

## Web-Based School Academic Information System (Case Study at an MTs School in Bandung)

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### @ABSTRACT

*Academic management activities are an essential part of the world of education related to the teaching and learning process. Currently, the academic information system at one MTs school in Bandung is still being done manually, such as recording student data, teacher data, subject data, scheduling data, and class data. However, this method is considered less effective because it is prone to damage or loss of data. This study aims to develop a system for data collection in teaching and learning activities. In developing the academic system, the author uses a qualitative descriptive method, in which data collection is carried out through triangulation, data analysis is inductive/qualitative, and research results emphasize meaning rather than generalization, emphasizing use cases. The programming language used to design and implement this academic information system is PHP with SSL, and the database used is MySQL. The results of this research can assist Curriculum officers and teachers in managing student data, teacher data, subject data, scheduling data, and class data more quickly and reduce the risk of data damage or loss.*

*Keywords: Information System, Academic, Website*

### INTRODUCTION

The current era of globalization has led many people to consider using various electronic-based tools. The main reason is to assist and improve performance. Almost every company, institution, and field of work now utilize electronic-based web platforms. This condition aims to facilitate faster

and more accessible data processing. (Prima et al., 2019) Essential data such as personal, company, student, and other crucial information must be securely stored. This condition also applies to the field of education, where web-based software is often used to support the performance of educators. (Aeni & Ekhsan, 2020)

Academic Information System (SIKAD) is a web platform that assists schools in processing academic data, including student data, teacher data, personal data, and more. (Hapsari et al., 2020) The storage of this data is of great importance as it facilitates users to store their data on the internet automatically. (Afnan et al., 2023) Various methods can be implemented to enhance the security of the stored data, including data encryption during transmission.

One of the junior high schools in Bandung will implement the School Academic System, setting an example for other madrasah schools. This school's academic system aims to facilitate access for educators and students to information related to activities at the school. (Chandra & Harso Supangkat, 2020) However, the utilization of this system still needs to be optimal in providing academic information within the school and in operating the program to facilitate its use by teachers. Therefore, it is expected that this academic information system will simplify the teaching process for teachers while introducing students to technology-based learning, which is rapidly evolving. (Sukmawati et al., 2021)

Manually filling in grades in report books consumes much time for teachers. The grade entry process is done by hand, and the grades are calculated manually. The same applies to manual attendance records, which lack backup data in case of loss or damage.

This research aims to develop a web-based academic information system that replaces the manual student grading and attendance system with a computerized system. (Tella et al., 2020) The software created in this study utilizes PHP programming language and MySQL as the database server. It will be tested to ensure its effectiveness and efficiency as an academic information system in one of the madrasah schools in Bandung. Based on the above descriptions, the author chose "SCHOOL ACADEMIC INFORMATION SYSTEM."

Academics is a field that studies the curriculum or learning, with one of its functions being to improve knowledge in terms of educational learning, which a school or educational institution can manage.

In theory and application, a system is a group of physical and non-physical elements that exhibit interconnectedness and interact toward one or more goals, objectives, or ends of a system. (Lestari et al., 2019)

Unified Modeling Language (UML) is a modeling language used for object-based systems or software. UML is used to comprehensively design system models that are easy to learn and understand. Object-Oriented Software Engineering (OOSE) is the software development methodology used to organize, plan, and control the development process of a system. The Object-Oriented Software Engineering (OOSE) methodology is utilized and

visualized with UML in this system development.

(Syafariani & Devi, 2019) This object-oriented approach focuses on the objects within the system, emphasizing the use of use cases. The OOSE methodology comprises three stages:

1. Create requirements model and analysis.
2. Design and implementation stage.
3. The testing phase (model testing).

The system can be interpreted as a collection of subsystems and components that work together with the same goal to produce a predetermined output. (Iksora et al., 2022) An information system is an organized set of procedures that provides information, decision-making, and control within an organization.

Academic is a field of study related to curriculum or learning, one of which is to increase knowledge in education and learning that a school or educational institution can manage.

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The present study employs a qualitative descriptive methodology. The descriptive methodology directs the investigation towards a comprehensive and in-depth examination of the social situation under scrutiny to explore and depict it thoroughly.

The researcher chose the qualitative descriptive research design to give a more thorough, transparent, and in-depth description of the observed field conditions.

The waterfall methodology is an initial approach within the software development life cycle (SDLC) employed for software development. The waterfall methodology adheres to a linear progression, commencing with the system's planning, analysis, design, and implementation phases.

The waterfall methodology comprises a series of sequential stages: requirements, design, implementation, integration and testing, and operation and maintenance.

The waterfall methodology offers the benefit of facilitating departmentalization and control throughout the development process. This method is achieved by sequentially developing each model phase, reducing the likelihood of errors.

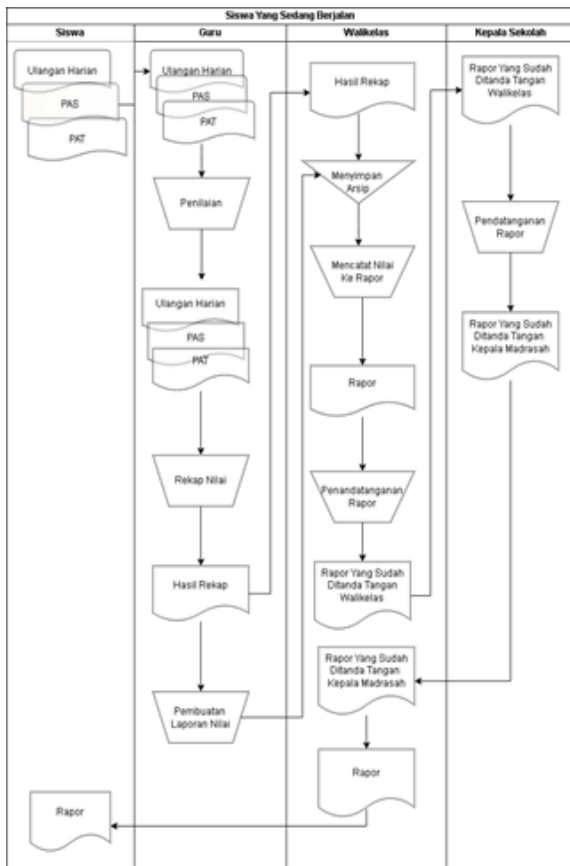
## **RESULTS and DISCUSSION**

### **METHOD**

### **SYSTEM ANALYSIS**

### Ongoing Analysis

System analysis aims to facilitate understanding of the components of a system to identify and evaluate problems related to system development based on existing needs. This analysis aims to find the best solution that can be implemented.



Academic Information System Architecture Design

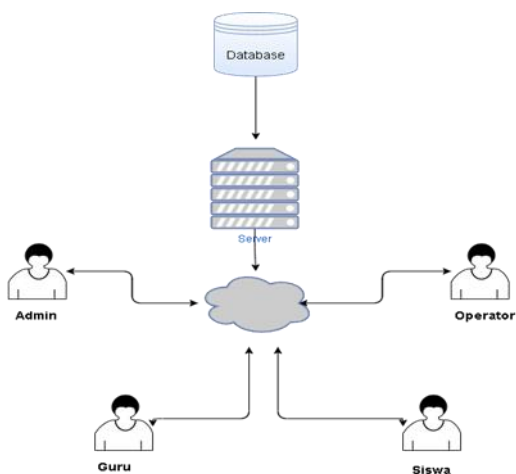


Table of Functional Requirements

No	Functional Requirements	Responsibilities
1	Administrator	<ul style="list-style-type: none"> <li>a. Function to enter and exit the system</li> <li>b. Setting information about students</li> <li>c. Setting information about teachers</li> <li>d. Setting information about subjects</li> <li>e. Setting information about value</li> <li>f. Setting information regarding attendance absences</li> <li>g. Class information settings</li> <li>h. Setting information about the room</li> <li>i. Arrangement of information regarding teaching schedules</li> </ul>
2	Teacher	<ul style="list-style-type: none"> <li>a. Login/Logout function</li> </ul>

		<p>b. Check Attendance Absence</p> <p>c. Preparing Materials and Assignments</p> <p>d. Preparing Quizzes and Exam Questions</p> <p>e. Give time in discussion forums</p> <p>f. Prepare teaching materials</p> <p>g. Check student grade reports</p>
3	Student	<p>a. Login/Logo function</p> <p>b. Perform Absences</p> <p>c. Check Materials and Tasks</p> <p>d. Conduct Self Assessment</p> <p>e. Do a Friend rating</p> <p>f. Check Quizzes and Exams</p>

Use Case Diagram



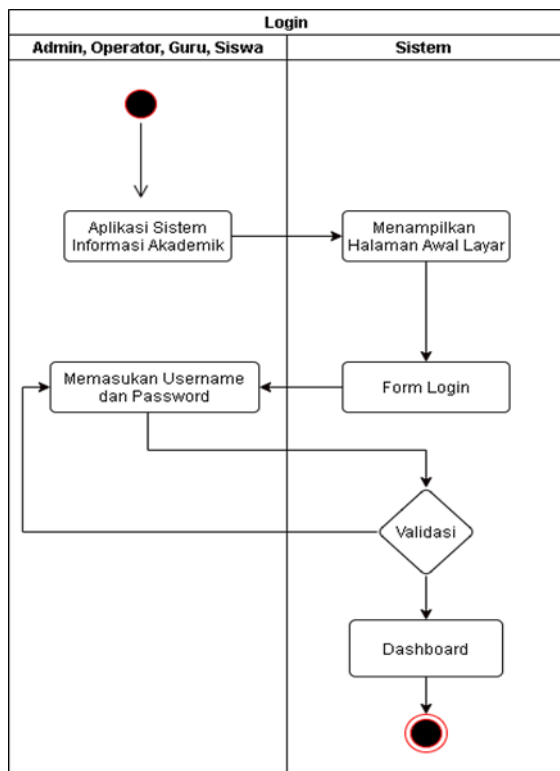
Aktor Use Case

No	Actor	Description
1	Admin	Perform full access settings on the system responsible for managing data on schedules, teachers, classes, students, subjects, users, and deleted data. It can also view teacher attendance data and student grades and make announcements to all users.
2	Operator	Has the authority to manage the system for setting data schedules, teachers, classes, students, subjects, and users, viewing teacher

		attendance data and student grades, and making announcements to all users.
3	Teacher	Individuals with access rights are responsible for entering student grade data and taking attendance according to a specified schedule.
4	Student	People who have access rights to the system to view class schedules and student grades.

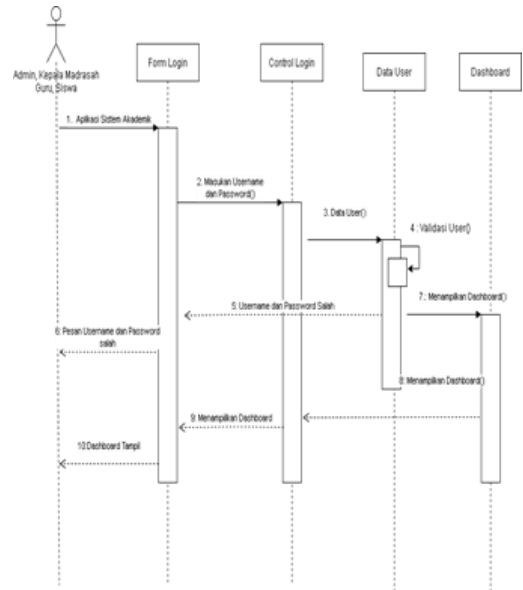
Activity Diagrams

Login Activity Diagrams



SYSTEM PLANNING

a. Login Diagram Flow Design



b. Database Design

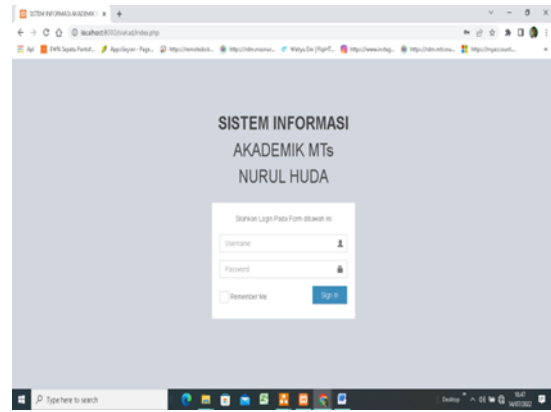


Admin Table

Nama Field	Type Data	Ukuran	Keterangan
idadmin	char	3	NotNull
username	varchar	8	NotNull
Pass	varchar	8	NotNull
Ket	varchar	255	Null
akses	char	1	NotNull
Tingkatan	char	20	Null

Teacher Data Table

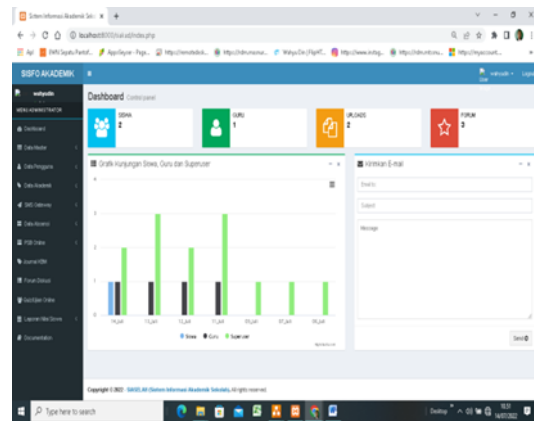
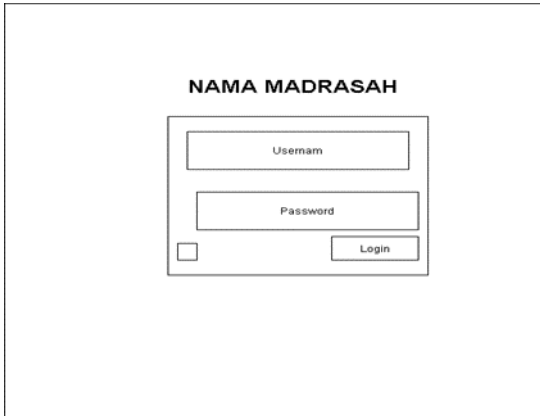
Nama Field	Type Data	Ukuran	Keterangan
nip	varchar	18	NotNull
pass	varchar	8	Null
nik	varchar	18	NotNull
nama_guru	varchar	20	NotNull
date_lahir	date		Null
tmpt_lahir	string	40	Null
Jenis_kelamis	int	5	Null
nuptk	varchar	12	NotNull
Id_status-Peg	int	5	NotNull
jenis_ptk	int	5	NotNull
id_agama	int	5	NotNull
alamat	varchar	255	Null
rt	varchar	5	NotNull
rw	varchar	5	NotNull



Dashboard View

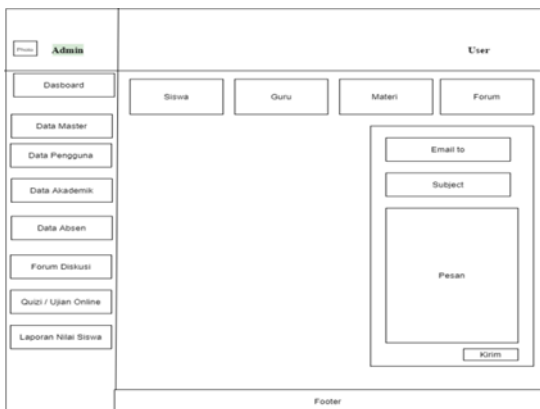
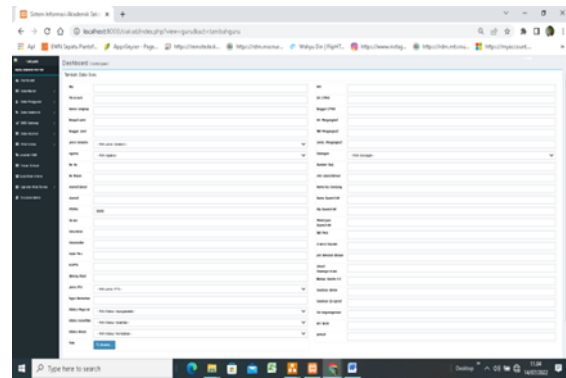
Admin Page Design

Login View Design



Display Add Teacher Data

Dashboard Display Design



System Implementation

The system implementation stage is where the web system is explained in detail to prepare it so it is ready to run.

Login View

From the test results above, it can be concluded that Admin teachers are prosperous in using an academic information system where teachers can log in, input data, and view value data. Based on this, the results of testing the system with teacher access rights were 100%

successful, being able to input data, and the end of this project was saving it into the database.

## CONCLUSION

Based on research on the School Academic Information System at a madrasa in Bandung, the results show that the system facilitates the processing of personal data of students, parents, teachers, and the head of the Madrasa. Equipped with academic data reports, this system can be accessed through a website to make it easier for teachers and administrative staff to manage and communicate academic information. Teachers can enter subject data and learning schedules per semester and generate related reports. Value assessment is carried out using the format provided on the website. Students can also access academic information through the website.

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