Journal of Artificial Intelligence and Engineering Applications

Website: https://ioinformatic.org/

15th June 2024. Vol. 3. No. 3; e-ISSN: 2808-4519

Website-Based Academic Application Design at Rumah Gemilang Indonesia Depok

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Abstract

Rumah Gemilang Indonesia *is an empowerment program unit and training center under the* Al-Azhar *National* Amil Zakat *Institute Program directorate. The current collection of academic data is felt to be less effective because it is still done manually.One of the superior features planned is an online report card system that allows academic staff and students to access the academic data needed for their respective needs. The method of collecting data in the preparation of this thesis is the method ofobservation, interviews and literature study. A web development method developed using the Code Igniter framework whose programming language is PHP based, CodeIgniter applies the MVC (Model, View, Controller) concept which makes it easier fordevelopers to design a website. By developing this academic application, it can makeit easier for academic staff to manage academic data and student report card scores online, which will be very effective and efficient in terms of time and students can immediately see the results of their report card scores online by accessing This academic application is through a website that is opened using a browser.*

Keywords: *Academic Application, Website Based, Online Report Card System,* RGI,*Software Engineering*

1. Introduction

Technology is developing very rapidly in the current era of globalization and the dissemination of information is increasingly broad and complex, along with current technological advances, education must be able to keep up with technological advances, especially computer technology. Everyone's information needs today can be met with the help of the internet so that information transmission can be done in a few seconds [1].

Rumah Gemilang Indonesia or often abbreviated as RGI is an amil zakat institution under Al Azhar, RGI implements a pesantren model that focuses on the implementation of informal education in the form of short courses. This integration is designed to ensure that RGI trainees not only learn superior knowledge and skills that will form the basis of their future, but are also well informed about the Islamic faith.

The problem that motivates researchers to want to conduct research in this place is because RGI has not fully utilized technological advances in handling academic data such as student data, test scores and student report cards because there is no academic data application system that has not been integrated with the school system. Considering the problems identified by the author, a website-based academic application was designed with the aim of facilitating the management of academic data so that decision making in the school environment is more organized.

Academic applications are needed in an institution engaged in education because its purpose is to manage data and process academic activities involving students, instructors, assessments and other attribute data. The creation of this website-based academic application is expected to facilitate the data collection of the report card system online.

For this reason, the research entitled "Designing a Website-Based School Academic Information System (SIAS)" is motivated by the problem of not maximizing technological developments in terms of processing academic data such as student data, student grades, test scores, and student report cards which are still not integrated with the school system because there is no application system for academic data [2].

2. Research Methodology

The methods that will be used by researchers are divided into three parts, as for the three methods, namely:

1. Observation
   Observation is a direct observation of an object in the environment using the five senses. The act of observation is carried out intentionally by complying with applicable observation rules [3].
   Observation is carried out by making direct observations in the field in order to find out about the problem to be studied with the aim of further strengthening academic data collection at RGI.
2. Interview
   An interview is an interaction between two or more people who aim to exchange information and ideas through a question and answer session, with the aim of forming a deeper understanding of a particular topic. In this study, researchers conducted interviews by going directly to the RGI campus and discussing with the Manager at RGI as a method of gathering accurate information. Structured interviews are used as a data collection method in which the researcher or data collector has a clear understanding of the information to be collected [4].
3. Literature Study
   Literature study is a method that collects data aimed at finding relevant information sourced from books, journals and scientific articles related to the topics discussed in this research [5].

2.1. Website

A website is a combination of interconnected web pages. Basicallyeach page is known as the home page and there is a menu in which there are hyperlinks to move to other pages on the web. Website is an explanation of information that has the concept of hyperlinks to facilitate internet users in browsing information [6].

2.2. CodeIgniter

CodeIgniter is a framework for building web-based applications that are compiled using the PHP language. CodeIgniter is a framework that is popular and in demand because of its use specifically for developing websites based on the Model View Controller (MVC) system. As a free framework, CodeIgniter is often used by developers to build a website using the PHP language. The purpose of its use is to simplify implementation for developers [7].

2.3. Waterfall Model

In the process, this academic application design uses a waterfall software development model. This waterfall model is more often used in software development. The Waterfall model is an SDLC (Software Development Life Cycle) model that is often used in software development that applies a systematic and orderly approach. The stages start from the planning stage to the maintenance stage which is implemented in stages. [8].

3. Results And Discussion

3.1. User Requirement Analysis

Academic Application is software used to present information about website-based academic data. With the use of this software, it is expected that academic information in the online report card system can be managed properly and the necessary information can be obtained easily and quickly. In the development of this academic application is to analyze the needs that involve identifying user needs, both in terms of functional and non-functional. For example, users (learners, instructors, administrative staff) need easy access to class schedules, academic information, and announcements. Non-functional needs include data security, system availability, and responsive performance.

3.2. Use Case Diagram of Academic Application Learner Page

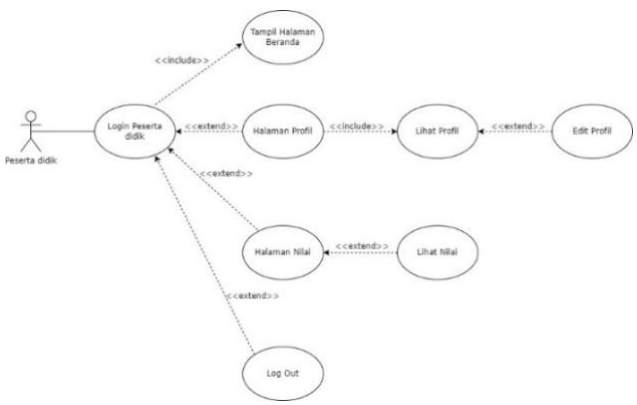

Fig. 1: Use Case Diagram Of Academic Application Leaner Page

a) Use Case Description Learners edit profile

Table 1: Use Case Description Learners edit Profile

Use Case Name	Learners edit Profile
Requirements	A1, A2
Destination	Learners can edit and complete data
Pre Condition	Learners have logged in
Post-Conditions	Updated learner data
Conditions if Failed	Failed to update
Main Actors	Learners
Main Flow	1. Learners log in. 2. Learners select the profile button. 3. The system displays student data. 4. Click edit, learners edit profile data. 5. Click update and the system will save to the database.
Alternative Flow	A2. Learners click on the learner's name. A3. Learners select the profile button. A4. The system displays learner data. A5. Click edit, learners edit profile data. A6. Click update and the system will save to the database.

b) Use Case Description Learners see Grades

Table 2: Use Case Description Learners see Value

Use Case Name	View Grades
Requirements	A3
Destination	Learners can view grades
Pre-condition	Learners have logged in
Post-Conditions	View grades
Conditions if Failed	No value yet
Main Actors	Learners
Main Flow	1. Learners have logged in 2. Learners choose a value 3. The system will display the existing values
Invariant	-

3.3. Activity Diagram

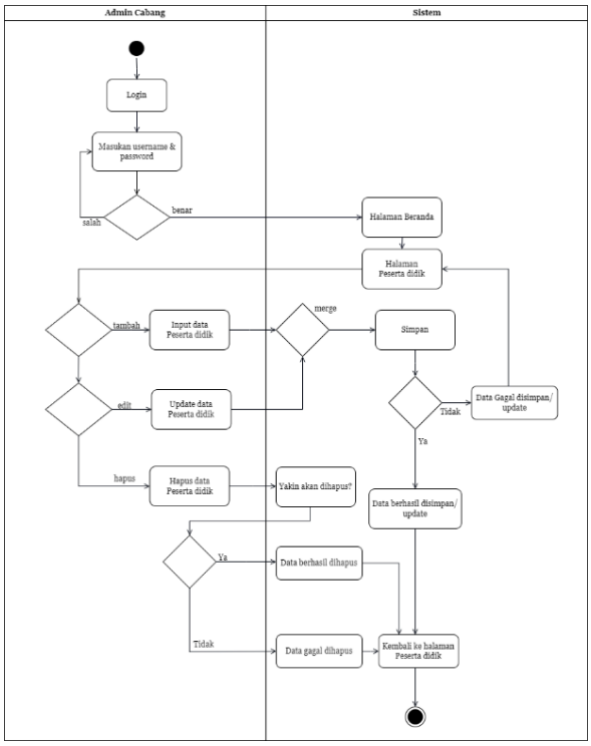

Fig. 2: Activity Diagram of Learner Management

From Figure 2, it is explained that after the admin logs in, the admin can input student data, update data and delete student data.

3.4. Component Diagram

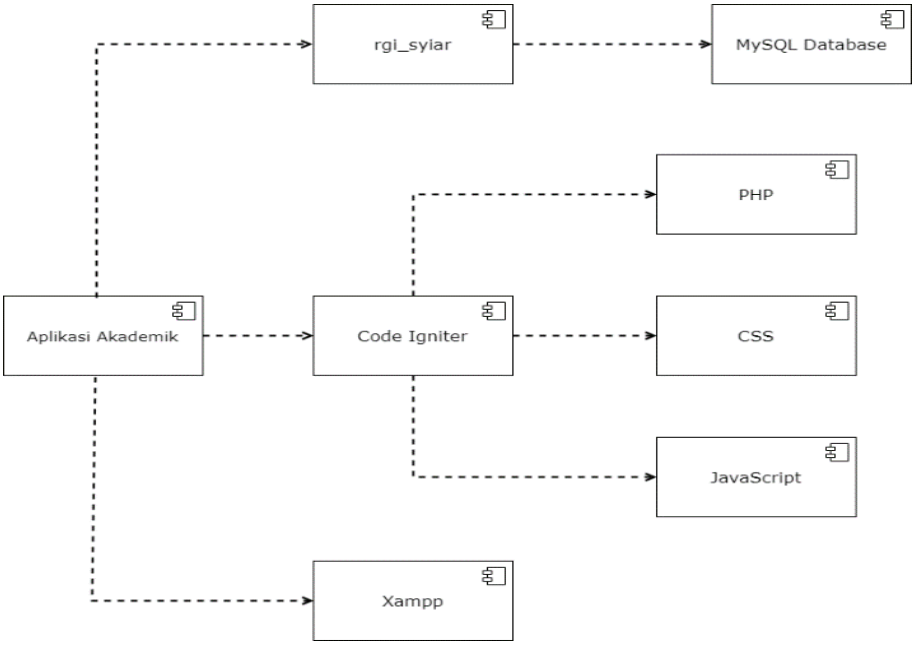

Fig. 3: Component Diagram of Web-based Academic Application

Based on Figure 3, it is explained that the website-based academic application uses several programming languages consisting of php, css, and javascript using the codeigniter framework and *MySql* database with the *Xampp* database support application.

3.5. Admin Home Page Display

Fig. 4: Website Home Page

Figure 4 is the initial display of the website admin page after successful login. From this page the admin can input data, update data and delete data for students, instructors, courses, and faculty data.

3.6. Blackbox Testing

Table 3: Blackbox Testing

No.	Tests performed	Fill in the Form	Desired Outcome	Testing Conclusion
1	Leave all data fields on the data form blank, then click the button "Save"	nipd : not filled in Full Name : not filled in Name Call : not filled Place of Birth: not filled in Date of Birth: not filled in Gender: not filled in Address : not filled Email: not filled in Cell phone number: not filled Email : not filled Last education : not filled Major: not filled Campus location: not filled Photo: not filled Username: not filled Password: not filled Retype Password: not filled	The system will refuse to save displaying the message "Your Data is Not Complete"	As desired
2	Only fill in the Full Name data and upload other data, then immediately click the "Save" button	nipd : not filled Full Name : Naufal Mumtaz Ramadhan Nickname : not filled in Place of Birth: not filled Date of Birth: not filled Gender : not filled Address : not filled Email: not filled in Cell phone number: not filled Email : not filled Last education : not filled Major: not filled Campus location: not filled Photo : not filled in Username : not filled in Password : not filled in Retype Password : not filled in	The system will refuse to save displaying the message Your Data is Incomplete	As desired

From the above tests, it can be concluded that all test inputs are filled in correctly and input validation works well as expected.

4. Conclusions

After the researcher studies the discussion that has been discussed previously, the researcher makes a conclusion on **"Designing Website-Based Academic Applications at Rumah Gemilang Indonesia Depok"** which has several conclusions, namely:

1. After designing this web-based Academic Application, it can be seen that the use of technology is useful for processing and storing academic data, the data will be stored in the database in the system created so that it will minimize the risk of data loss or damage.
2. The designed application can facilitate data management by instructors, management and branch admins who are in charge of managing academic data and online report card systems.
3. The designed application will also make it easier for students at RGI to access their academic grade information online through a website that can be opened through their respective browsers.

5. Advice

Researchers realize that there are several shortcomings in making this Academic Application. Therefore, the author provides several suggestions as a consideration for the next developer so that the management of value data can run better in helping Rumah Gemilang Indonesia Depok, as for the following suggestions:

1. This application requires maintenance with regular analysis and evaluation to make improvements and refinements to the application.
2. For further website development, it is better to add a forum feature that can be used by students, instructors and management to conduct questions and answers related to the academic assessment process to make it more effective.
3. There needs to be training for staff in using this web-based academic application.
4. Create a guidebook to facilitate students and staff in using the application.

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