

## Comparison of PHP Programming Language with Codeigniter Framework in Project CRUD

1<sup>st</sup>Muqorobin, 2<sup>nd</sup>Nendy Akbar Rozaq Rais

<sup>1,2</sup>Institut Teknologi Bisnis AAS Indonesia

<sup>1,2</sup>Jl. Slamet Riyadi No. 361 Windan, Makamhaji, Kartasura, Sukoharjo

<sup>1</sup>robbyaullah@gmail.com, <sup>2</sup>ab.terate@gmail.com

**Abstract**—Programming Language is a certain code that is designed to create an application program design. The number of programming languages currently circulating, it is necessary to test the level of reliability of a programming language. The purpose of this research is to compare the programming language PHP and Codeigniter Framework, both of these programming languages are back end languages so that they have close specifications in processing data from the database. Implementation developed with CRUD-based CodeIgniter Framework. CodeIgniter is an open source web application network that is used to build dynamic PHP applications on the Project CRUD (Create Read Update Delete) model. In general, the two programming languages aim to manage the database so that it can be displayed and managed by the application. The research method used is literature study and practicum in lectures with students. The basic difference in this study is that the PHP language does not require special Driver Connection Tools so that in connecting the database to the application, it is enough to create a connection script, while the Codeigniter Framework is required to use Driver Connections when connecting to the database. The final result of this research is based on System Testing at PHP Performance Level 85% and Framework 75%, PHP Information 73% and Framework 85%, PHP Control 74% and Framework 87%, PHP 75% Efficiency Framework 82%, Service on PHP 73 % and Framework 82%.

**Keywords** : Comparison, PHP, CodeIgniter Framework, CRUD

### I. INTRODUCTION

Programming language is the most important part in developing an application, computer programming is increasingly becoming a necessity for people in all areas of life. Since the rapid development of IT, almost everything has been digitized and the use of software / applications is a common activity for all circles, this is because there are many software / applications available for a simple small shop or for a high-tech hospital [1]. To create an application, programmers can use various programming languages, such as Java, PHP, C, Visual Basic, Delphi, etc. The development of the use of the Java language is currently quite rapid, this is evidenced by the TIOBE ranking in July 2014 which states that the Java language is the second most popular programming language in the world [2].

With the development of an increasingly modern era, the dissemination of information using media is more effective and efficient. Initially all news, information, events and others could only be obtained from books, newspapers, radio and television. However, since the advent of the internet, all walks of life have been able to obtain fast, accurate and relevant information on a web page that can be accessed in real time from any gadget or computer. Companies or agencies currently provide various kinds of information using intermediary media, namely websites. Making a website has undergone many developments. This

development is proven by the many choices of frameworks that can be used to build a website. Framework is a framework of basic programming languages that have been developed and made easy to use so that a website can be completed in a relatively short time [3]. The framework used to build a website that is currently popular like CodeIgniter.

PHP (PHP: Hypertext Preprocessor) is an open source server side scripting programming language. As a scripting language, PHP executes programming instructions at runtime. The results of the instructions will of course be different depending on the data processed. PHP is a server-side programming language, so scripts from PHP will be processed on the server. Server types that are often used in conjunction with PHP include Apache, Nginx, and LiteSpeed.

CodeIgniter is a framework that is claimed to have the fastest execution compared to other frameworks [4]. CodeIgniter is a web application framework that is used to build dynamic PHP applications that are built using the Model View Controller development pattern concept. CodeIgniter provides a variety of libraries that can simplify development and includes the fastest framework compared to other frameworks [5].

The Secretariat of the DPRD of Sragen Regency is an element of service to the DPRD which is led by a Council Secretary who is technically operationally located under and responsible to the DPRD Leader and administratively responsible to the Regent through the

Regional Secretary. The DPRD Secretariat in providing information in the form of activities and others uses intermediary media, namely letters. Mail Management is a list of incoming and outgoing letters in the Secretariat of DPRD Sragen. This letter management was initially only in offline form, namely using paper as a writing medium. With the development of an increasingly modern era, there is a proposal regarding the creation of a Letter Management Information System for the Sragen DPRD Secretariat so that its preparation is faster and more effective in its delivery. However, the Sragen DPRD Secretariat Software Developer still doesn't know the framework or PHP Native that is suitable for building the Sragen DPRD Secretariat Letter Management Information System.

## II. LITERATURE REVIEW

In the research conducted by Atmaja et al, in this study the emphasis is on the use of the PHP Language and CodeIgniter Framework which is more emphasized on the Model View in Codeigniter, this research was conducted so that this E-commerce application can be utilized by all SMEs in Denpasar City. With this E-commerce application, it is hoped that it can help SMEs to inform their products and business as well as expand their marketing reach, both local and international marketing [6].

In the research conducted by Oky & Dian, in this study more emphasis is placed on the features that exist in the archiving information system using the Visual Basic language, this system is designed to be used on any PC device, both old and new with a desktop view model [7].

In research conducted by David Novianto Simanjuntak & Syaeful Karim, in this study more emphasis is placed on the features that exist in the library information system using the PHP programming language, this system is designed to make it easier for librarians to collect web-based library data [8].

In the research conducted by Septian, this research uses the PHP programming language, in this study only emphasizes the comparison of the PHP Framework based on MOOSE CK and its Design Quality Properties [9].

In the research conducted by Hamid, this research was conducted with a case study of the HMJ IT STMIK AKAKOM Inventory System using the PHP programming language, in this study more emphasis was placed on the comparison between the CodeIgniter Framework and the Laravel Framework, in this study also used several parameters such as database access , AJAX feature[10].

Research conducted by the author has differences with other research in terms of objects and methods used.

The object used by the author is the Sragen DPRD Secretariat Letter Management Information System with the performance comparison method, how to access databases and implementation of Javascript features. Performance comparison method is used to measure response time, throughput, requests per second. The comparison method for database access is used to compare and analyze database access for table access procedures in Create, Read, Update, Delete (CRUD) operations. The comparative method of implementing the Javascript feature is carried out on the Javascript feature in the Sragen DPRD Secretariat Letter Management Information System.

## III. RESEARCH METHODS

Borg & Gall (1983), stated that experimental research is the most reliable scientific research (most valid), because it is done by strictly controlling the confounding variables outside the experiment.

Experimental Research Characteristics:

In the following, some characteristics of experimental research are presented, which distinguish it from other positivistic research, that is:

1. The experimental method is the only research method that is considered the most able to test the causal relationship hypothesis, or can best fulfill internal validity.
2. The experimental method is a research design that provides the most rigorous hypothesis testing compared to other types of research
3. The experimental method is a research used to find the effect of certain treatments on their effects under controlled conditions.
4. Characteristics that distinguish experimental research from other research:
  - a. One or more independent variables are manipulated (the conditions are made different, for example: treatment and non-treatment.
  - b. All other variables, except the treatment variable (independent variable), were controlled (maintained constant).
  - c. The effect of manipulation of the independent variable (treatment) on the dependent variable is observed, with the assumption that because it is given different treatment, it will have a different impact.
  - d. There is a comparison, so it is necessary to make equalization between the group to be treated and the group not to be treated (the two groups to be compared must be comparable).

#### IV. RESULT AND ANALYSIS

Comparative results of CodeIgniter Framework and PHP Native in terms of performance, how to access the database and implementation of features, as well as to find out which framework or PHP Native is more suitable to be used in building a Letter Management Information System for the Sragen DPRD Secretariat.

The results of testing the two applications by testing the hardware and software system can be explained that the making of a letter information system application at the DPRD Secretariat of Sragen Regency with a framework codeigniter is better than using PHP Native. This is evidenced by the system testing carried out, the results show that the CodeIgniter Framework is superior or better than PHP Native. This is proven that in the development of a system in terms of existing performance ranging from Response Time, Throughput to Requests Per Second, CodeIgniter Superior and for other things such as Databases are the same because they use the same Database and CRUD implementation is also the same, only PHP Native is slightly superior in slightly more concise code but over all tested systems the CodeIgniter Framework is superior. The System Process Flow can be seen in Figure 1.

Alur Sistem Pengaduan dan Aspirasi Online  
 Pada Sistem Informasi Kehumasan Sekretariat DPRD Pasti,  
 Akuntabel dan Inovatif (SIDEWA PASTI)

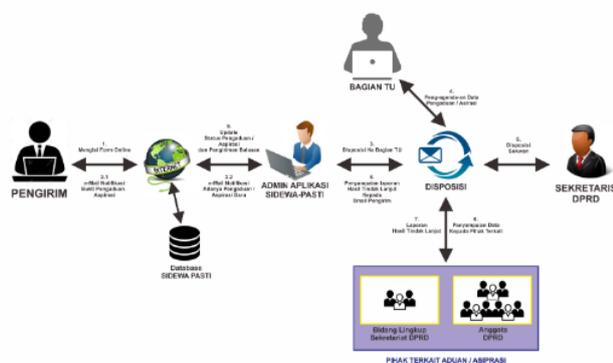


Figure 1. Sragen Regency DPRD Application Letter System Flow

The implementation of the Correspondence Project that has been developed using a combination of PHP and Native and Codeigniter Framework can be seen in Figure 2.



Figure 2. ITB AAS Indonesia Lettering Application Design

The results of testing with a user questionnaire (user) obtained that the percentage of codeigniter framework is superior to that of PHP Native. The gains per parameter are: codeigniter framework performance 85% and PHP Native 75%, codeigniter framework information 85% and PHP Native 73%, Control codeigniter framework 87% and PHP Native 74%, Efficiency codeigniter framework 82% and PHP Native 75%, and Service codeigniter framework 82% and PHP Native 73%.

#### 1. Comparison System

##### a. Comparison of Database Connection Implementation

In this study, a comparison of how to access the database is done by comparing and analyzing database connections for the procedure for accessing tables in the Create, Read, Update, Delete (CRUD) operation.

The results of the comparison of the implementation of the database connection on the two systems can be concluded that the CRUD in the system can run well, there is no difference because it uses the same MySQLi database, so it can be stated in the comparison of the implementation of the database connection that both have the same results.

##### b. CRUD Implementation Comparison

Comparative results from the implementation of CRUD on the two systems, it can be concluded that CRUD in the system can run well, there is only a difference in the Source code as shown in the picture that the CRUD Source Code from the System made of PHP Native is Simpler than the CRUD Source Code from the System by using CodeIgniter Framework, so it can be concluded that in this respect PHP Native is superior to CodeIgniter.

##### c. Performance Comparison

Response time comparison is done by comparing which framework is faster in terms of response on the system. After the test results are displayed, it can be

concluded that the Response Time of the CodeIgniter Framework is faster with an average response time of 0.45 Seconds tested from site24x.com.

#### d. Throughput Comparison

This comparison is done by comparing which framework is faster in terms of Network Speed on the system. After comparison, it is obtained that by using the CodeIgniter framework, the Througput obtained from the server is faster than the Througput or network access obtained by the System from PHP Native, so that the results obtained that the system comparison in the CodeIgniter Througput Framework is superior to PHP Native with an access time of 0.36 seconds with a 256 Kbps network, while PHP Native if using 256 Kbps can be accessed with a time of 0.45 seconds.

#### e. Requests Per Second

RPS or r/s is a measure of scalability that characterizes the throughput handled by a system. (LoadImpact, 2017). From the results of the comparison, it can be concluded that the CodeIgniter system can make more requests at the same time, so that in this test CodeIgniter is superior to PHP Native.

## 2. User Comparison (User)

The comparison of users in question is the difference between users with one another in responding to the two application systems being tested, namely systems that use codeigniter framework and PHP Native. Application users are given a questionnaire (question) that must be filled in according to how they feel and do when testing the two systems. The system was tested on 10 randomly selected users. The questionnaire given is divided into 5 parameters consisting of Performance, Information, Control, Efficiency and Service.

#### a. Performance

From the results of the performance questionnaire, it was found that 85% of users liked applications made with the Framework and 35% did not like applications made with PHP Native.

#### b. Information

From the results of the questionnaire, it was obtained that 85% of users quite liked applications made with the Framework and 73% liked applications made with PHP Native.

#### c. Control

From the results of the quisenair control, it was found that 87% of users quite liked applications made with the Framework and 74% liked applications made with PHP Native.

#### d. Efficiency

From the results of the efficiency quisenair, it was found that 82% of users liked applications made with the Framework and 75% did not like applications made with PHP Native.

#### e. Service

From the results of the quisenair service, it was found that 82% of users liked applications made with the Framework and 73% liked applications made with PHP Native. Based on the results of the comparison of the PHP Native programming language with the Framework, it can be displayed in a graph in figure 3.

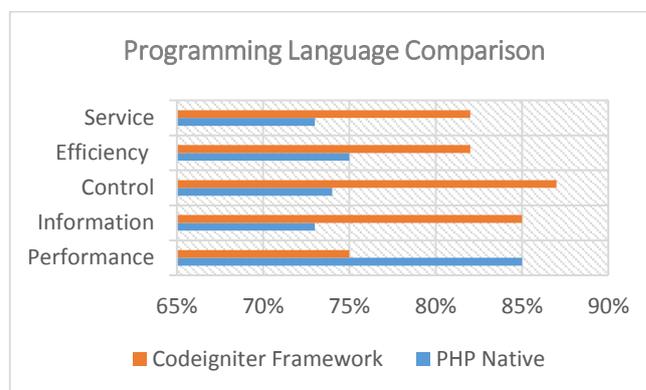


Figure 3. Results of Programming Language Comparison.

Based on the results of the comparison of the two PHP programming languages with the framework, it can be concluded that the framework has a higher level of performance compared to the PHP language.

## VI. CONCLUSION

The conclusions obtained from the research on the Comparative Use of the Codeigniter Framework Vs PHP Native in the Letter Management Information System of the Sragen DPRD Secretariat are as follows:

1. The CodeIgniter framework is better than PHP Native in terms of performance and is more recommended for use by users.
2. Coding using CodeIgniter is more organized in the Folder of each SubMenu that will be coding.
3. PHP Native is simpler in coding the system, this can be recommended to advanced programmers and not for team work, because some variables only programmers who make this system know themselves, so it is not suitable when used for team work.

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