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# Website-Based Student Payment System with Payment Gateway at Hasbullah Bahrul Ulum Islamic Boarding School

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## ABSTRACT
*Technological advances allow humans to more easily carry out their activities, and one way technology is utilized is by assisting in payment transactions. This research presents the stages in developing a web-based payment system with a payment gateway at the Hasbullah Bahrul Ulum Islamic Boarding School which will later function to facilitate the payment process with a payment gateway system, make it easier for students or guardians of students to check their sharia bills and also minimize recording errors so that they can Process financial records appropriately. The aim of this research is to meet needs and facilitate the process of checking bills and payments at the Hasbullah Bahrul Ulum Islamic Boarding School. This system is designed using the PHP programming language and MySQL for the database. This program package is designed to simplify the development of this system, allowing it to be used to create web page displays, and build payment system applications. This is in accordance with the needs desired by Islamic boarding school administrators, such as managing student data, number of students, bills, number of daily transactions, and creating reports to see bill summaries.*

***Keywords:*** *Technology; Payment transactions; Web-based system; Payment gateway.*

## INTRODUCTION
The rapid development of technology in the digital era has influenced many fields, including education, including Islamic boarding schools. Financial management is important in maintaining the quality and operational efficiency of Islamic boarding schools, but many still face difficulties in this regard. Conventional methods of managing finances in Islamic boarding schools are often complicated and slow down the process, causing delays and difficulties in planning and monitoring. Therefore, it is important to implement innovative solutions to improve optimal financial management.

Financial management is an important element in the implementation of the educational process in the Islamic boarding school environment (Azizah & Prismana, 2022). The main aim of education is to develop and strengthen an individual's physical and spiritual potential, in accordance with the values prevailing in society.

By highlighting problems in financial management in Islamic boarding schools and emphasizing the importance of innovative solutions to increase efficiency, this research provides a new contribution to the literature on educational financial management in the Islamic boarding school environment. Apart from that, this research also underlines the responsibility of the community and parents of students in ensuring optimal financial management to improve the quality of educational services. This shows a new and important perspective in the context of Islamic boarding school education, which can be a significant contribution to the development of educational financial management policies and practices in the future.

It is important for educational institutions to have an easy financial management system in order to provide optimal services to students. The process of managing student data and financial administration, including payments, must be accurate according to actual circumstances. Therefore, in the educational context, this aspect has a high level of significance. Administration involves a series of steps and efforts related to implementing policies to achieve specific goals. It involves various activities that involve cooperation between individuals or groups with a rational aim to achieve predetermined goals. On the

other hand, payments arise as a result of a series of economic activities, involving the process of transferring funds to fulfill certain obligations.

This research aims to overcome problems in financial management at the Hasbullah Bahrul Ulum Tambakberas Jombang Islamic Boarding School. First, the goal is to create a website-based payment system with a payment gateway to simplify the payment process. Second, the aim is to provide an automatic way for students' parents to pay via a payment gateway, so that payments are easier and can be monitored properly. Lastly, the goal is to reduce administrative errors and staff workload by automating financial recording. This all aims to provide new solutions in managing Islamic boarding school finances, increasing the efficiency, accuracy and quality of educational services there.

## METHOD

This research uses the waterfall model in developing a website-based payment system with a payment gateway. The Software Development Life Cycle (SDLC) approach means that the project involves a series of stages carried out sequentially, one after another. The following are the main stages in the waterfall model :

- Analysis, this stage involves collecting and analyzing the requirements for the system to be developed. This includes identifying user needs, desired functionality, and system limitations.
- Design, the system design stage is carried out based on the needs that have been analyzed previously. This includes system architecture design, user interface design, as well as database and data structure design.
- Implementation, a stage that involves coding or building a system based on a previously created design. Program codes or system components are developed according to predetermined specifications.
- Testing, systems or components that have been built are tested to ensure that they function as expected. This includes functional testing, performance testing, and integration testing between system components.
- Maintenance, the system that has been developed is maintained and improved according to feedback from users. This includes addressing bugs, improving functionality, and adapting to changing needs.

## RESULT AND DISCUSSION

This chapter discusses planning and development of application systems. After the development stage is complete, system performance testing is carried out on the application being developed.This chapter covers the planning and development of application systems. Once development is finished, the system's performance is tested in the application under development.

- **System Modeling**
  Use Case Diagram
  A use case is a set of scenarios tied together by a user to achieve a goal(Setiyani, 2021). Use Case Diagrams are visual tools used to show how users or actors interact with a system or application to achieve their goals. The use case diagram in this research can be seen in the image below.

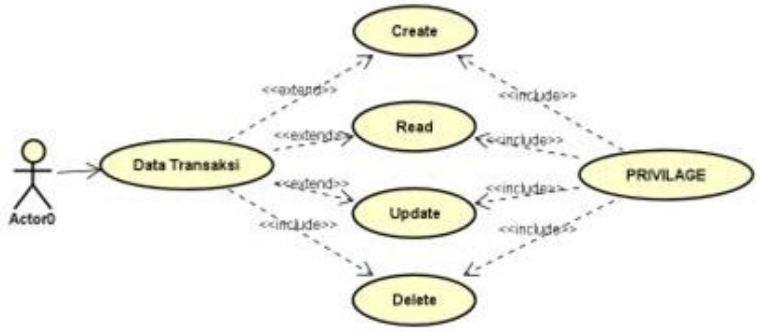


**Figure 1.** Use Case Diagram

Database Design

A database is a collection of information that is compiled and constitutes a complete unit that is stored in hardware (computer) systematically so that it can be processed using software(Setiawan & Yasdomi, 2016). The database design can be seen in the table below.

**Table 1.** Database Design

| Nama_field | Tipe Data | Keterangan |
|---|---|---|
| bulan_id | Integer (11) | AUTO_INCREMENT |
| Student_student_id | Integer (11) | |
| Payment_payment_id | Integer (11) | |
| Mont_mont_id | Integer (11) | |
| Bulan_bill | Decimal (10,0) | |
| Bulan_status | Tinyint (1) | |
| Bulan_number_pay | Varchar (100) | |
| Bulan_date_pay | Date | |
| User_user_id | Integer (11) | |
| Bulan_input_date | Timestamp | |
| Bulan_last_update | Timestamp | |

Activity Diagram

An activity diagram is a diagram that describes the concept of data/control flow, structured and well-designed actions in a system (Arianti et al., 2022). The activity diagram for this research can be seen in the image below.

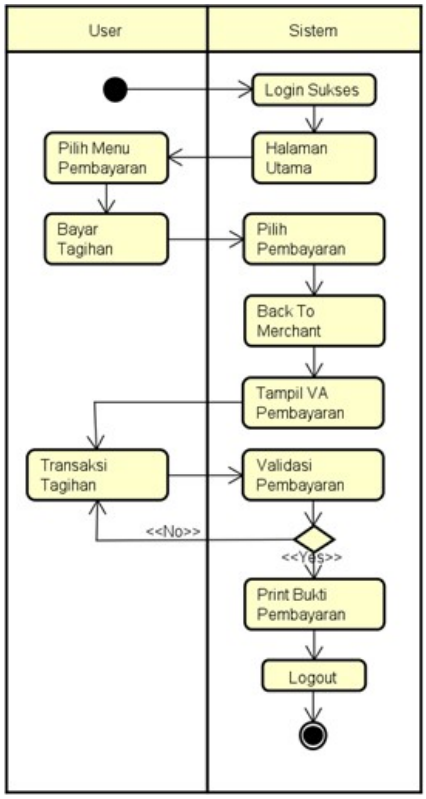


**Figure 2.** Activity Diagram

- **Result**
  From the system design that has been described, a website-based student payment system with a payment gateway is produced that is able to manage billing data and facilitate online payments. The following displays the resulting system :
  - Student Data Management Page
    The student data management page is a display for inputting student data. This page is managed by the admin to add and delete student data.

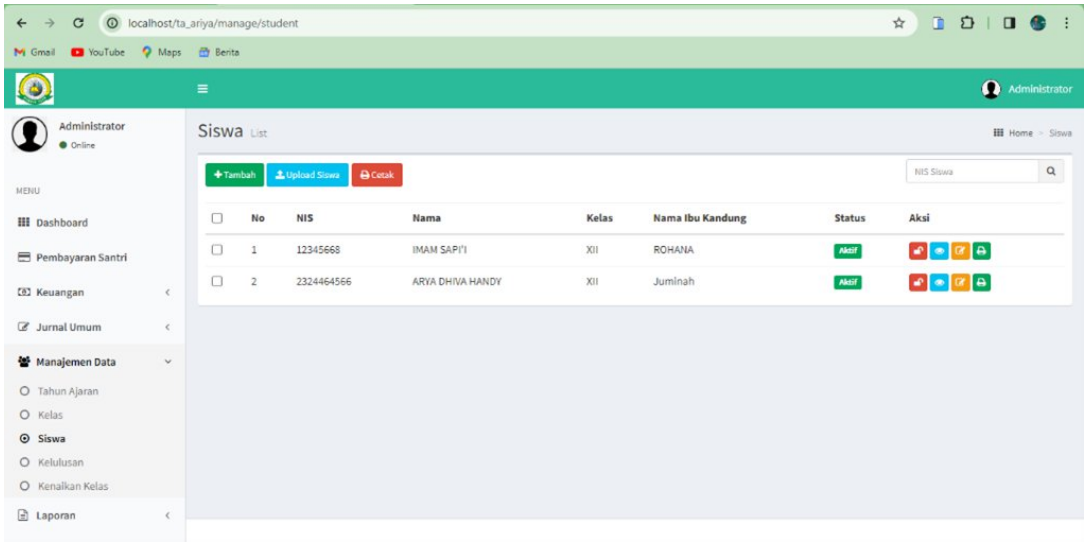


**Figure 3.** Student Data Management Page

  - Billing Data Management Page
    The billing data management page is a display managed by the admin to add or delete billing data for students/users.

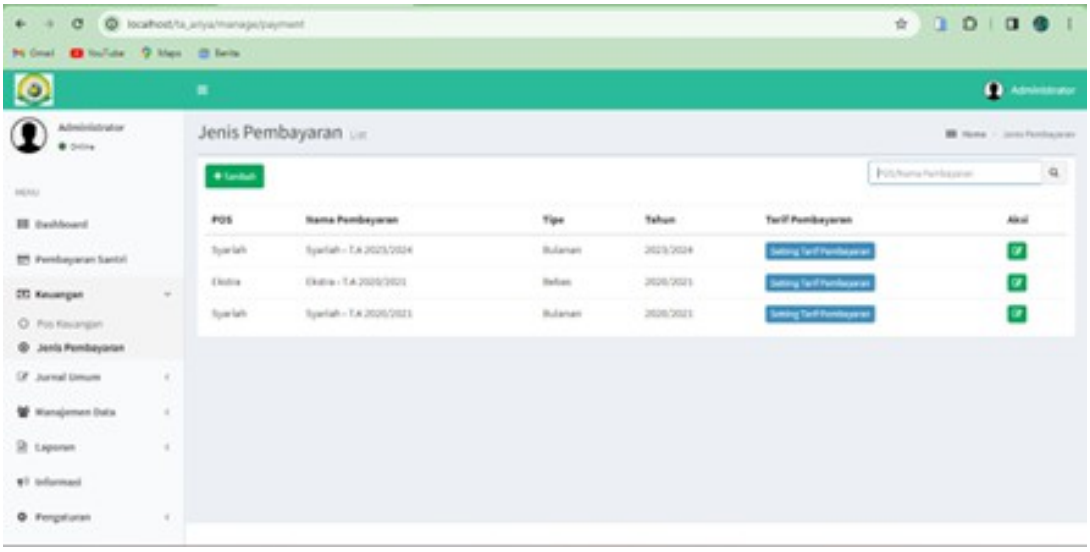


**Figure 4.** Billing Data Management Page

  - Payment Page
    This page is used to input fine payments. In the user section, payments use a payment gateway to make it easier for users to make payments and input data by the admin.

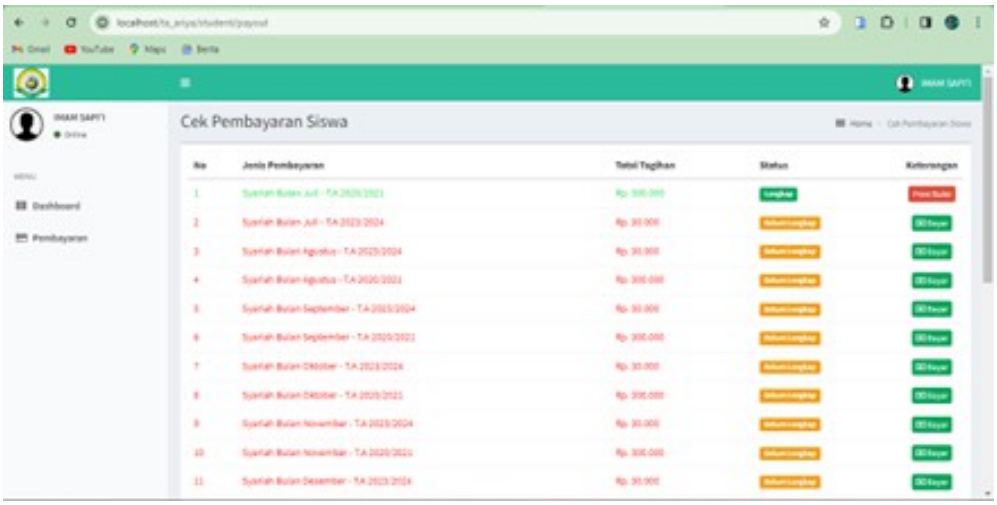


**Figure 5.** Payment Page

- **Discussion**
  This research was tested using black box testing. Black box testing is testing to determine the functionality of the software by providing input and seeing whether the test produces output as expected or not(Mad Cani & Ali Ridha, 2023). Testing can be seen in the table below:

**Table 2.** Testing Black Box

| Test Scenarios | Expected Results | Testing Results |
|---|---|---|
| Blank Data | A notification about Data Required to be Filled In appears | Success |
| Input Data | A notification appears that the data has been successfully added and the system adds the data to the database | Success |
| Edit Data | A notification appears that the data has been successfully changed | Success |
| Payment | A payment method selection popup appears and a successful payment message appears when the transaction is complete | Success |
| Print Proof of Payment | Displays a print preview of proof of payment and download | Success |

## CONCLUSIONS

Research on the implementation of a website-based payment system with a payment gateway at the Hasbullah Bahrul Ulum Islamic Boarding School concludes that the use of this technology has a significant positive impact. First, this system reflects the Islamic boarding school's efforts to keep up with developments in information technology in managing finances. Second, the student payment process becomes more efficient and administratively reduced thanks to the automation provided by the payment gateway. Third, financial transparency increases because it allows monitoring of student payment transactions. Fourth, students and parents/guardians have the convenience of making online payments, which can be done at any time and from anywhere. Fifth, the use of this system provides an opportunity for Islamic boarding school staff and administrators to improve their understanding and skills in

information technology. Thus, a website-based payment system with a payment gateway not only increases financial efficiency, but also strengthens transparency, ease of access, and develops technological capabilities in Islamic boarding schools.

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