Design and Implementation of Web Application for Attendance List of Lecturers Using Codeigniter and Bootstrap Framework

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Abstract. Creating web application using traditional programming has lots of obstacles and failures in its development due to the fact that not only it is very difficult to trace logically but also it is not well organize. To overcome this, the researchers have created a new technology in web programming using framework. In this research, we used codeigniter framework. We designed and implemented web application for attendance list of lecturers that teach at Mulia University in Balikpapan using codeigniter and bootstrap framework. This research has several steps: collecting data, process modeling, data modeling, program creating, and application testing. The application that was created is based on system design which has been made before and its result has been tested by lectures that teach the courses. The main features that have been resulted in this research is login system, courses, lectures, attendances list system, and its report. The result of this research is lecturers attendance list system which design and implement web program using codeigniter and bootstrap framework and LTE admin easily and fastly. This attendance system hopefully will make all the process of attendance practical and easy.

1. Introduction

The development of information technology that occurs rapidly has demanded its human resources not only to adapt to current development but also to improve technology of web innovation. Many practitioners, in education sector, are eager to use technology of web innovation that is easy to develop, and high quality, to support teaching and learning process. A high quality application, nevertheless, depends on the structure system that is used [1]. One of the framework that is open source and used by many people widely in creating web application is codeigniter framework. Mulia University is a private university that located in Balikpapan that has been developing rapidly. This new university is a merger of three colleges, ASMI Balikpapan, STMIK Balikpapan, STMIK SPB Samarinda, and it is demanded to adapt the development of information technology especially technology of lecturers attendance list system. The system of lecturers attendance list in Mulia University is still using manual system. As a result, the researchers want to design and implement a lectures attendance list system that is computerized which is easy to develop using codeigniter, bootstraps framework, and LTE admin.
1.1. Framework and Codeigniter

Framework is a collection of program codes which is stored in different file that can simplify repeated operations. There are several advantages of using framework: easy to use, shorten the development process, has capability to integrate the system easily [2]. With a framework, it can develop the application homogeneously, and the development has to follow the workflow which is set by a framework. It means that every development need to have the same method in completing creating of application. Codeigniter is PHP framework that is very light and developed by using PHP code that needs simple and elegant toolkit to create a complete web feature application [3] [4].

1.2. Model, View and Controller

Model, view and controller (MVC) is an architecture that is used to make web application program. This architecture devides the components of program into three main parts: model, view and controller [2]. Model is used to display the data used by the application. View implement the user interface used by application. Controller consists of the whole program flow and deals with event storage created by user.

1.3. Bootstrap and LTE Admin

Bootstrap is framework of Hypertext Markup Language (HTML), Cascading Style Sheet (CSS), JavaScript (JS), which is the most populer framework to design and develop web and mobile application [5]. Bootstrap is a framework that can help to design and develop a web easily and fastly [6]. There are a lot of functions or class that is ready to used offered by bootstrap. It only needs development in using those funtions according to our need such as navbar component, menu, form, etc. LTE admin is a template that is developed by CSS bootstrap framework. The author of this template is Abdullah Almsaeed. He distributed this LTE admin template for free. The template is suitable for developers that want to make a dashboard admin with various features and has a lot of benefits to be used in creating a project of web based application.

2. Methodology

2.1. Collecting Data Method

The researcher collected all data that related with the research in several steps: a) observation method, this method is used to observe the object of the research directly, b) interview method, this method is used to interview those who used the system, c) literature review, this method is used to read books, journals, literature materials, and understand all theories related with the problems that is being studied.

2.2. Process Modeling

Everything that related to a system in one organization that representation of all entities is called use case diagram. Use case diagram is modeling that describes system behaviour that will be created. Use case diagram describes an interaction between one actor or more and the system. The actors that are used on the application of lecturers attendance list is shown in figure 1 below:
Figure 1. Use case diagram lecturers attendance list system

Figure 1 is use case diagram lectures attendance list which consists of lectures actor and admin actor as organizer of lecturer attendance list. The admin inputs the data of lecturers, courses and attendance list setting system. Lectures select the course that they teach and input the material of lecture.

### 2.3. Data Modeling

Application of lecturer attendance list uses database as a storage media which consists three tables whereas the relation of those tables is shown in figure 2 below:

Figure 2. The relation tables of lecturer attendance list

Figure 2 is the relation of tables of lecturers attendance list that consist of lecture table that is used to store the data of lecturers; course table that is used to store the data of courses; and attendance list table that is used to store the lectures attendance list.

### 2.4. Creating the Program

In this program creating step, the researchers applied the concept of MVC on framework of codeigniter, bootstrap and LTE admin.
2.5. Application Testing

This stage is application testing by carried out application try out. The application is store and install in local server computer in the office of informatic major which is organized by a clerk as an admin. In the front desk of Mulia University, we provided a PC that has a function as computer client to access the application of lecturers attendance list that is being used.

3. The Result of the Study and Discussion

The result of the study and discussion covered the design of lecturers attendance list system. In this system there are several features such as login feature, the page of admin, courses, lecturers, lecturers attendance list, and its report. In the system of lecturers attendance list, the clerk as an admin log in to the system and then input the courses and the lecturers attendance list. The lectures themselves input their presence and the material of the course. After that, the clerk will validate the data that have been input.

3.1. Admin Page

On Admin Page of Lecturers Attendance List, the admin or administration staff log in to enter the system for inputting the data of lecturers, courses of informatics and information system major, and setting the attendance list of lecturers.
Figure 5 shows us login form for administration staff. In figure 6, we can see the page of administrator. In figure 7, we can see the page for organizing the data of lecturers.

Figure 8 shows us the organizing of courses based on the current curriculum, and in figure 9, we can see lecturers attendance list page that is used for organizing the data of lecturers attendance list.

3.2. Lecturers Attendance List Page

In Figure 10, It shows us the form of lecturers attendance list that is used by all lecturers to check in and to input the material of the lesson. In figure 11, it is the report of lecturers attendance list that is exported in Microsoft Excel format.
4. Conclusion

Based on the research and try out that have been conducted, we concluded that the design and implementation of web application for lecturers attendance list on informatics and information system major using codeigniter and bootstrap framework and LTE admin can be applied as framework, interface design and organizing of administratorspage in creating a program.

This digital attendance system has so many advantages for the lecturers that make the process of attendance more practical and easier than manual attendance system.

5. References

[1] M. T. Mahmood, O. I. Ashour, O. Ucan, and O. Bayat, “Design and Implementation of Web Based For Intermediate Online Shop with Laravel Framework,” vol. 8, no. 3, pp. 124–133, 2019.

[2] W. Denyefa Cletus, A. Kakandar, and C. Nnaemeka Paul, “Responsive Web Design Frameworks : A Review,” Int. J. Sci. Res. Comput. Sci. Eng. Inf. Technol. © 2017 IJSRCSEIT, vol. 4, no. 2, pp. 2456–3307, 2017.

[3] D. Upton, Codeigniter for rapid PHP application development. 2007.

[4] L. Yicheng, “Development of a blog system using CodeIgniter framework Development of a blog system using CodeIgniter framework,” Bus. Inf. Technol.

[5] Fabio, “Bootstrap Programming Cookbook,” Bootstrap Program. Cookb., p. 89, 2016.

[6] P. Panchal, “Responsive Web Design and Web Development Using Bootstrap Frond-End Framework,” Comput. Commun. Technol., pp. 1–8.