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Website-Based School Financial Information System

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Abstract

Abstract: The rapid development of information technology has brought significant changes in data and information management in the educational environment. This research focuses on the development of a website-based Financial Information System tailored to the needs of SDIT Binaul Izzah Bumiayu. This system was designed using the waterfall method with stages of needs analysis, design, implementation, and testing to improve efficiency, accuracy, and ease in managing school financial data which was previously still manual. The results of the study indicate that the system created is able to assist schools in the process of recording, recapitulating financial reports, and accelerating data access while reducing human error. Recommendations for future system development include the addition of payment notification features, automatic reports, student data integration, improvement of supporting facilities, and ongoing cooperation between schools and universities, followed by periodic evaluations to improve system quality.

Keywords:*Financial Information System, Website, School Financial Management, Waterfall, SDIT Binaul Izzah Bumiayu.*

1. Introduction

Technological developments are currently occurring at a rapid pace and bringing about major transformations, as they enable information to be accessed quickly, accurately, and without the constraints of time and space. This has encouraged many organizations and educational institutions to adopt information technology to manage school data and present information with high efficiency.[1]An information system is a collection of software and hardware components that function to collect, store and manage data into information that is useful for users.[2]. Information systems help process data into meaningful information.[3]Data can be processed to produce reports, graphs, and analyses that can aid in better decision-making. Websites are an innovation in the field of internet-based information technology, offering various advantages.[4]Web-based applications are easily accessible, information is easily distributed, and they are platform-independent. Information can be presented in web browsers on various operating systems due to document standards, allowing for the display of various types of data.[5].

School finance is a crucial aspect in the management of educational institutions, which includes all activities related to the management and utilization of financial resources to support the operations and development of schools.[6]Financial administration in schools is a crucial step in managing funds, from receipt to accountability for their use. Currently, many educational institutions still manage financial data manually or using notebooks, resulting in frequent errors in data entry due to human error, which is caused by a lack of accuracy when inputting data.[7]The Laravel framework has unique advantages that make it superior to other frameworks, such as stable data reloading, extremely fast performance, and high data security. Transitioning to an IT-based system can address these issues in several ways.[8]First, implementing a computerized system in schools will allow for the automatic compilation of payment data, reducing the time and errors associated with manual data entry. Second, utilizing a payment gateway allows students and parents to make tuition payments through various electronic methods, which increases transaction security and reduces the risk of cash loss. Third, a sophisticated information system provides real-time reporting, making it easier for schools to monitor transactions and better control cash flow. Fourth, encryption technology in the payment gateway will protect users' personal and financial data, minimizing the risk of information leaks.[9]According to the Education Finance Watch report published by UNICEF and the World Bank in 2021, digitizing financial management systems in the education sector is a crucial strategy for ensuring the effective use of public funds.[10].

The current information delivery system at SDIT Binaul Izzah Bumiayu still uses a manual financial recording system, which involves recording transactions in notebooks or physical documents. However, with technological advances and the increasing need for faster and more accurate administration, this manual method is considered ineffective and carries a high risk of recording errors, data loss, and reporting difficulties. Therefore, it is necessary to develop a financial information system application tailored to the school's needs, to simplify the financial management process, speed up work times, reduce the risk of human error, and facilitate automated and structured data retrieval and reporting.

It can be concluded that the manual financial management still implemented at SDIT Binaul Izzah Bumiayu has various weaknesses that can hinder the effectiveness of school administration. With technological advancements and the need for more efficient, accurate, and accessible systems, the implementation of appropriate digital solutions is necessary. This will contribute to providing a system that simplifies financial recording, management, and reporting in an integrated and modern manner.

2. Research Method

2.1 Data collection technique

Implementing knowledge and skills in information technology, particularly in software development. This program focuses primarily on developing a website-based financial information system tailored to the needs of SDIT Binaul Izzah Bumiayu.

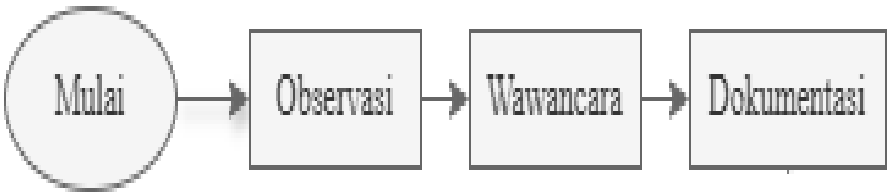

Fig. 1: Research process flowchart

1. Observation
is a method of collecting data through direct observation of the condition or behavior of the object being observed, accompanied by recording[11]According to Siregar Deasy (2024), this technique functions as a research approach in which researchers actively observe phenomena or events in the natural environment to gain an in-depth understanding of the context being studied.[12]Based on observations and interviews with the administration of SDIT Binaul Izzah Bumiayu, on April 21, 2025, it was discovered that the school's financial payment system is still manual. Recording is done by hand on student payment cards, then re-recorded in the payment book. This process is prone to errors, takes a long time to search for data, and is difficult to manage as the amount of data increases. It also risks damage or loss of physical storage. Therefore, a transition to a computer-based system is needed to address these issues, improving the ease, speed, accuracy, work efficiency, and experience of financial administration in schools.

2. Interview
is a form of verbal communication between two or more parties to explore views, opinions, or points of view regarding a particular issue[13]According to Haydar Hadziq et al. (2024), interviews mean seeking news by contacting sources directly or indirectly, such as by telephone or in writing.[14]. The researcher conducted a direct interview with Mrs. Widya Rahmawati, the administrative staff of SDIT Binaul Izzah Bumiayu, to obtain information on financial data management as a basis for developing an information system. During the interview, data such as the number of students, payment types, and financial recording and reporting flow were collected, which served as an important reference for designing a system tailored to field needs.

3. Documentation
Documentation is the process of recording or archiving past events in various forms such as writing, photos, or important works to record, store, and present information as a reference or evidence in the future.[15]At this stage, supporting data is collected, including soft files of student data, which are then used as examples in designing and testing the school's financial information system.

2.2 System Development

The system development method used in creating this application is the waterfall method. (Duma & Pusvita, 2023) state that the waterfall method is a software development model with a structured and systematic workflow.[16]This process is carried out in stages, starting from requirements analysis, design, implementation, and testing, where each stage must be completed before moving on to the next to maintain the organization of the workflow. The stages of the waterfall method include:

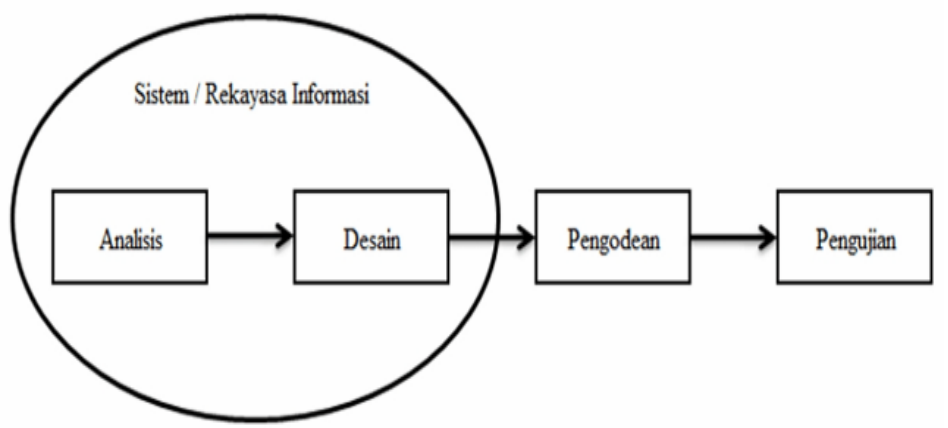

Fig. 2: Stages of the waterfall method[17]

1. Analysis: This phase involves identifying and gathering system requirements from the school, such as teacher, class, student, transaction type, and other critical elements. Developers must understand the workflow and needs of users, including the principal, administrative staff, and homeroom teachers, to ensure the system meets all operational requirements. The goal is to develop detailed requirements documentation as a basis for the design.

2. Design: This stage creates the appearance of the application interface that will be used by users.

   a. Flowchart: A flowchart is a graphical representation that shows the steps and sequence of procedures in a program.[18].

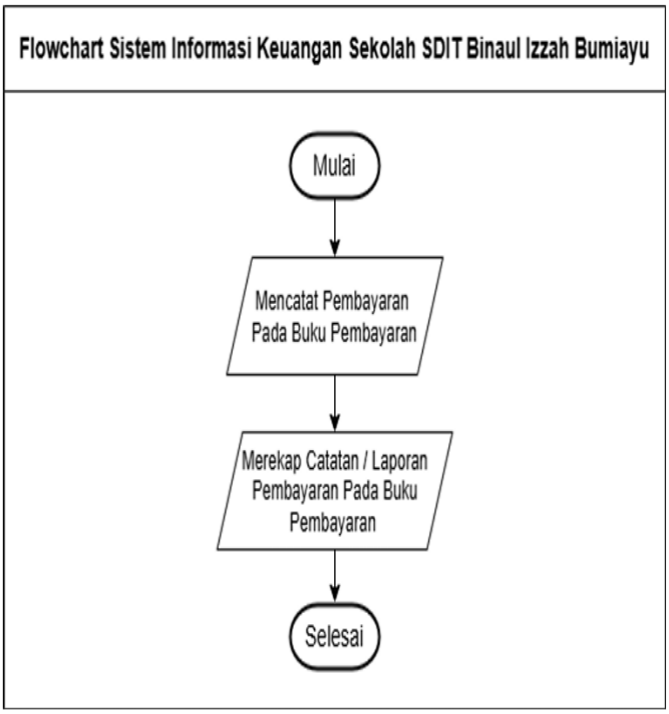

Fig. 4: Flowchart of the running system

   b. Use Case Diagram: Use case diagrams function to show the interaction between users and the processes in the system 24 25[19].

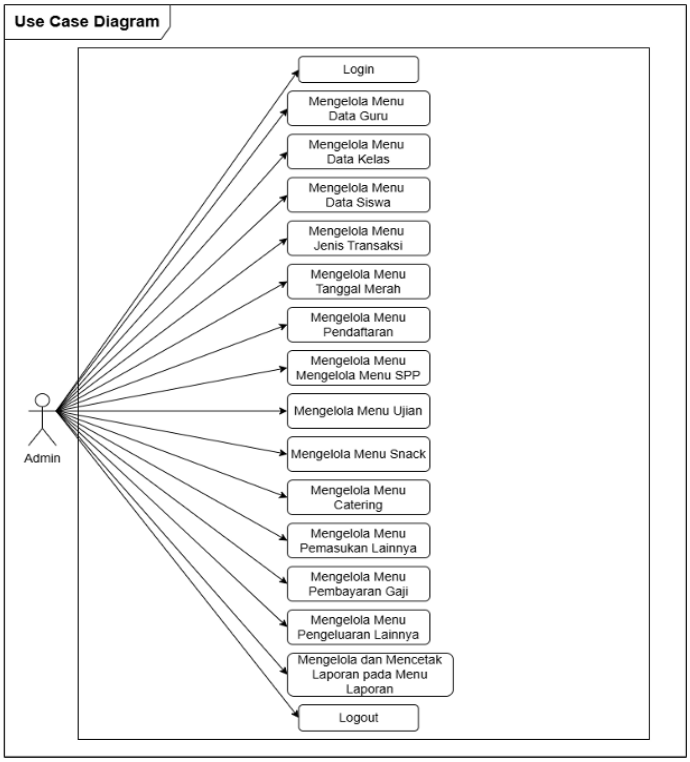

Fig. 6: Use case diagram

c. Design Planning

Fig. 7: Login design

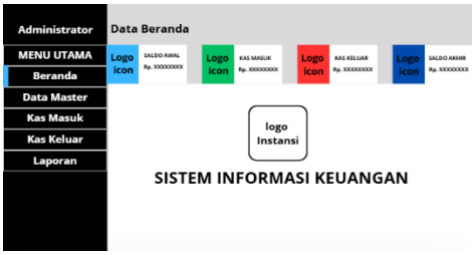

Fig. 8: Dashboard design

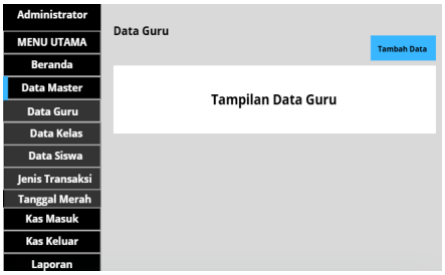

Fig. 9: Teacher data menu design

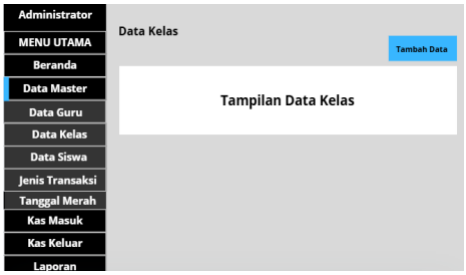

Fig. 10: Class data menu design

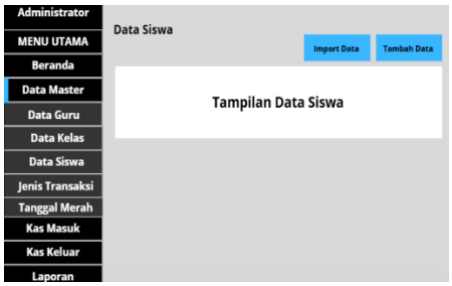

Fig. 11: Student data menu design

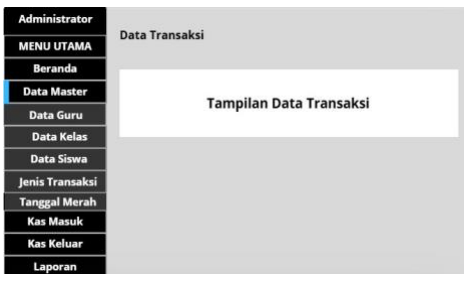

Fig. 12: Transaction data menu design

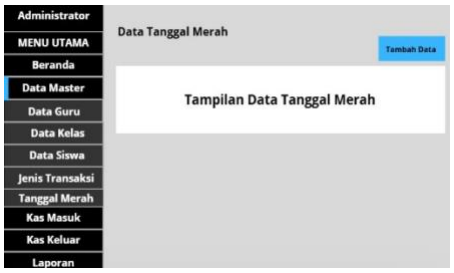

Fig. 13: Red date data menu design

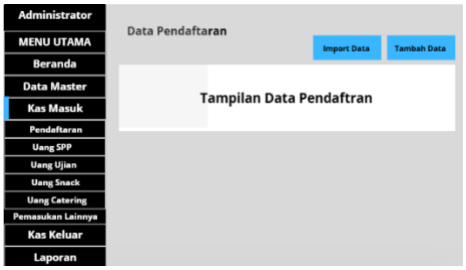

Fig. 14: Registration data menu design

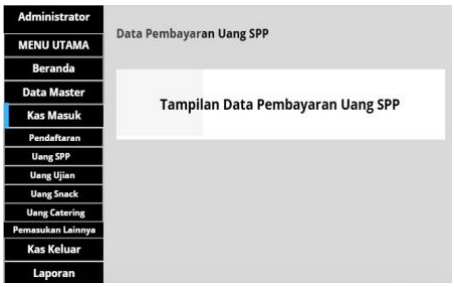

Fig. 15: Tuition fee menu design

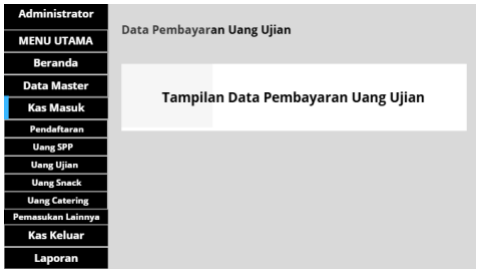

Fig. 16: Exam money menu design

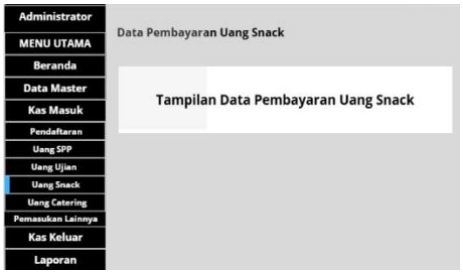

Fig. 17: Snack money menu design

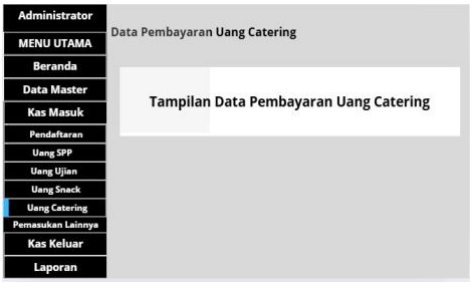

Fig. 18: Catering menu design

Fig. 19: Other income menu design

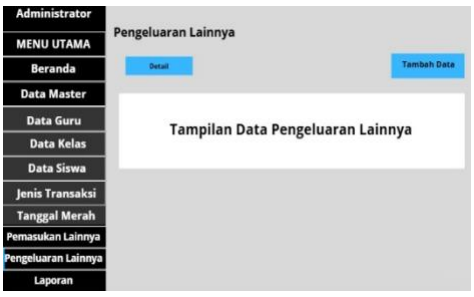

Fig. 20: Other expense data menu design

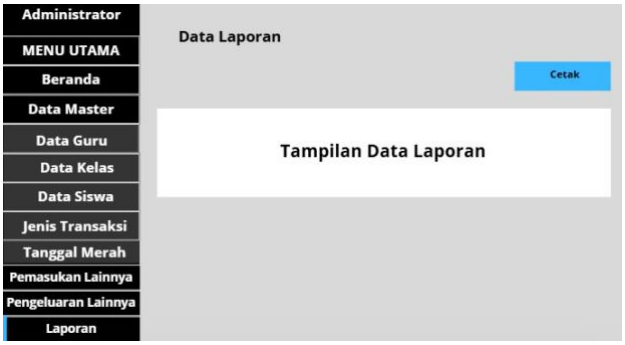

Fig. 21: Report menu design

3. Implementation

Implementation is the coding stage tailored to the needs and design of the system being developed. The following is the process for implementing the developed system.

a. Admin Login Page View

Fig. 22: Login page

Figure 22 shows the initial admin login screen for the system. After successfully logging in, the main page, or dashboard, will appear.

b. Dashboard Page View

Fig. 23: Dashboard page

Figure 23 shows the main dashboard of the SDIT Binaul Izzah Financial Information System. This page displays a summary of the beginning balance, cash inflows, cash outflows, and ending balance. On the left side, there's a navigation menu that administrators can use to manage master data, record cash inflows and outflows, and view reports.

4. Testing

This stage evaluates whether the application's features function according to its objectives and user needs. The method used is black box testing, which assesses system functionality based on the output of specific inputs without examining the program's internal structure. This technique is effective for detecting errors in data input, transaction processing, and system display and output. The focus is on ensuring all menus and features, from user data management to financial transactions and reporting, are accessible and function correctly according to admin access rights.

Table 1: Results of Black Box Testing Checklist Version

No	User Roles	Features/Menu Tested	Test Steps	Expected Output	results (✓/X)
1.	Admin	Login	Enter username& valid password	Successfully logged in to *dashboard*	✓

2.	Admin	Teacher Data	Plus,change, see teacher list	Data is saved and displayed	✓
3.	Admin	Class Data	Plus,change, view, class details	Class data successfully saved & displayed	✓
4.	Admin	Student Data	Add, change,import, see students	Student data successfully displayed & saved	✓
5.	Admin	Transaction Type	View & change transaction data	Transaction appears & updated successfully	✓
6.	Admin	Holiday	Add & delete holiday dates	Red date data successfully saved/deleted	✓
7.	Admin	Registration	Add, change,delete, import & pay registration	All registration processes are running smoothly	✓
8.	Admin	Tuition Fees	Payment form,payme nt details & data	Paymentrecorded and details displayed	✓
9.	Admin	Exam Fee	Payment form,paymet details & data	Exam transactions are recorded and displayed	✓
10.	Admin	Snack Money	Payment form,change, payment details & data	Paymentsaved & editable snacks	✓
11.	Admin	Catering Money	Payment form,change, payment details & data	Catering paymentsaved & displayed complete	✓
12.	Admin	Other Income	Add & detail income	Additional input data was successfully saved	✓
13.	Admin	Salary Payment	Add & salary payment details	Salary saved & details visible	✓

14.	Admin	Other Expenses	Add & detail expenses	New expenses recorded & viewable	✓
15.	Admin	Cash Report	Look,details, and print reports	Cash report appears and is printed successfully	✓
16.	Admin	*Logout*	Click logout on the system	The system returns to the login page	✓

5. Conclusion

The interns' knowledge and skills in conducting needs analysis, design, and implementation of information systems have significantly improved. The user needs analysis for designing a website-based school financial information system has been successfully implemented comprehensively and in accordance with applicable school procedures. The system designed and tested by the interns can help the school simplify the financial report recapitulation process, reduce reliance on manual recording, and speed up data retrieval.

Suggestion

As a follow-up to the internship at SDIT Binaul Izzah Bumiayu, several recommendations were provided for future improvements, both for schools and universities. First, system development can be carried out by adding additional features such as payment notifications, automatic reports, and more comprehensive student data integration. Second, schools are advised to provide adequate supporting facilities, such as computers with appropriate specifications and a stable internet connection, so that the system can run smoothly. Third, it is recommended that collaboration between schools and universities continue for the continuous update and development of the system. Finally, regular evaluation and monitoring are needed to identify obstacles and make improvements to improve the quality of the system in the next period.

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