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# Design of Academic Information System at Bintang Harapan Preschool

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**Abstract**

PAUD Bintang Harapan is an early childhood education located in Talang Batu Village, Rambang Kapak Tengah District, Prabumulih City, South Sumatra Province. Currently, PAUD Bintang Harapan in storing academic data is still in the form of archives, both student attendance, report card filling and tuition payment reports, so it is difficult to search for data. Therefore, the author tries to create a website-based academic information system using PHP and MySQL and UML assistance in designing the system created. This design uses the Extreme programming method, so it can be concluded that this system is feasible if the academic information system is implemented at PAUD Bintang Harapan.

***Keywords:*** *Academic Information System, PAUD Bintang Harapan, Extreme Programming*

## 1. Introduction

The world today is increasingly advanced, and technology is also developing rapidly. This rapid technological advancement has brought us into a new world, one where communication plays a crucial role in life. One result of this technological advancement is the existence of websites, which are now widely used to support certain needs. For example, the existence of a school academic information system is crucial for managing academic data. Utilizing technology offers numerous benefits, including ease of processing, searching, storing, and verifying data. All tasks that were previously complex are now easier to complete. A website is a collection of pages on an internet domain that are created for a specific purpose and are interconnected and can be accessed widely via the front page using a web browser via a protocol commonly called http or Hypertext Transfer Protocol[1]. The academic information system is an application designed for the needs of school administrative data processing with the aim of managing academic data better[2].

School is a place in the form of an organization that implements Early Childhood Education (PAUD). Early Childhood Education (PAUD) is an educational unit that organizes development efforts aimed at children from birth to the age of 6 (six) years which is carried out through providing educational stimulation to help physical and spiritual growth and development so that children are ready to enter further education. PAUD Bintang Harapan is an early childhood education located in Talang Batu Village, which has a structure consisting of a principal, teachers and students. Currently, PAUD Bintang Harapan in storing academic data is still in the form of archives, both student attendance, report card filling and tuition payment reports, making it difficult to search for data. This is considered less effective in PAUD management, considering the increasingly rapid technological developments today. This causes less efficient performance and the results of the processed data are still at risk of being invalid.

## 2. Theoretical Basis

### 2.1. Design Definition

Design is a process or stage for creating or planning something using techniques to formulate the goals to be achieved[3]. Based on the opinion above, it can be concluded that design is a stage of depiction after system analysis, the aim of which is to produce planning so that goals can be achieved.

### 2.2. System Definition

A system is a combination of elements, components or variables that are interconnected with each other in order to achieve a certain goal[4]. Based on the opinion above, the conclusion can be drawn that a system is a unity of components or elements that are connected to each other and carry out a function to achieve a goal.

### 2.3. Definition of Information

The Big Indonesian Dictionary (KBBI) defines information as information, notification, news, or reports about something. Information is a collection of processed data. Information is something that holds crucial meaning in the decision-making process. It must be completely free from misleading errors and must be fully valuable, namely accurate, timely, and relevant[4].

### 2.4. Definition of Academic

Academics are things related to education which contain everything that is needed to support academic activities themselves. Academics are all things related to science, theory and education[1]. Based on the explanation above, the author concludes that academics are things related to education which contain everything needed to support academic activities themselves.

### 2.5. Definition of Preschool

Early childhood education is a comprehensive process of growth and development of children aged birth to six years, which involves all physical and non-physical aspects, by providing appropriate and correct stimulation for physical, spiritual, motoric, emotional and social development so that children can grow and develop optimally[5]. Early Childhood Education (PAUD) is a form of education that must provide a foundation for physical, intellectual, social, emotional and language growth and development, with the stages of development that early childhood goes through[6].

### 2.7. Website Definition

The web is a collection of pages on an internet domain that are created for a specific purpose and are interconnected and can be accessed widely via the front page using a web browser via a protocol commonly called http or Hypertext Transfer Protocol[1]. A website is a collection of web pages and their supporting files, such as image files, videos, and other digital files stored on a web server which can generally be accessed via the internet[7].

## 3. Research Methods

### 3.1. Data Source Type

1. Primary Data Source
   Primary data is data obtained directly from sources or respondents. Primary data can be obtained through direct or indirect interviews, observations, focused discussions, and questionnaires[8].
2. Secondary Data Sources
   Secondary data is data obtained indirectly through an intermediary. Secondary data can be obtained through evidence, records, books, journals, or historical reports already compiled in archives or documentary data[8].

### 3.2. Data Collection Technique

1. Observation
   Data collection by conducting direct observation of activities at Bintang Harapan PAUD.
2. Interview
   The data collection process was carried out by conducting direct interviews with the principal of Bintang Harapan PAUD.

## 4. System Analysis And Design

### 4.1. Proposed Class Diagram

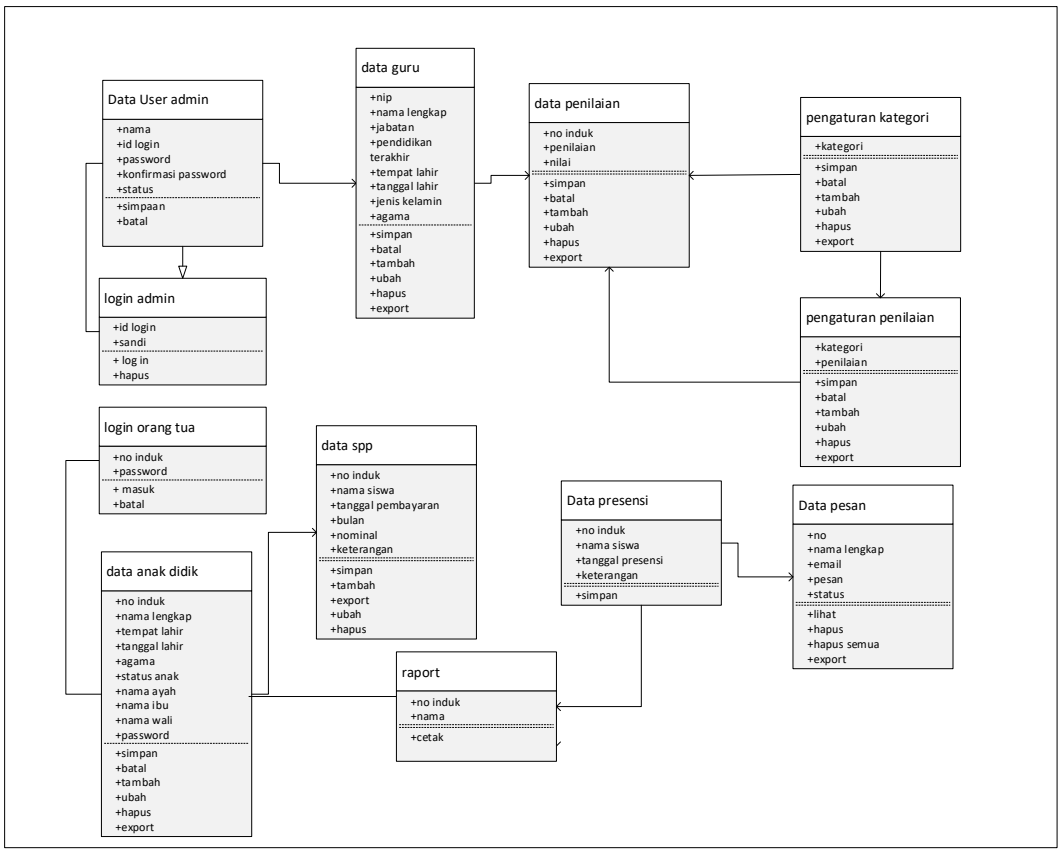


**Fig 1 :** Class Diagram

This figure illustrates the structure and relationships between classes in a school's academic information system. Several main entities exist, including Admin User Data, Teacher Data, Student Data, Assessment Data, Attendance Data, Tuition Fee Data, and Report Cards. The Admin User Data class contains login and user status attributes and is related to the admin login process. Student Data serves as the student information center, connected to the Parent Login, Tuition Fee Data, Attendance Data, Assessment Data, and Report Card classes. The Teacher Data class stores detailed teacher information and has data manipulation capabilities (save, add, modify, delete, export). Student assessments are organized within Assessment Data, which is linked to Assessment Settings and Category Settings, allowing grades to be grouped by specific categories. Tuition Fee Data records student payments, while Attendance Data stores attendance. All of this information ultimately contributes to the Report Card, which can be printed. Finally, there is Message Data for internal system communication management.

# 5. Implementation And Testing

## 5.1. Interface Implementation

Below is the homepage of the academic information system website at Bintang Harapan Preschool which displays the institution's name, logo, and motto "Healthy - Smart - Happy" clearly in the middle of the page for visitors to see:


**Fig 2 :** Website Home Page Implementation

This page provides academic information for parents of students with instructions to log in first before being able to access their child's grade list.

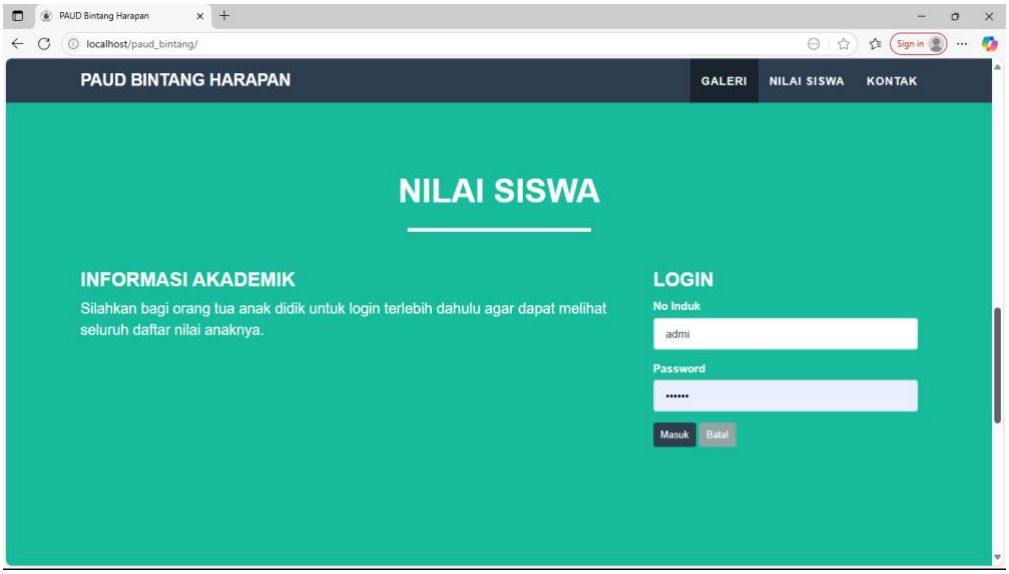


**Fig 3 :** Parent Login Page Implementation

This page displays assessments in a table, each with a number column, assessment name, and a score, such as "Good" or "Fair." Next to the table is a pie chart depicting the percentage of scores by assessment category. This display is designed to provide parents with clear and informative online access to their child's academic progress:


**Fig 4 :** Implementation of a Child's Grade List Page That Can Be Viewed by Parents

Below is the admin homepage. At the top are menus such as home, admin, students, teachers, assessments, settings, and messages, which are used to access various system features. In the center of the page, users are presented with three main options in the form of icons representing important functions: Tuition Payment, Student Attendance, and Print Report Card.


**Fig 5 :** Admin Home Page Implementation

The page below is the tuition payment information system at Bintang Harapan PAUD. Its function is to display a list of student tuition payments, including information such as student ID number, student name, payment date, month paid, payment amount, and payment status (e.g., "Paid"). Administrators can add new data using the add button, edit data using the edit button, or delete data using the delete button. Additionally, there is an option to export data to PDF format and a search feature to facilitate student data retrieval:

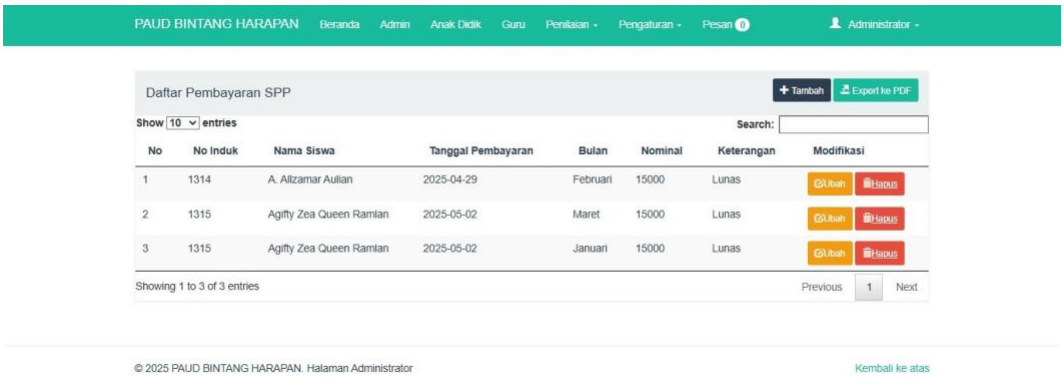


**Fig 6 :** Implementation of the SPP Payment Data Page

The image below shows the student report card print interface in the Bintang Harapan PAUD information system. This page allows administrators to print student report cards:

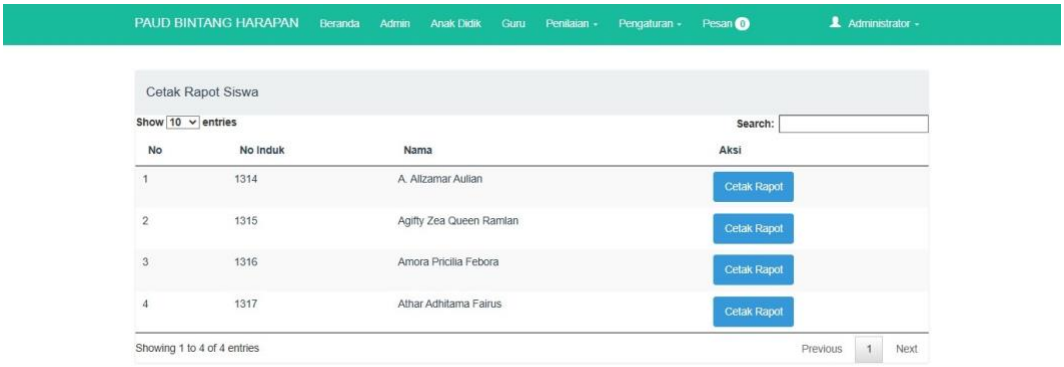


**Fig 7 :** Implementation of Student Report Card Print Page

## 5.2. System Testing

System testing is the final stage before a system is introduced to consumers, who act as users. This testing is a process carried out to determine whether it functions as expected and to identify potential errors in the software. Black box testing focuses on specific device functions, ensuring that the website's functions and appearance are working as intended.

**Table 1 :** System Testing

| No | Item Pengujian | Detail Pengujian | Kesimpulan |
|---|---|---|---|
| 1. | *Login Admin* | Verifikasi data *login* | *Valid* |
| 2. | *Login* Orang Tua | Verifikasi data *login* | *Valid* |
| 3. | *Form* mengirim pesan | Mengirim pesan | *Valid* |
| 4. | *Form* pembayaran spp | Tambah, Simpan, Ubah, Hapus Dan *Eksport* pdf | *Valid* |
| 5. | *Form* presensi | Tambah, Simpan, Ubah, Hapus Dan *Eksport* pdf | *Valid* |
| 6. | *Form* Cetak rapor | Cetak rapor | *Valid* |
| 7. | *Form* Admin | Tambah, Simpan, Ubah, Hapus Dan *Eksport* pdf | *Valid* |
| 8. | *Form* Anak Didik | Tambah, Simpan, Ubah, Hapus Dan *Eksport* pdf | *Valid* |
| 9. | *Form* Guru | Tambah, Simpan, Ubah, Hapus Dan *Eksport* pdf | *Valid* |
| 10. | *Form* Penilaian | Tambah, Simpan, Ubah, Hapus Dan *Eksport* pdf | *Valid* |
| 11. | *Form* Pengaturan | Tambah, Simpan, Ubah, Hapus Dan *Eksport* pdf | *Valid* |
| 12. | *Form* data pesan masuk | Tambah, Simpan, Ubah, Hapus Dan *Eksport* pdf | *Valid* |

## 6. Conclusion

Based on the discussion of the previous chapters and answering the problem formulation and research objectives, the following conclusions can be drawn:

1. The Extreme Programming research method is an appropriate method for building an academic information system at the Bintang Harapan Early Childhood Education Center based on this website.
2. With this website-based academic information system, it helps in managing academic data such as filling out report cards, student attendance, and tuition payment reports, so that the data obtained is more accurate and the time used is also less during the input process.
3. The academic information system at Bintang Harapan Preschool was built using CodeIgniter 3, MySQL as the database and Visual Studio Code as the coding editor.

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