagram illustrates the classes in a bank's credit information system and their relationship to one another can be seen in **Figure 4**.

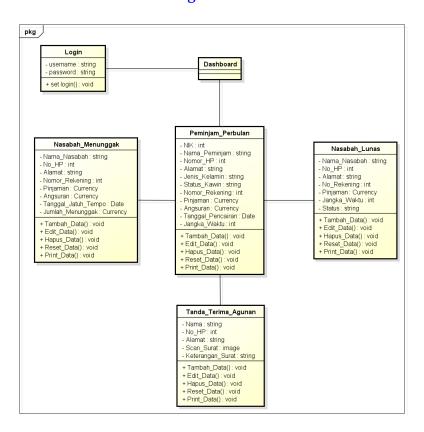


Figure 4. Class Diagram

# 3.2 Application System Display

# a. Login and Registration View

As illustrated in **Figure 5**, the first display is the login form display, which serves as a verification for users who can access the system by inputting a username and password as well as sign up view with input the full name, username, email, password, and password confirmed.

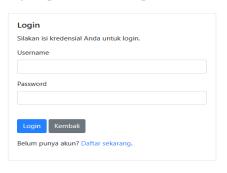




Figure 5. Login and Sign-Up View

# b. Application Start Menu View

The first view of the office stationery management application is shown in **Figure 6**.

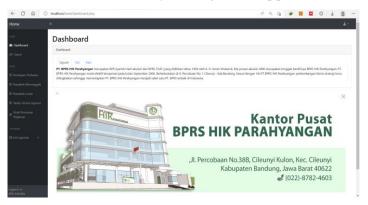


Figure 6. Dashboard View

#### c. Application Bank Customer View

The application of Bank Customer View is shown in **Figure 7**, and the data input of bank customers is shown in **Figure 8**.

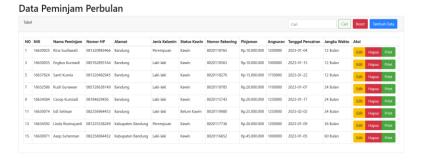


Figure 7. The application of Bank Customer View



Figure 8. The application of Bank Customer Input

d. Application Customer Data In Arrears View

The Application Customer Data In Arrears View shown in **Figure 9** and data input of Customer Data In Arrears shown in **Figure 10**.

# Data Nasabah Menunggak

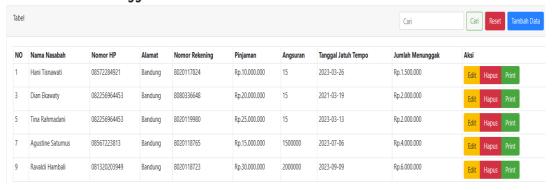


Figure 9. The Application Customer Data In Arrears View

# Tambah Data Nama Lengkap Risda Roosyantie Nomor HP 081298452573 Alamat Jalan. Menuju Hatimu Nomor Rekening 4531\*\*\*\*\*\*\*\*\*\* Jumlah Pinjaman Pilih Angsuran 10 Tanggal Jatuh Tempo dd/mm/yyyy Jumlah Menunggak 400000 Simpan Clear Kembali

Figure 10. The Application Customer Data In Arrears Input

# e. Application Customer Data Paid Off

The Application Customer Data Paid Off shown in **Figure 11** and data input of Customer Data In Arrears shown in **Figure 12**.



Figure 11. The Application Customer Data Paid Off View



Figure 12. The Application Customer Data Paid Off Input

# f. Application Collateral Receipt Data

The Application Collateral Receipt Data is shown in **Figure 13**, and the data input of Collateral Receipt Data is shown in **Figure 14**.

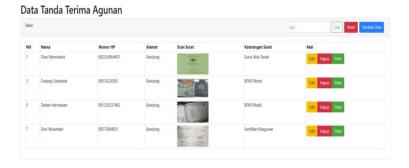


Figure 13. The Application Collateral Receipt Data View

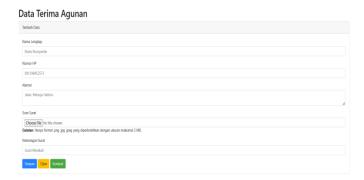


Figure 14. The Application Collateral Receipt Data Input

# g. Application Loan Disbursement Receipt

The Application Loan Disbursement Receipt is shown in **Figure 15**, and the data input of Loan Disbursement Receipt is shown in **Figure 16**.

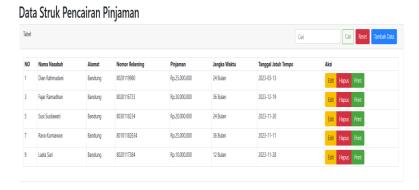


Figure 15. The Application Loan Disbursement Receipt View

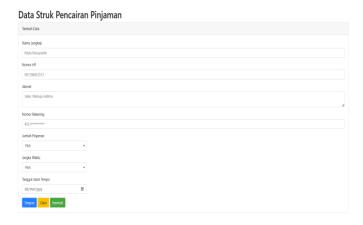


Figure 16. The Application Loan Disbursement Receipt Input

# h. Reports

The Report of bank customers is shown in Figure 17.



Kantor Pusat BPRS HIK Parahyangan JI Percobaan No. 38B , Cileunyi Kulon , Cileunyi, Bandung Jawa Barat 40622

Laporan Data Peminjam Perbulan

NO	NIK	Nama Nasabah	Nomor HP	Alamat	Jenis Kelamin	Status Perkawinan	Nomor Rekening	Pinjaman	Angsuran	Tanggal Pencairan	Jangka Waktu
1	16630025	Rina Susilawati	0813209834 66	Bandung	Perempuan	Kawin	8020118765	Rp.10.000.0 00	1200000	2023-01-04	12 Bulan
2	16630035		0857628931 64	Bandung	Laki-laki	Kawin	8020118563	Rp.10.000.0 00	1000000	2023-01-15	12 Bulan
3	16637824	Santi Kumia	0813204829 45	Bandung	Laki-laki	Kawin	8020118270	Rp.15.000.0 00	1750000	2023-01-22	12 Bulan
4	16632586	Rudi Gunawan	0857266381 49	Bandung	Laki-laki	Kawin	8020119785	Rp.20.000.0 00	1100000	2023-01-07	24 Bulan
5	16634584	Cecep Kumiadi	0818462945 6	Bandung	Laki-laki	Kawin	8020115743	Rp.20.000.0 00	1250000	2023-01-17	24 Bulan
6	16630074	Edi Setiwan	0822569644 53	Bandung	Laki-laki	Belum Kawin	8020119980	Rp.25.000.0 00	1250000	2023-02-02	24 Bulan
7	16634592	Linda Rosmayanti		Kabupaten Bandung	Perempuan	Kawin	8020117736	Rp.30.000.0 00	1200000	2023-01-09	36 Bulan
8	16630071	Asep Suherman	0822569644 52	Kabupaten Bandung	Laki-laki	Kawin	8020116652	Rp.45.000.0 00	1000000	2023-01-05	60 Bulan

Figure 17. The Reports of Bank Customers

Testing of a software system at this stage is crucial to ensure that all system attributes are functioning according to the pre-designed specifications before it is utilized by end-users. Any errors identified during the testing process can be rectified, and further development can be undertaken. The Black Box testing method was employed for this testing process. The outcomes of the system testing are presented in **Table 1** and **Table 2** for reference.

Table 1. Blackbox Testing on Office Documentation Applications

No	Testing Scenario	<b>Expected Results</b>	Results After Testing
1	The login process is designed to only allow access upon entering a valid email address in the username field, without requiring a password input. This streamlined approach ensures that users can swiftly and securely access the system using their registered email address without a password if the password is not.	The login system in the application has been designed to utilize security. As such, it requires both a username and password to be the entire login. If the password is not provided along with the username, the system will not grant access, ensuring that unauthorized users cannot gain entry.	Successful
2	Login using the wrong username and password. Attempting to log in with an incorrect username and password, such as an invalid email address will result in an unsuccessful login attempt. The system is designed to validate the credentials provided. Access will only be granted if they do not match the registered email and password. Please ensure that the correct username and passwords are entered to log in successfully.	If an incorrect username and password combination is incorrect, the system will provide an immediate notification stating, "Incorrect username and password." This feature ensures that users are promptly alerted to the error, preventing unauthorized access attempts. By displaying a clear and concise message, the system aims to provide feedback and guidance for users to rectify the issue and successfully log in with the correct credentials.	Successful
3	To add new data to the main page, complete the required fields and click the "Submit" button to initiate the upload process. This user-friendly feature lets you easily input and submit the necessary information to update the main page with the latest data. The system will then process the submission and seamlessly integrate the new data into the main page, ensuring that the most up-to-date information is readily available.	Upon submission, the system will sly upload the data to the main page and store it in the database. This efficient process ensures that the new data is immediately reflected on the main page for users to access while safeguarding it in a reliable and protected database. This robust system architecture guarantees that the uploaded data is stored securely and efficiently retrieved and utilized.	Successful
4	Fill in the username, and password fields using a valid email address, then press the "Login" button.	The system will accept and then display the main application page.	Successful
5	Clear one of the data on the upload form page.	The system will refuse/fail to upload data to the main page because there are empty fields.	Successful

Table 2. Blackbox Testing for Applications

No	Testing Scenario	Expected Results	Results After Testing
1	Add data customers with fill all form	Data successful added	Success
2	Edit data customers with fill all form	Data successful updated	Success
3	Delete data customers with fill all form	Data successful deleted	Success
4	Add data customers in arrears with fill all form	Data successful added	Success
5	Edit data customers in arrears with fill all form	Data successful updated	Success
6	Delete data customers in arrears with fill all form	Data successful deleted	Success
7	Add data customers who have paid off the loan	Data successful added	Success
8	Edit data customers who have paid off the loan with fill all form	Data successful updated	Success
9	Delete data customers who have paid off the loan with fill all form	Data successful deleted	Success
10	Add data collaterall receipt	Data successful added	Success
11	Edit data collaterall receipt with fill all form	Data successful updated	Success
12	Delete data collaterall receipt with fill all form	Data successful deleted	Success
13	Add data loan disbursement receipt	Data successful added	Success
14	Edit data loan disbursement receipt with fill all form	Data successful updated	Success
15	Delete data loan disbursement receipt with fill all form	Data successful deleted	Success

Based on the results obtained from the BlackBox testing method conducted on the Office Documentation Application, it is evident that the system performs in accordance with its design and testing expectations. As a result, the testing conducted on this application system can be deemed successful. The thorough testing approach has validated the system's functionality and performance, affirming that it operates as intended and meets the expected outcomes. Using a loan bank information system can significantly streamline the lending process and enhance the efficiency of financial institutions. By leveraging advanced technology and data management techniques, a loan bank information system provides numerous benefits for lenders, borrowers,

and the overall lending ecosystem. One key advantage of using a loan bank information system is improved data accuracy and integrity. These systems are designed to capture, store, and manage loan-related data in a centralized and structured manner, reducing the chances of data entry errors and inconsistencies. Accurate data is essential for lenders to make informed decisions regarding loan approvals, interest rates, and repayment terms. It also enables borrowers to receive fair and transparent loan offers and helps regulatory agencies monitor lending practices effectively. Another benefit is increased operational efficiency. Loan bank information systems automate various aspects of the lending process, such as loan application, credit assessment, and documentation. This automation minimizes manual tasks, reduces paperwork, and expedites loan processing times, resulting in quicker loan approvals and disbursements. Lenders can also leverage the system's analytics capabilities to assess credit risk, evaluate loan performance, and make data-driven decisions, leading to better lending outcomes.

Furthermore, loan bank information systems enhance risk management. These systems provide lenders with tools to assess credit risk, evaluate borrowers' creditworthiness, and monitor loan performance. This enables lenders to identify potential risks early, implement risk mitigation measures, and proactively manage loan portfolios. Additionally, loan bank information systems often integrate with credit bureaus and other data sources to access comprehensive credit information, enabling lenders to make more informed lending decisions and manage risk effectively. Loan bank information systems also improve customer experience. These systems offer borrowers a user-friendly and convenient loan application process, with online applications, automated credit assessments, and self-service portals for loan management. Borrowers can easily submit loan applications, track the status of their loan, and access relevant loan information, making the process more convenient and transparent. This enhances customer satisfaction and loyalty, improving customer retention and referral rates.

However, it's important to acknowledge potential challenges and risks associated with using loan bank information systems. Data security and privacy are critical concerns, as these systems store sensitive borrower information. Adequate security measures, such as encryption, access controls, and regular audits, must be in place to protect against data breaches and unauthorized access. Additionally, lenders must ensure compliance with relevant data protection regulations, such as the General Data Protection Regulation (GDPR) in the European Union, to avoid legal and reputational risks.

#### 4. Conclusion

From the research and writings described, the following conclusions can be drawn: (1) This designed application is intended to assist bank employees in managing bank loan data and computerized reports. (2) The process for designing a bank loan application follows the prototype method. (3) The right way to overcome the problems that arise in PT. BPRS HKI Parahyangan is implementing a web-based program developed with PHP and using My SQL as the database.

Utilizing a loan bank information system can offer significant advantages for financial institutions, including improved data accuracy, increased operational efficiency, enhanced risk management, and better customer experience. However, it is crucial to carefully evaluate the security and compliance aspects and implement appropriate measures to mitigate potential risks. By leveraging the capabilities of a robust loan bank information system, lenders can optimize their lending operations and deliver superior services to borrowers, resulting in mutual benefits for all stakeholders involved.

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