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Designing Student Data Applications Using Websites with Java, My SQL and PHP programming languages

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Abstract
The current development of information technology and the internet has brought major changes in various aspects of life, one of which is the education sector. Schools as educational institutions require efficient and accurate student data management to support various administrative and academic activities. However, many schools still rely on manual methods in managing student data. This approach not only takes time and effort, but is also prone to errors and data loss. Managing student data manually often faces various problems, such as difficulties in finding certain data, delays in preparing reports, and the risk of errors in data input. All of this can hamper administrative processes and have a negative impact on school operational efficiency. With the increasing number of students and the complexity of data that must be managed, the need for more sophisticated and integrated systems is increasingly pressing.

Keywords : *Student Data Management, Information Technology, School Administration, Manual Methods, Operational Efficiency*

INTRODUCTION

As a solution to this problem, the development of a web-based student data admin system application using PHP, CSS and MySQL technology is very relevant. This application is designed to make it easier to manage student data in a centralized and structured manner, thereby minimizing the risk of errors and increasing work efficiency. With PHP as a server-side programming language, the system can process data quickly and responsively. MySQL as a relational database allows for secure and organized data storage, while CSS is used to create an attractive and easy-to-use interface.

This application provides various features that support student data management, including automatic data input and printing via Microsoft Excel. All data is stored in a database that can be accessed by school admins via a web interface, which allows fast and efficient data access from anywhere and at any time.

By implementing this system, it is hoped that schools can manage student data more effectively, increase accuracy in data collection, and save time in the administration process. Ultimately, this application aims to support improving the quality of educational services by simplifying administrative tasks, so that teachers and staff can focus more on academic activities that better support student development.

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Scope of problem

The limitations of the problems in developing this website-based student data admin system application are as follows:

1. This application can only be accessed via a web browser and is not designed as a mobile or desktop application.
2. This application is only used by school admins to manage student data, not for use by students or parents directly.
3. The data managed includes student personal data, but does not include the management of financial or other school administrative data.
4. This system is designed for use by medium-sized educational institutions, with a maximum number of students of 1000 people.

Objective

The purpose of this writing is to build a website-based student data admin system application that can facilitate the management of student data effectively and efficiently. With this system, it is hoped that student data management can be done more quickly, accurately, and can be accessed at any time by the school admin.

METHODS

The research method used in developing this application is the Software Development Life Cycle (SDLC) method with the following stages:

1. Planning

At this stage, an analysis of user needs is carried out, gathering information from various sources, as well as planning the features that will be developed in this application.

2. Design

At this stage, the system is designed based on the needs that have been identified, such as database design using MySQL, as well as user interface design using HTML and CSS.

3. Implementation

At this stage, the system began to be developed using the PHP programming language for server-side scripting and MySQL for database management. This implementation also involves writing code for integration between the frontend and backend.

4. Trial

After implementation, the application is tested to ensure the functionality runs according to plan, and improvements are made if there are bugs or errors in the system.

RESULTS AND DISCUSSION

This website-based student data application is a website platform designed to help schools manage student data efficiently and in a structured manner. This website allows school administration, such as principals, teachers and administrative staff, to manage student data online, so that it makes it easier to record, monitor and report student data. With this website users can access it from anywhere via devices that are connected to the internet network. This website application has 3 features on the website dashboard page display, namely home, about, and logout.

Website Designing

At this website design stage, a flowchart, navigation structure, use case diagram, database design and appearance design of the website pages are created. All of these elements function to provide a clear flow in creating programs on this website, so that they can be understood well.

The work flow on this website can be described in the flow diagram in Flow chart

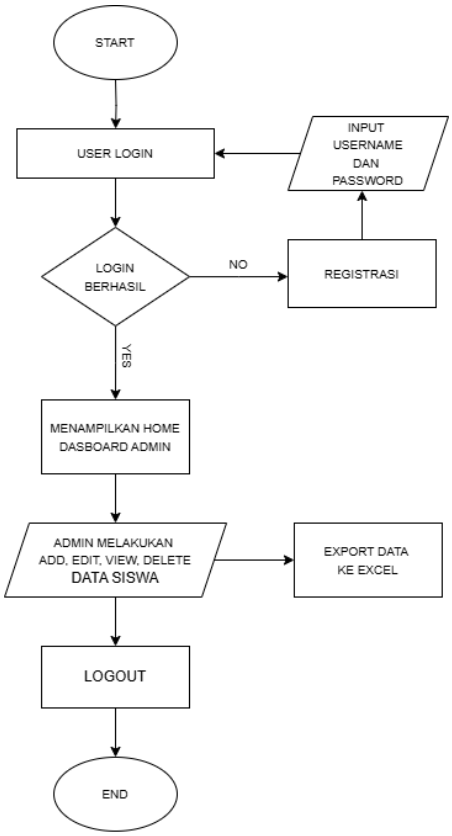

Figure 1. below

In the flowchart in Figure 1, it starts with start, then the user logs in, then there will be a condition where the user has successfully logged in or not, if not, the user will register first by inputting the username, password and password confirmation, if successful then the next page will display the admin dashboard home page, then the admin can add student data, change student data by inputting the registration number, name, place and date of birth, gender, major, Gmail, photo and address, besides that the admin can also see student data and delete student data, if so then the data will be exported to Microsoft Excel to be printed in the form of an xls document containing student data that has been successfully input by the admin, if successful then the admin will carry out a logout session.

Navigation Structure

The navigation structure used in creating this website is a hierarchical navigation structure. The navigation structure on the website can be seen in Figure 3.2 below

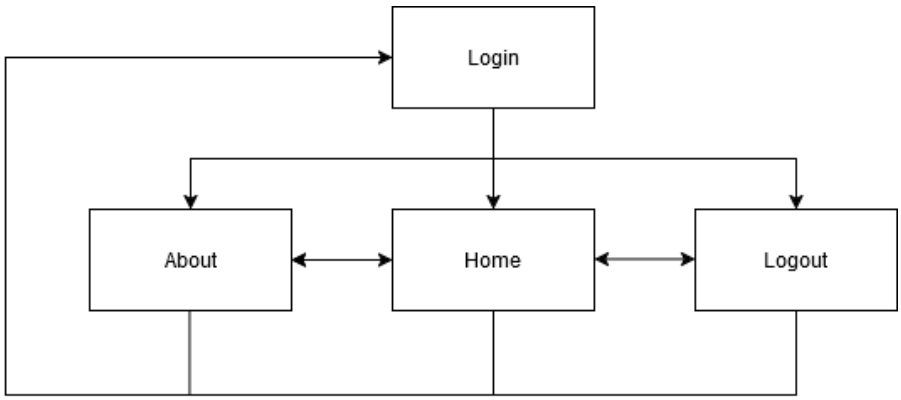

Figure 2. shows the process starting by entering the "Login" page

Figure 2. shows the process starting by entering the "Login" page, where the user enters the username and password to access the application. After successfully logging in, the user is directed to two main navigation paths, namely the "Home" page and the "About" page. The “Home” page functions as the main center for displaying the main features of the application, while the “About” page provides information about the application or site. Then there is a "Logout" option which can be accessed from the "Home" page. This feature allows users to exit the application, which will then redirect users back to the “Login” page.

Use Case Diagrams

Use case diagrams are diagrams that show the relationships between actors and systems. This diagram represents the interaction between actors and processes in the system being designed, so that the application workflow can be understood more clearly. The following illustration of a use case diagram can be seen in Figure 3. below.

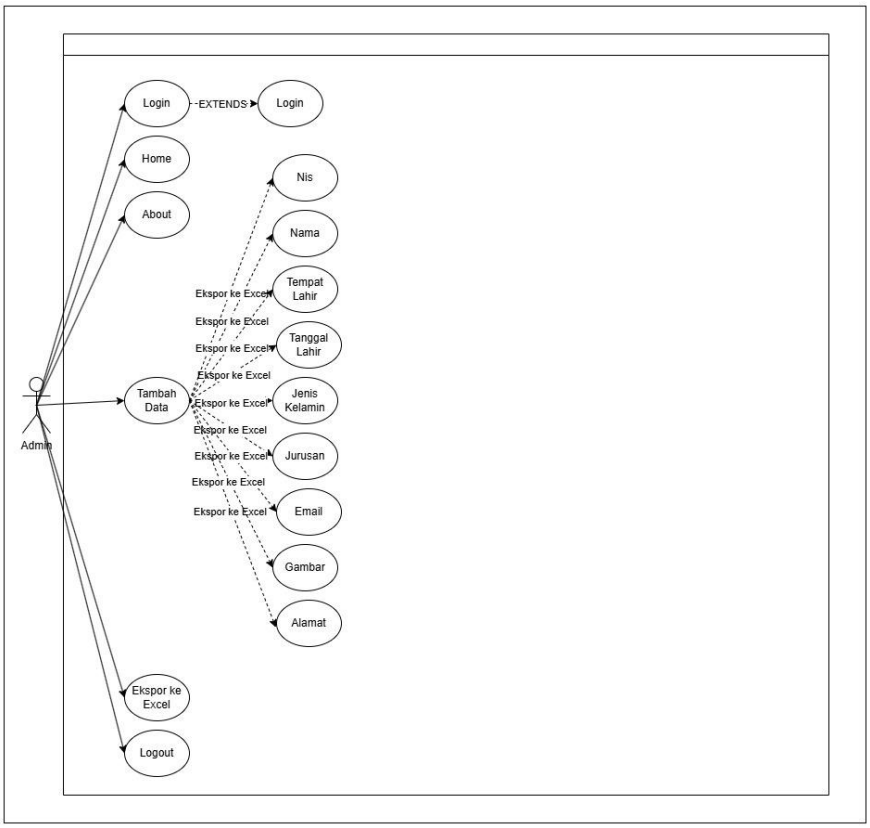

Figure 3. Illustration of a use case diagram

The use case diagram depicts the interaction between the main actor, namely the admin, and the system. The process starts with logging in, which is the first step for the admin to access other features. After successfully logging in, the admin can open the home page as a navigation center and the about page which contains information about the system. The admin has access to manage data through the add data feature, which allows adding new information to the system. Apart from that, there is an export to Excel feature which makes it easier for admins to export data into Excel format. Data that can be exported includes various attributes such as registration, name, place of birth, date of birth, gender, major, email, picture and address. This feature is designed to support efficiency in data management and documentation. After finishing using the system, the admin can log out to exit the application, to maintain access security.

Database Design

In database design, it is created to simplify the content and organization of the data needed to support the various system designs that have been created. In this database design there is a database with the name student_data. in the student_data database it is divided into 2 tables, namely the student table and the user table.

Student Database Design

This Student database design is used to support the system in managing and storing student data from users. This database design contains nis data, name, place of birth, date of birth, gender, major, email, picture and address.

Table 1. Database Students

No	Field	Tipe Data	Panjang Data	Keterangan
1.	Nis	Varchar	50	-
2.	Nama	Varchar	255	-
3.	Tempat_lahir	Varchar	50	-
4.	Tanggal_lahir	Date	-	-
5.	Jenis kelamin	Enum	-	-
6.	Jurusan	Enum	-	-
7.	Email	Varchar	255	-
8.	Gambar	Varchar	255	-
9.	Alamat	Text	-	-

User Database Design

This user database design is used as a supporting system for storing and managing student user data. This database design contains ID, username and password.

Tabel 2. Database User

No	Field	Tipe Data	Panjang Data	Keterangan
1.	Id	Integer	11	Primary Key
2.	Username	Varchar	50	-
3.	Password	Varchar	255	-

Display Design

At the design stage, this display functions to simplify the process of explaining the contents and description of the system that has been created. This display design consists of the system login page display, register display, admin dashboard page display, add data display, change data display, and detail display.

System Login Display Design

In the system login display, this is the initial page before entering to log in to the website with an account identity consisting of a username and password as shown in figure 3. below.

Register Display Design

The registration page display menu functions for the user to register an account consisting of a username, password and password confirmation as shown in Figure 3.4 below.

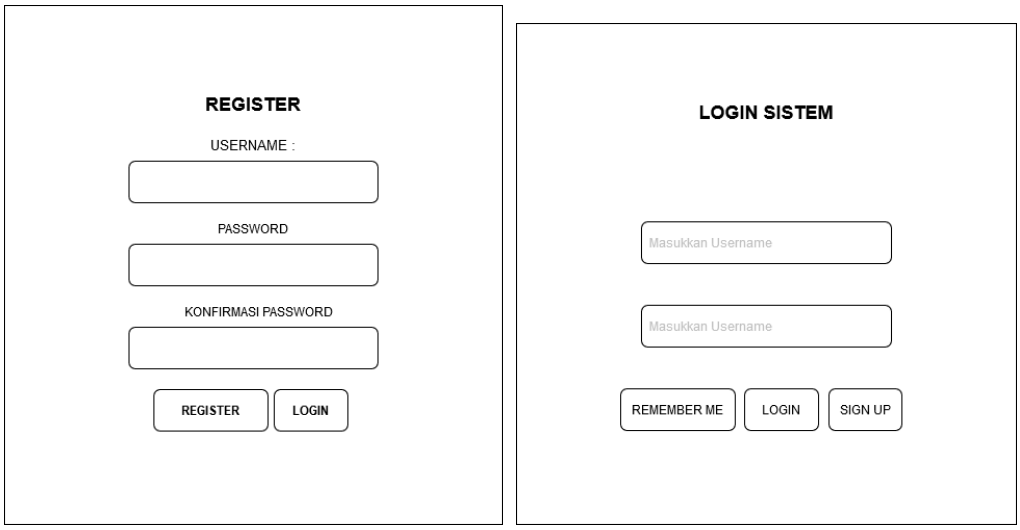

Figure 4. Register display

Designing the Admin Dashboard Page Display

On the admin dashboard page display, this is the main admin page which is used to manage student data which is shown in figure 5 below.

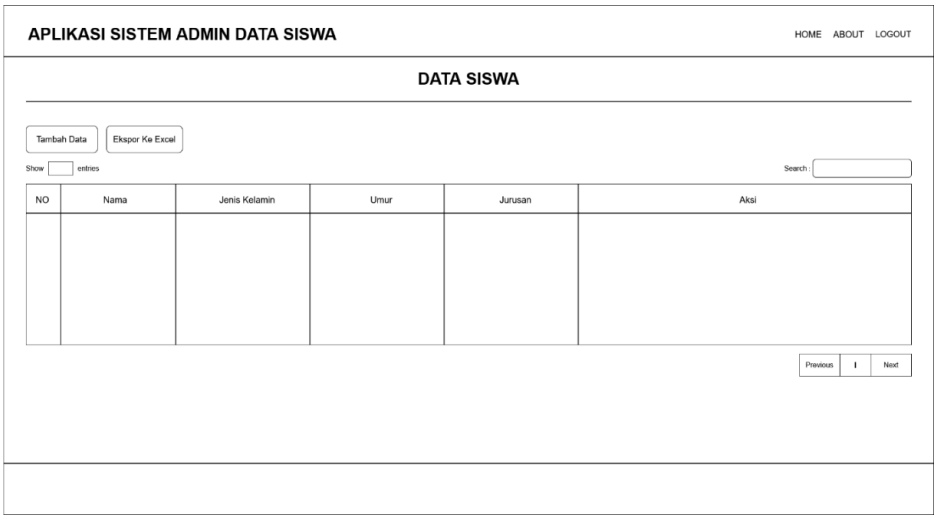

Figure 5. Designing the Admin Dashboard

Designing the Add Student Data Page Display

The display design for adding student data is the page that the admin uses to add student personal data as shown in figure 6 below.

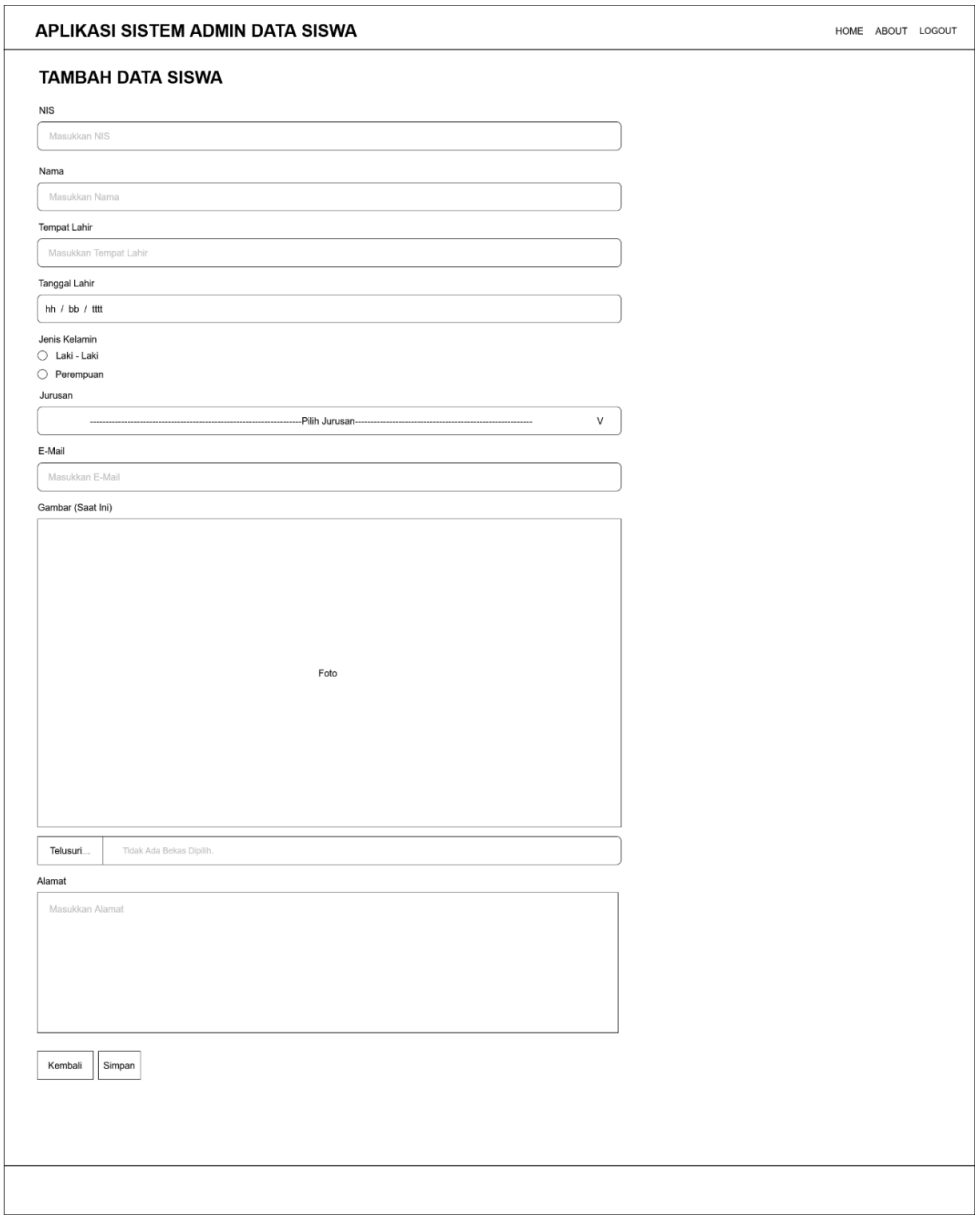

Figure 6. Designing the Add Student Data

CONCLUSIONS

Designing a Student Data Application Using a Website Using the Java, My SQL and PHP programming languages has been completed with satisfactory results. This application is designed to replace manual methods in managing student data, providing a more modern, efficient and practical solution for schools. By utilizing web-based

technology, this system has a simple and easy-to-use interface, making it easier for school admins to access and manage student data. This application has been tested on various devices with different screen sizes, browsers and specifications, and is proven to function well without interruption. However, several improvements can be made to improve performance and overall user experience.

Designing a Student Data Application Using a Website Using the Java, My SQL and PHP programming languages is still simple, considering the limited capabilities we have. For further development, this website will be better by improving the interface design to make it more responsive for various devices, especially for access on small screens such as smartphones.

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