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DESIGN AND DEVELOPMENT OF INFORMATION SYSTEM FOR MONITORING VIOLATIONS AND GOOD BEHAVIOR AT SMPIT ALBASHIROH

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Abstract. The monitoring process of students' violations and good deeds at the SMPIT Al Bashiroh Islamic Boarding School dormitory is currently conducted manually using paper forms that are prone to loss or damage. This causes delays in data recapitulation, limits access to integrated information for authorized personnel in making disciplinary decisions, and reduces transparency because parents cannot monitor students' behavioral progress in real time. This research applies the User-Centered Design (UCD) method as the system development framework. UCD is an iterative approach that focuses on users and their needs throughout every design stage to produce a system with high usability and a better user experience through collaboration and continuous user feedback. The research was conducted at SMPIT Al Bashiroh, Malang Regency. User requirements were identified through interviews with stakeholders directly involved in the system and on-site observations. The application was developed using the PHP programming language and MySQL as the database management system. The resulting system records violation and good deed data, automatically calculates student points, and generates structured daily, weekly, and monthly reports. Based on the User Acceptance Testing (UAT) results, the system achieved an average score of 96%, indicating that the application is highly feasible and effective in supporting administrative processes and disciplinary monitoring at SMPIT Al Bashiroh.

Keywords: Information Systems, Kindness, Monitoring, Student Discipline, User Centered Design, Violations.

INTRODUCTION

Monitoring of violations and positive behavior in an educational context is a process of recording, monitoring, and reporting aimed at improving efficiency, data accuracy, and the involvement of students' parents or guardians, while also clarifying and strengthening structured and transparent discipline management, as stated in the research by Magfiroh (2024). Research conducted by Ilhami (2025) Discipline is an integral part of Islamic teachings, which emphasize the importance of responsibility, order, and commitment in fulfilling one's duties as a human being.

Based on observations and interviews conducted at SMPIT Al Abashiroh, it was found that the process of monitoring students' violations and good deeds at the dormitory is still carried out manually by recording them on small forms that are prone to loss or damage; these forms are then submitted for announcement and serve as the basis for imposing sanctions in accordance with agreed-upon regulations. Violation points are announced weekly and summarized monthly as a reference for students' visitation and return home privileges, while acts of good behavior are recorded to deduct points, ensuring a more objective assessment of discipline. This has led to various problems, including limited data integration because records are scattered across different departments, which slows down workflows and has the potential to cause inconsistencies. Progress reports on students are often delayed because supervisors must wait for summaries from

the administration, while the lack of centralized documentation regarding rules and good conduct leads to inconsistent and often subjective disciplinary actions. There is no written record of disciplinary violations and good conduct in the dormitories, so the imposition of disciplinary actions often varies depending on individual judgment. Furthermore, transparency is severely lacking because parents do not have direct access to data on their children's progress, which often creates a perception of unfairness and sparks protests. These conditions indicate that the current system is inefficient, lacks transparency, and is prone to inconsistencies in the guidance and evaluation of students' behavior.

The website-based Management Information System for managing student violation points at the Jombang Islamic boarding school offers several advantages, including improving the efficiency of the school administration, providing real-time information, and making it easier for parents to monitor their children's progress online. Research conducted by Hidayat Syarif (2024) indicates that this system is also capable of increasing transparency and accountability in the recording of disciplinary violations, reducing conflicts between boarding school administrators and parents, and facilitating data-driven decision-making based on structured data.

In a study conducted by Xaverius (2022), it was stated that a information system was developed using the CodeIgniter framework to record, monitor, and document counseling data more efficiently. This study showed that manual methods often carry the risk of data loss, making a digital system a reliable and easily accessible solution. Manual record-keeping often leads to paper waste and difficulties in compiling data.

In this development, the researcher will use the User-Centered Design (UCD) method, which is one of the frameworks within the Software Development Life Cycle (SDLC). According to Anugrah (2025), the UCD method places the user at the center of the entire system development process, as the resulting product will be more relevant to the users' needs and expectations.

Based on the previous discussion, a system is needed that can address existing challenges, thereby simplifying the documentation of students' violations, good behavior, and points, and thus streamlining the evaluation and guidance processes for students to improve efficiency and transparency (Lestari & Darmanto, 2025).

RESEARCH METHODS

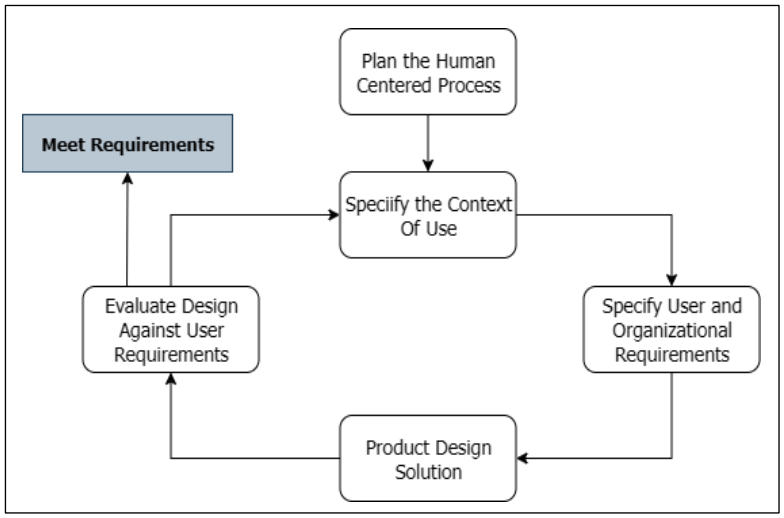


Figure 1. User-Centered Design Model

The research method used to design and develop this system employs User-Centered Design (UCD) as the system development framework. UCD is defined as an iterative process in which the primary focus is on users and their needs at every stage of the design process. This

approach aims to create products with optimal usability and user experience, as well as direct feedback from users Norman (2013). The UCD method focuses on usability goals, tasks, user characteristics, design workflows, and the environment Wulandari & Voutama (2023).

1. Plan The Human Centered Process
   This is the first step in analyzing and designing a system. This step involves planning the research, identifying problems, and gathering the necessary data..
2. Specify the Context of Use
   This is a phase aimed at gaining a better understanding of the users for whom the system is designed. This phase involves analyzing who uses the system, analyzing the purposes for which the system is used, and analyzing user characteristics.
3. Specify User and Organizational Requirements
   Steps in identifying requirements and determining the functional aspects of the user system. Based on the analysis conducted at this stage, the functional and non-functional aspects of the system are identified, along with a description of the hardware and software used.
4. Produce Design Solution
   This is a stage in the problem-solving process that involves deriving solutions from the analysis conducted in the previous stage and developing a user interface (UI), following the UML design that was previously created. During this stage, design testing is also conducted with users to evaluate each design step developed to meet user needs.
5. Evaluation Design Against User Requirements
   The evaluation phase, during which the designed system is tested using black-box testing, and the system's acceptance by the relevant stakeholders through user acceptance testing; once the system meets the stakeholders' requirements, the system design is considered complete.

RESULTS AND IMPLEMENTATION

1. Plan the Human Centered Design

This process consists of several steps to identify existing challenges. The first step begins with data collection conducted through interviews and observations at Al Bashrioh IT Junior High School with several users involved in the system's development. Based on the results of the interviews, the following conclusions can be drawn: First, there is currently no system capable of storing data on students' disciplinary infractions and positive behaviors. Second, there are no real-time daily, weekly, monthly, or annual reports on students, resulting in a lack of written documentation.

a. Persona Development
   Persona Development involves creating user profiles by understanding who the users are, what their habits are, and what they need from the system, and then tailoring the system and design accordingly.
b. User Journey Mapping
   User journey mapping helps illustrate the user flow when using a violation monitoring system. This user journey mapping helps identify the steps where users may encounter difficulties, leading to challenges or obstacles.

2. Specify Context of Use

This phase involves identifying relevant systems by analyzing interview results to gain an understanding of user access rights.

a. System Description

The design of this information system for monitoring student violations is intended to make it easier for OSBARA to compile weekly and monthly summaries of violations and points, enable parents to view their children's points in real time, and assist dormitory directors and dormitory staff in monitoring students.

b. Needs Analysis

The purpose of this requirements analysis phase is to identify and understand the system requirements that align with user needs, including access rights. There will be five actors in the system to be designed: the Administrator, the dormitory director, the dormitory supervisor, OSBARA, and the students' guardians. The actors and their access rights for this system are shown in Table 1.

Table 1. Actors and System Access Rights

No	Aktor	Hak Akses
1	Administrator	Log in; set up data for administrators, students, parents, classes, and academic years; configure master settings for violations, good behavior, and points; manage violation and good behavior points; view summaries of violations and points; view violation reports; and view history.
2	Dormitory Director	Log in, view summaries of students' violations and points, and view student violation reports.
3	Dormitory Supervisor	Log in, configure master data for violations, good behavior, and points; set student statuses; manage violations and good behavior; view point summaries; and view reports.
4	OSBARA	Log in, set master data for violations, good deeds, and points, manage violations and good deeds, view point summaries, and view reports.
5	Student Guardia	Log in and view the history of violations, good deeds, and points.

3. Specify User and Organizational Requirements

In this phase, the author developed the program specifications and conducted further analysis to identify system requirements. The analysis in this phase included functional and non-functional requirements..

a. Functional Requirements Table

The table of functional requirements is shown in Table 2 below:

Table 2. Functional Requirements Table

No	Activity	Description	Input	Output
1	Login	Users must log in first to access the system	username dan password	System dashboard based on access rights
2	Dormitory Staff Setup	The administrator sets up dormitory staff by entering the staff member's name, position, username, and passworddan password	ID, staff member's name, position, username, password	Dormitory Staff Data Table
3	Set Up Parent Data	The administrator manages parent data by entering the	ID, parent's name, phone number,	Parent Data Table

No	Activity	Description	Input	Output
		parents' names, phone numbers, addresses, and occupations	address, occupation	
4	Student Data Setup	The administrator sets up student data by entering the student ID, student name, address, gender, grade, and guardian	Student ID, student name, address, gender, grade, guardia	Student data table
5	Job Data Setup	The job data setup process performed by the administrator by entering the job title	ID, job title	Job Data Table
6	Academic Year Data Setup	The academic year data setup process performed by the administrator by entering the academic year	Academic year ID, academic year	Academic year data table
7	Class Data Setup	The administrator sets up class data by entering the class name and dorm supervisor	Class ID, class name, dorm supervisor	Class data table
8	Field Category Data Setup	The administrator sets up category data by entering the category name and description	Category ID, category name, category description	Field category data table
9	Data Setup Violations and Points	The process of setting up master records for violation types and points by administrators, dormitory supervisors, and OSBARA by entering the name of the violation, division, and points	Violation ID, violation name, division ID, points	Data table for violation types and points
10	Setting Student Status Data	The process of setting student status data by the administrator, including the point ranges and descriptions for statuses permitted and not permitted by the dormitory supervisor, by entering	student status ID, status point range, status name	Student Status Settings Data Table
11	Data Setup Awards and Points	The process of setting up master records for award types and points by administrators, dormitory supervisors, and OSBARA by entering the award name, division, and points	Award ID, award name, division ID, points	Data table for award types and points
12	Management of Student Violations	Violations are managed by administrators, dormitory supervisors, and OSBARA by entering the student's	Transaction ID, student ID, violation type ID, date	Student Violation Data Table

No	Activity	Description	Input	Output
		name and the type of violation		
13	Management of Students' Good Deeds	Good deeds are managed by administrators, dormitory supervisors, and OSBARA by entering the student's name and the type of good deed	Transaction ID, student ID, good deed type ID, date	Student Good Deeds Data Table
14	Point Summary	The point summary can be accessed by administrators.		Table summarizing violations and points
15	History	The history of infractions, good deeds, and points can only be accessed by the student's guardian		The student's history page, which contains infractions, good deeds, and points.
17	Reports	Reports can be accessed by administrators, dormitory directors, and dormitory counselors		Tables showing detailed reports and statistical reports
18	Logout	The logout page is displayed to redirect the user back to the login page.	Clicking the logout button	Displays the login page

b. Table of non-functional requirements

The table of non-functional requirements is shown in Table 3 below:

Table 3. Table of Non-Functional Requirements

No	Requirements	Notes
1	Reliability	The system must have strict password and access controls.
2	Portability	The system is fully accessible across a wide range of browsers.
3	Usability	The system is easy to use.
4	Interface	The system's interface is user-friendly for users with diverse backgrounds.
5	Availability	The system is accessible 24 hours a day, except during repairs and maintenance.

4. Produce Design Solutions

Based on the analysis conducted in the previous phase, this phase will involve creating diagrams that will be used to facilitate system design. UML (Unified Modeling Language) diagrams will be used. UML is a tool used to abstract object-oriented software Noviantoro (2022) and consists of Use Case Diagrams, Activity Diagrams, Sequence Diagrams, and Class Diagrams. In this phase, the user interface will also be developed and the program implemented.

a. Use Case Diagram

The main use case diagram aims to illustrate the entire system to be designed based on the analysis conducted in the previous phase (Siska Narulita, 2024). This diagram provides an overview of user interactions with the system; in this system, there are five actors: the administrator, the dormitory director, the dormitory supervisor, OSBARA, and the students' guardians. The main use case diagram for the system is shown in Figure 2.

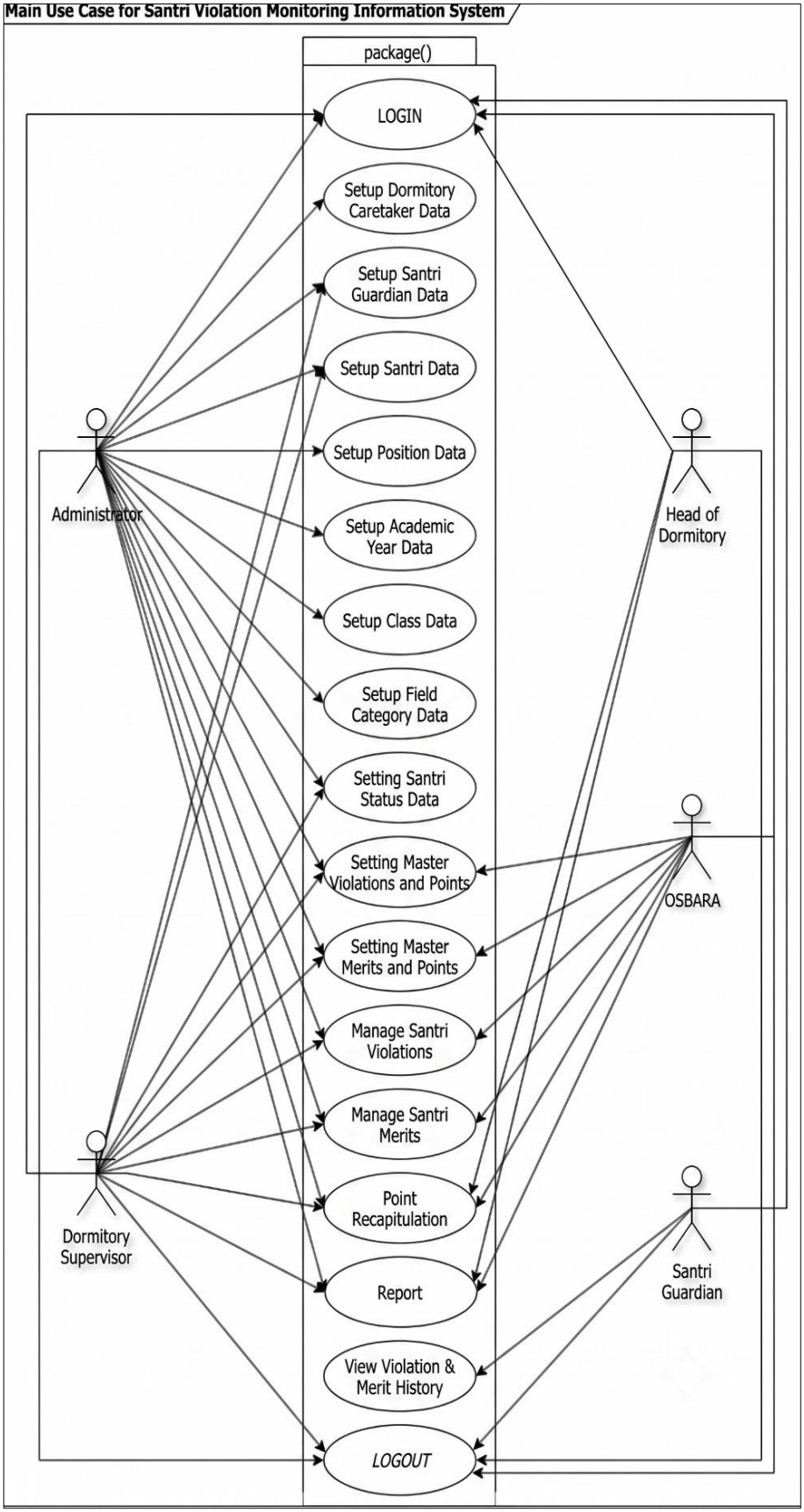


Figure 2. Main Use Case Diagram of the System

b. Sub use case diagram

A sub-use-case diagram for managing student violations is shown in Figure 3.

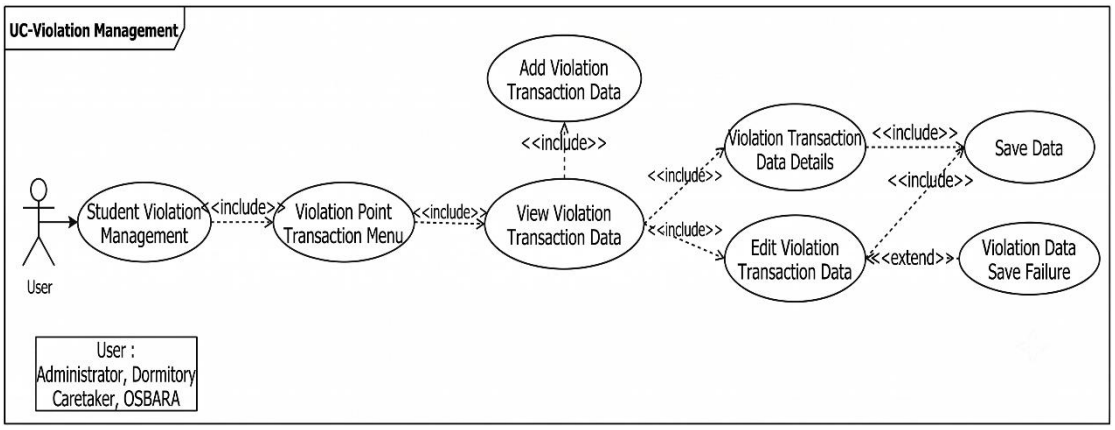


Figure 3. Sub-Use Case Diagram for Managing Student Violations

A description of the Setting Master for Violation Management sub-use case is shown in Table 4

Table 4. Description of the "Violation Management" Sub-Use Case

Use Case Name	Student Violation Management	ID	PPS	Importance Level	High
Primary Actor	User : Administrator, Dormitory Supervisor, OSBARA		Type	Primary	
Stakeholder and Interest	User : Perform data entry, view, edit, and manage point transaction records. Sistem : Display violation point transaction management data.				
Brief Description	This use case describes how users perform data input, editing, and deletion of violation point transactions. The system processes the request and responds by validating the input data.				
Trigger	The user performs changes to the violation point transaction data, and the system validates whether the entered data is valid or invalid.				
Relationship	Association : Violation Point Transaction System Include : View, Add, Edit Violation Point Transactions System Exclude : Failed to save data.				
Normal Flow Event	1. The user selects the Transactions menu and the Violation Points submenu. 2. The system responds to the user's request. 3. The system displays the Violation Point Transaction page. 4. The user adds new transaction data by clicking the Add Data button. 5. The system displays the form for adding a new violation point transaction. 6. The user clicks the Edit button to modify an existing violation point transaction. 7. The system displays the edit form containing the selected transaction data. 8. The user edits the required information or enters a new violation point transaction. 9. The user clicks the Save button.				
Alternate / Exception Flow	1. The entered data already exists. 2. The entered data is incomplete or invalid				
Pre Condition	localhost:8000/violation				
Post Condition	localhost:8000/violation				

c. Activity diagram pengelolaan pelanggaran

An activity diagram illustrates the flow of a process or activity within a system to be developed, starting from the initial steps, through the decision-making processes within the system, to the final stage of the system's process (Siska Narulita., 2024). The activity diagram for violation management is shown in Figure 4.

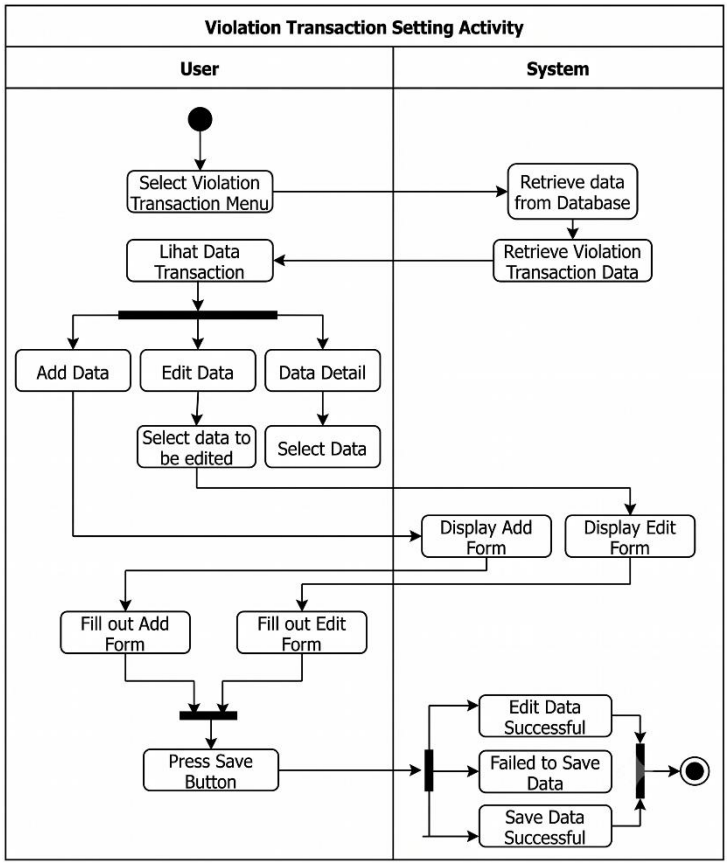


Figure 4. Activity Diagram for Violation Management

d. **Sequance diagram**

A sequence diagram represents the dynamic collaboration among several objects and illustrates the sequence of messages exchanged between them, as well as the interactions that occur among objects within the developed system (Sinambela., 2024). The sequence diagram for violation management is shown in Figure 5..

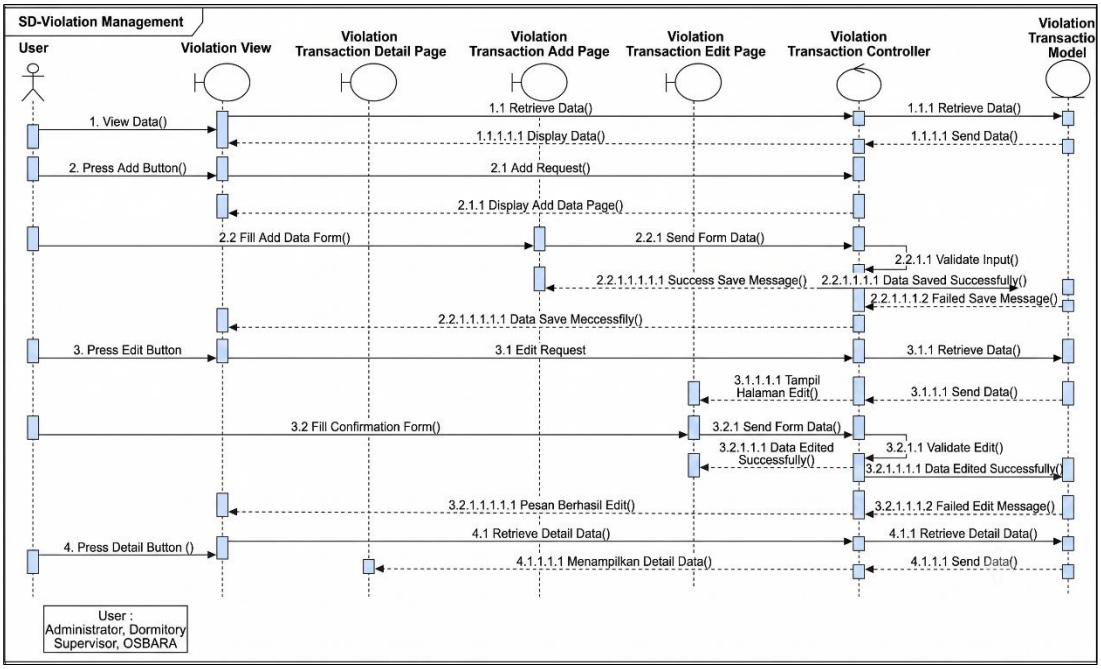


Figure 4. Sequence Diagram for Violation Management

e. Class diagram

The class diagram below illustrates the structure of the classes in the planned information system for monitoring student violations and good conduct, showing the attributes, methods, and relationships between objects in this system Numa & Ohnishi (2023) The class diagram for the information system for monitoring student violations and good conduct is shown in Figure 6.

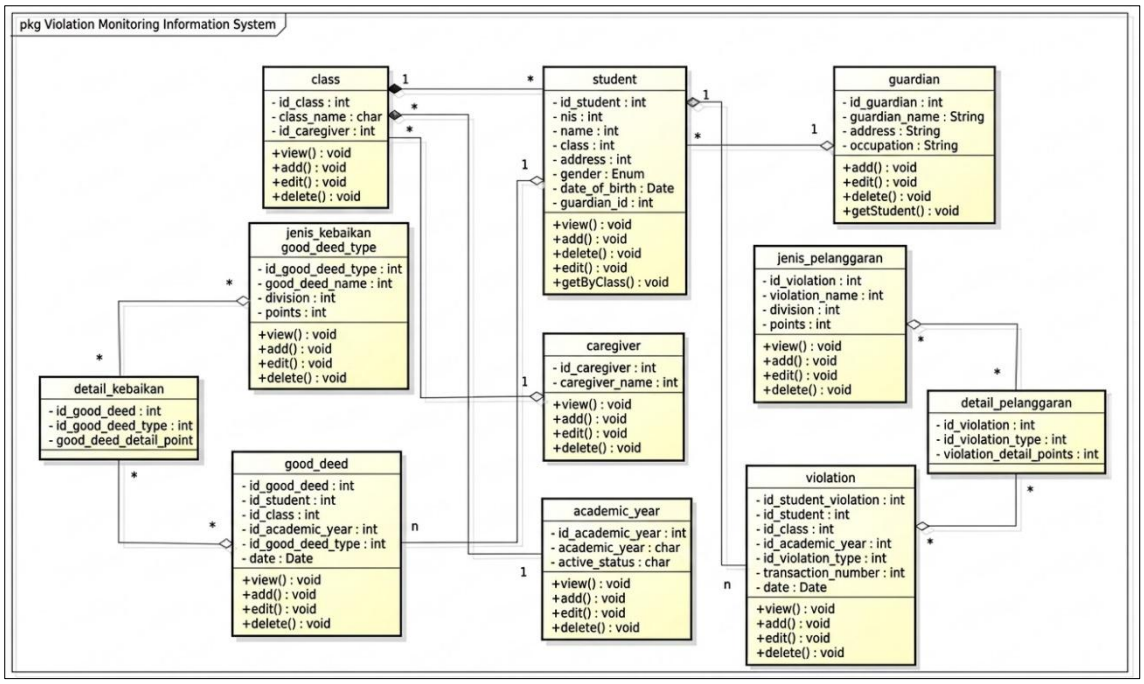


Figure 5. Class Diagram

f. User interface

The User Interface shows the design of the display to be created for the student violation monitoring information system. The design consists of a framework for each feature in

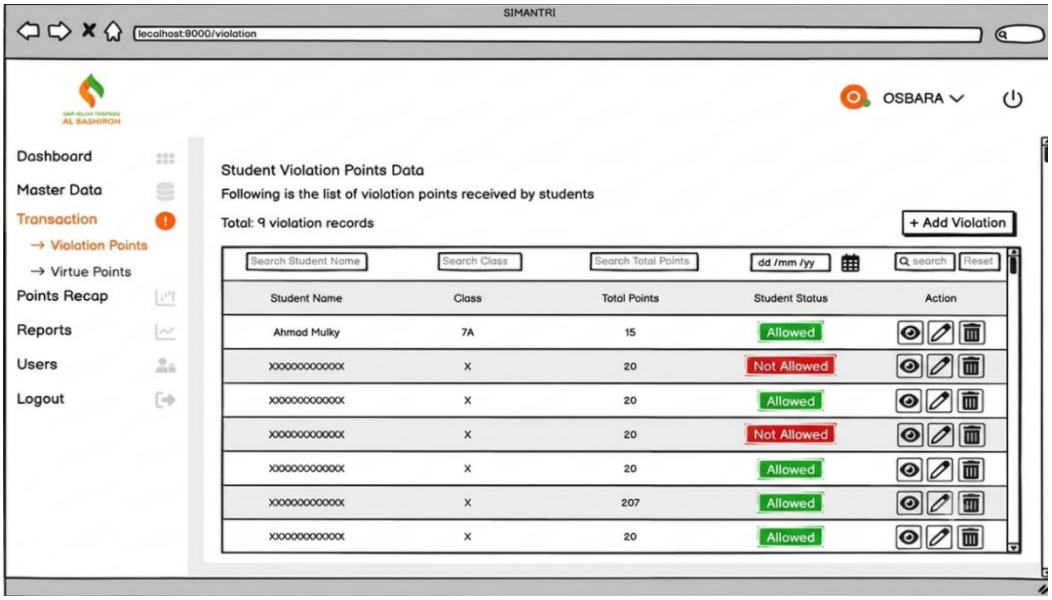


Figure 6. User Interface for Violation Management

accordance with user needs identified in the initial design phase. The violation management user interface includes features found in the violation point transaction menu, where users can add data, view violation details, and edit violations. This violation management interface page also includes a table displaying student violation data. Users can filter the data by student name, class, points, and date. The user interface for the violation management page is shown in Figure 7.

5. Evaluation Design and Against User Requirements

The evaluation was conducted to determine the system design's alignment with user requirements. The evaluation involved five users representing the dormitory director, caregivers, OSBARA administrators, and student guardians, using a five-point Likert scale questionnaire. The evaluation was conducted iteratively in two phases to gather feedback and ensure the design met user needs.

The Phase I evaluation of the initial design yielded an average score of 2.78 out of 5.00, falling into the "poor" category. These results indicated that the design still required improvements. Based on user needs, features were added to include academic year data, class data, and the ability to input more than one type of infraction or positive behavior at a time. After these improvements were made, the Phase II evaluation yielded an average score of 4.18 out of 5.00, categorized as "very good." This result indicates an improvement in the design's alignment with user needs. Based on the two evaluation phases, all tested user needs have been met. Consequently, the design is deemed to meet user requirements and proceeds to the implementation phase.

a. System Implementation

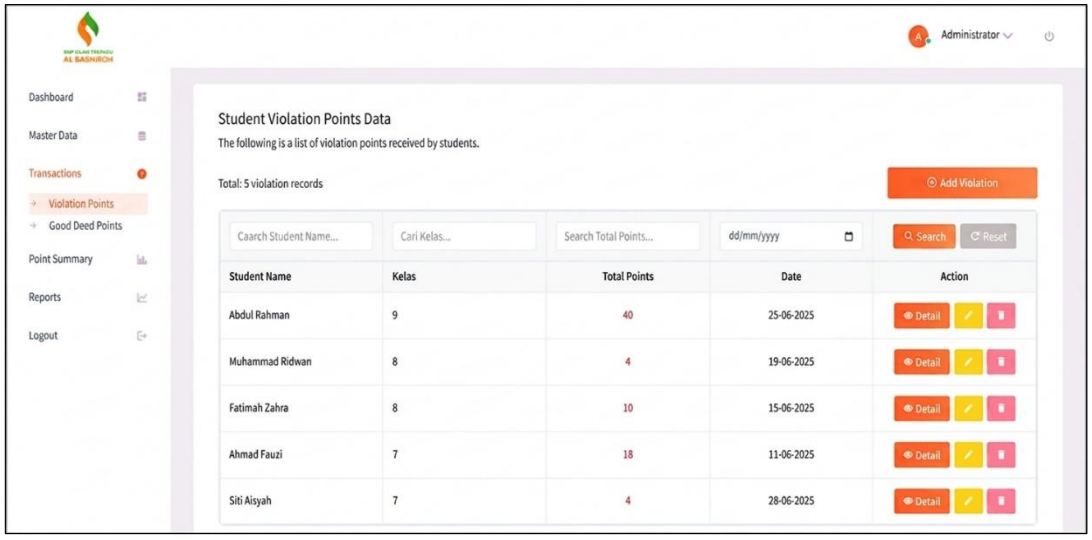


Figure 8. Violation Management Page

Once the design was deemed to meet user requirements, the system was implemented based on the evaluated design. The system implements features for managing student data, academic years, classes, disciplinary infractions, commendations, points, and student behavioral history, in accordance with user access rights.

The Violation Management page displays a table listing the students' names, classes, total violation points, and the date of the student's most recent violation. There are also buttons to add, edit, and delete data for violation categories and points for each type of violation. There is also an "Add Data" button to create a new violation type, along with categories for the violations and points for each violation. The system interface for the master settings of violations and points is shown in Figure 8.

The results of the implementation were then tested using Blackbox Testing to verify system functionality and User Acceptance Testing (UAT) to measure user acceptance.

b. Blackbox testing

Once the design was deemed to meet user requirements, the implemented system was tested using black-box testing. The purpose of this testing was to ensure that the system's functions operated in accordance with the established requirements and design.

Black-box testing is a type of software testing that focuses on evaluating system functionality without considering its internal workings (Zulkarnaini., 2023). The following are the results of black-box testing of the functionality of the information system for monitoring students'

violations and good conduct at the Al Bashiroh Islamic Boarding School junior high school dormitory.

Table 5. Black-Box Testing of Violation Management

No	Function	Test	Expected Result	Test Result	Notes
1	Violation Management (View data)	Select the "Points Transactions" menu and the "Violation Points" submenu	The system will display a page with data on student violations	The system successfully displays data on student violations	Suitable
2	Violation Management (Add New Data)	Click the "Add Violation" button, then fill in the student's violation details, and finally click the "Save" button to save the information.	The system displays the form for adding student data, and the data is successfully saved.	The system has successfully added the new violation data, and the data is stored in the database	Suitable
3	Misconduct Management (Adding Data to Existing Records)	Click the "Edit" button on the student's violation record, click the "Add Student Violation" button, then fill in the available fields and click the "Save" button	The system will display the student violation data editing form, and the data has been successfully saved	The system has successfully displayed the student violation editing form, and the data has been successfully saved	Suitable
4	Handling Validation Errors (Incomplete New Data Entry)	Click the "Add New Data" button, leave one field blank, and then click "Save."	The system will display the warning message "Please fill out this field," and the data will not be saved to the database.	The system successfully displayed the warning "Please fill out this field" because one field was incomplete.	Suitable
5	Violation Management (Data Details)	Click the "Details" button	The system will display the details of the relevant student's violation	The system was unable to display the details of the relevant student's violation	Unsuitable

c. User Acceptance Testing (UAT)

User Acceptance Testing is one of the most innovative methodologies for preventing Information Technology project failures Afrianto (2021). The following are the results of the UAT covering all aspects, which was conducted with all users of the information system for monitoring a summary of violations and good conduct by students at the Al Bashiroh Islamic Boarding School junior high school dormitory.

Table 6 User Acceptance Testing Results

No	Question	Score			
		Total	Average Respondents	%	AVG
	FUNCTIONALITY ASPECTS				
1	Does the system work as intended?	97	3.88	97	**97.50%**

No	Question	Score			
		Total	Average Respondents	%	AVG
2	Does the system display the students' records of infractions and good behavior in accordance with the records that have been kept?	98	3.92	98	
	REALIBILITY ASPECTS				
3	Does the system respond well when in operation?	95	3.80	95	**95.50%**
4	Is the system capable of processing data effectively and optimally?	96	3.84	96	
	USABILITY ASPECTS				
5	Are the menus in the system easy to use?	95	3.80	95	**94%**
6	Is the system interface easy for users to use and understand?	93	3.72	93	
	EFFICIENCY ASPECTS				
7	Is this system more efficient than the current one?	96	3.84	96	**97%**
8	Will this system make it easier to manage disciplinary violations in the dormitory?	98	3.92	98	

CONCLUSION

This research has produced a systematic information system for monitoring infractions and good behavior to reduce the risk of errors in recording infractions, good behavior, and points, and to ensure transparency in reporting students' infractions, good behavior, and points to their guardians. The development model used a user-centered design approach: 1) Plan the Human-Centered Design 2) Specify the Context of Use 3) Specify User and Organizational Requirements 4) Produce Design Solutions 5) Evaluate Design Against User Requirements, with the following users: 1) dormitory director, 2) dormitory supervisors, 3) OSBARA administrators, and 4) students' guardians. Data inputs: 1) administrator data, 2) student data, 3) data on violations, good conduct, and points. Process: Accumulation of each student's violation points stored in the database. Output: 1) reports in the form of tables or lists, 2) a summary of each student's points, 3) a summary of each student's violation and good behavior points, 4) violation point data accessible to student guardians.

Black Box testing results indicate that the system is generally in accordance with the system design and requirements analysis. UAT testing results show a pass rate of 97.50% for functionality, 95.50% for reliability, 94% for usability, and 97% for efficiency, with an overall average pass rate across all aspects of 96%.

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