Development And Functional Testing On CodeIgniter Framework Based Academic System

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Abstract
A university usually consists of several faculty, majors and courses. Employees at the university will be overwhelmed if the services related to the administration, faculty and student data collection and everything to do with the academic campus is still done manually without the system. This study aimed to establish the academic system to improve the efficiency and effectiveness of administrative services and academic at a university. Development of the system will be through the design phase and then built with CodeIgniter framework. Then the system that has been built tested with functional testing system. The results of the test obtained 100% function has been run properly as needed. Construction of the academic system with CodeIgniter framework could boost services in the college environment.

Keywords: codeigniter framework, academic information system, information technology, web based application

1. INTRODUCTION

Today, information technology is increasingly transformed into a system that can be accessed without knowing the boundaries of space and time. The latest information system that becomes a favorite is the online information system.

In the world of education, the role of information systems is helpful in terms of service, management and data processing, academic scores, finance and other academic activities. In addition, many parties are facilitated by the construction of information systems for the academic world. The usual university consists of several faculties, departments and courses, will be overwhelmed if the services related to administration, data collection of faculty and students and all related to academic campus are still done manually without the system. This can reduce productivity and deteriorate campus management. The decrease of campus productivity will affect the decrease of service and the effectiveness of the work of both lecturers and academic staff so that it affects the students, alumni and the quality of the campus. Poor management and campus services also have an impact on the decreasing image of the campus in the community.
Currently, there is no system that can facilitate students to fill study plan card, checking academic transcript and GPA. Another problem is that students and lecturers still have to check the schedule manually. In addition, financial problems are also still not open to students. It is meant for the payment problem students still have to ask directly with the financial party about any arrears that they have not completed, either the cost of graduation or just to check payment semester dues.

To build an application in the form of academic information systems, researchers use one framework that is widely used in building web based applications is CodeIgniter. This is because the framework supports php4 and php5 and has many good communities and forums (Wiswakarma, 2009). In addition, the CodeIgniter technology in making the information system built becomes more organized because of its structure and orderly arrangement (Koespradono, Suraya, Rachmawati, 2013). In the making of akadmik system in Sleman area using CodeIgniter mention that the use of CodeIgniter in making of academic system shows the result that tested both in terms of efficiency, reliability and usability (Sari, 2016).

To improve the administrative and academic management services at the University, it is necessary an application in the form of academic information system that can facilitate not only students in the administrative and financial process, but also academic staff and lecturers in improving the service.

2. Methodology

The research method consists of materials and tools used and work procedures.

2.1 Materials

Materials used in this study are campus related data related to the making of academic system, such as student data, data of educational personnel and other data deemed necessary.

2.2 Tools

The tools used in this research are Dell Inspiron M4040 Laptop with Intel Celeron N2830 Bay Trail dual core processor, 500 GB Hard Drive, 2 GB RAM Memory, 11.6 "Monitor. Slain it, Laptop with AMD E450 Processor, 500 GB Hard Drive, 2048 MB RAM Memory and 13 "AMD Radeon Monitor. Software Windows 7, Notepad ++, Filezilla, Putty, Mozilla Firefox and Microsoft Word.

2.3 Procedure

The flow of making academic system is done with the following stages:

2.3.1 System Review

At this stage data collection on the system by doing:

a) Study of literature; The literature study used among others the collection of literature that supports the research objectives achieved include literature from reference books, journals, and from the internet.

b) Interview; Interview conducted to parties related to data processing related to data related system.

2.3.2 System Design and Prototyping
The results of the analysis and evaluation stage become the materials used in the design phase or system design as a way to get alternative solution solutions that can be proposed in system development. This stage is divided into several other stages, namely:

a) Design Database Structure, after doing the design of modules and processes it will be done to the database design in accordance with the data involved with the processes that occur in the module. The linkage between the data involved is poured in the form of a database.

b) Design System architecture, this stage is done to design the system architecture in accordance with system requirements that have been defined before, the system architecture can be either software architecture or hardware architecture as application support.

Prototyping stage is done to model the system in the form of application, modeling is done to get the most ideal system model. Phases related to prototyping are:

a) The coding of programs, modules, processes and data that have been designed in the design phase of the system is poured in the form of an application by encoding. The coding of the program is made in PHP language and MySQL based database.

b) Prototype Database, at this stage is made modeling of data storage, the database that serves to in addition to storing also process the data based on the program created.

2.3.3 Testing
Testing done by white box testing and black box testing.

2.3.4 System Analysis
This stage is a step done to analyze the system in more detail both the process, procedures, and functions in accordance with the data that has been collected, the stages of system analysis is divided into several stages:

a) Requirement system Analysis, the stage where the requirements or system requirements are defined according to data functions and processes that occur in the previous system.

b) Process Analysis, this stage is done to analyze the detail processes that occur in accordance with the transaction applicable to the system, the process can be insert and delete.

c) Data Analysis, stages to analyze the data associated with the process that occurs in system activities

2.3.5. Implemtation
This stage is the final stages in the development of applications / systems, where the application is expected to be applied in the real activities associated with the system. There are evaluations and improvements used to refine the application so that it can run optimally as expected.

3. RESULT

The result of this research is a system that facilitate in processing academic administration of university. The system consists of a collection of related elements and is
responsible for processing inputs so as to produce output (Tavri, 1989). The system is processing academic administrative data into important information about university academics. Where is meant by information is data that is processed into a form more useful and meaningful for the recipient (Jogiyanto, 1990). The system meets the needs of daily transaction processing, support operations, managerial and strategic activities of an organization and provide certain outside parties with the necessary reports (Jogiyanto, 1996). This system allows the user to record and then update the data obtained. Such as the purpose of a computer system, which stores information and allows the user to retrieve and update the information upon request (Date, 2000).

In the database we recognize the terms entities and relationships. It is also used in the manufacture of academic systems. Entities are things in the real world whose information is stored in a database (Peranginangin, 2006). For example in this study; We can keep the information of students who are studying at Fajar University, Makassar. Thus, the student of Fajar University is an entity.

The initial appearance of the academic system is the login page. The page will always be displayed to any user accessing the system page.

Figure 1. Login page

Once entered in the Login page as admin, then the menu bar appears to access the master data page consisting of pages Building, Room, Prodi, Concentration, Lecturer, Group Course, Grade Values and Academic Year.
Another menu bar is the Student menu. This page displays a list of students based on the included Study Program, Concentration and year of students.

The next menu bar is Academic menu consisting of Academic Year, Course, Schedule of Lecture, Registration, Study Plan Card (KRS), Study Result Card (KHS) and Cumulative Achievement Index (GPA).

If the user chooses the menu of the Study Plan Card page (KRS), then the student's KRS page is displayed according to the Study Program, Concentration, Entrance Year and Student Name entered. Suppose, Incorporated Prodi student Electrical Engineering,
Information Engineering Concentration, Year 2011 with Bukhari Student Name, it will be displayed as the following example:

Figure 5 Student Card Study Plan (KRS) Display

The next menubar is the Finance menu consisting of Payment Form, Payment Type, Tuition Fee and Financial Statement.

Figure 6 Payment

If in the menu bar is selected page Lecture Cost, then the system displays a page that lists the tuition of students based on Concentration and Year of Student Force. For example, to know the tuition of Informatics Engineering students for Year 2010, enter the data as desired by the user and then display the Tuition Fee column consisting of the Registration Fee line, semester, Student Affairs, Graduation and KKN Cost. Here's the page in question:
The last menu bar is the System Users menu. Where, this page is a page that can only be accessed by the admin. The page is to show who the user has been registered to be able to access the system created.

The System User page displays who are registered users and has the right to login and access the academic system. The page also displays the user level that is divided from Admin, Student, Staff of Department and Lecturer. Each user level has different access rights to each other, depending on the needs of each level. The page also displays the last login column to know when the last time each user accessed the academic system page.
System functional testing is a type of testing performed on the software to ensure the application of the software is in accordance with its function. Where the most common problem is questioned in this test is whether the system has been developed in the right way and is in accordance with the specifications and provide output or display results as expected. Here are the results of system testing that has been made:

<table>
<thead>
<tr>
<th>No.</th>
<th>Identify the test</th>
<th>Instructions</th>
<th>Expected results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Access the main page</td>
<td>Testers visit the url address of the system, using the web browser of the laptop and pc</td>
<td>The homepage opens perfectly as it is mocked in system design</td>
</tr>
<tr>
<td>2.</td>
<td>Login (member/user and admin)</td>
<td>Testers use an admin account to login on the system</td>
<td>The system responds by accepting the username and password of the user for the admin and directing the login page according to admin privileges.</td>
</tr>
<tr>
<td>3.</td>
<td>Link Master Data menu</td>
<td>Testers highlight pulldown Master Data icon to display the menu provided.</td>
<td>The system displays a list of menus available in the pull-down icon Master Data that is building, room, Prodi, Concentration, Lecturer, Group Course, Grade Values and Academic Year.</td>
</tr>
<tr>
<td>4.</td>
<td>Student Link Menu</td>
<td>The tester presses the student link menu to see the page on the link.</td>
<td>The system displays a list of students based on the Study Program, Concentration and Force of mahasiswa entered testers.</td>
</tr>
<tr>
<td>5.</td>
<td>Academic Link Menu</td>
<td>Testers highlight pulldown Student icon to display the menu provided.</td>
<td>The system displays the list in the pull-down menu icon Academic Year Academic namely, Course, Lecture Schedule, Registration Study Plan Card (KRS), Card Study Results (KHS) and Index Point Average (GPA).</td>
</tr>
<tr>
<td>6.</td>
<td>Financial Link Menu</td>
<td>Testers highlight pulldown Finance icon to display the menu provided.</td>
<td>The system displays the list in the pull-down menu icon that Finance Payment Form, Payment Type, Tuition and Financial Statements.</td>
</tr>
<tr>
<td>7.</td>
<td>System Link System menu</td>
<td>Testers logged in as admin so have access privileges to know who the system user is and the level of user</td>
<td>Displays membership information</td>
</tr>
</tbody>
</table>
permissions of the system as a student, lecturer, staff or admin.

4. CONCLUSION

The quality of software that has been developed in terms of functionality is good enough, after the test, obtained 100% function has been running correctly as needed. Development of academic system with CodeIgniter framework can boost service in college environment, so that implementation of information system development can be used maximally and running smoothly, and follow the development of information technology. The use of internet services integrated with information systems for academic data services allows students to access academic data easily, quickly and accurately. Through the internet, all the academic data required can be accessed easily without taking a long time.

5. SUGGESTION

For further development of research Academic information system to be made reference table for each academic calculation formula, so that if there is a change formula is simply changed from the reference table instead of script.

REFERENCE


