

# Implementation of View Controller Model Architecture in Population Administration Service System

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## ABSTRACT

Population administration services at the Kamal sub-district office are currently still using manual methods. This causes the administrative service process in the Kamal subdistrict office to not run efficiently. Therefore, an application for a web-based population administration service system is needed that is built with the Model View Controller architecture using a Codeigniter framework. Using the MVC architecture there are several benefits including software development that is easy to repair. By using the MVC architecture can bring changes that facilitate the demographic service process in the district Kamal, and can also shorten the processing time of the service so as to reduce the buildup of queues and also facilitate the admin in the district office Kamal in the data search process of residents residing in the district Kamal. The result of the research show that MVC implementation on population administration service system applications can be easily used and developed again.

Keywords : Information System, Population Administration, Web-Based Application, MVC, Codeigniter

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## 1. INTRODUCTION

The Kamal sub-district office has a population administration service that helps residents to produce data. The large number of archives and residents who come often makes the population administration services run inefficiently. This is because the process of population administration services is still using the manual method. Such as making population data, archive data, civil registration data, administrative data, data generation reports and info about the sub-district of Kamal. So we need a web application that can help population administration services. The application will be built using MVC (Model View Controller) architecture.

MVC stands for Model, View, Controller, which is an architecture for creating a program. This architecture emphasizes the division of program components into three main parts, namely Model, View, and Controller [15]. The concept of MVC (Model View Controller) is a special strategy to facilitate users in the process of finding their own data, MVC is a concept that was introduced to encapsulate data along with processing (model), isolate from the process of manipulation (controller) and view (view) to be represented on a user interface [3]. So, MVC can make it easier to make large-scale applications, easy to develop, program code more neat and structured, and simplify application maintenance.

Code igniter is a framework that is very appropriate, because of its advantages, a good framework must have complete documentation, because a collection of classes without documentation is the same as a pile of foreign files and adds to the problem development, using this

framework can maintain files in the application [1]. Because the files in the District Office are quite large.

Code igniter has the concept of MVC where coding is structured, namely Model as a process that interacts with the database, View as acceptance and represents data to the user, Controller functions to receive requests and data from the user and then determines what will be processed by the application [8]. Code igniter also has a library that can be used by programmers so that the program does not need to create more such as pagination libraries, session library, file uploading libraries, and others [5].

This is what drives the author to conduct a study entitled "Information System for Population Administration Services Based on Web-Based Using a View Controller Model Architecture" with a case study taken at the "Kamal District Office". Which later this application can facilitate the Kamal District Office in conducting population administration services.

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## 2. LITERATURE REVIEW

Previous Research Previous research discusses "Design and Implementation of Web-Based Library Information Systems with MVC (Model View Controller) written by Dini Hari Pertiwi. In this study, it was concluded that the Library Information System can provide convenience for parties in the work environment in carrying out activities in the library. In the system consists of several files including: member principal files, book files, transaction files, arrangement files, stock files as well as borrowing and returning books. In the system that the author did, the time needed to produce a member data recap. book data recap,

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membership card making, loan book recap or returned requires a relatively short time compared to the old system. And the system is made more practical because it can directly print membership cards when members confirm after registering [7]. Research conducted by Panji Wisnu Wirawan with the title "Model View Controller (MVC) Design Pattern for Java Based Device Applications". MVC design patterns can be compiled for Java / J2ME based mobile applications. Each component (Model, View and Controller) can be arranged in separate classes. With this separator, it is hoped that software components can be reusable [9]. The research entitled "Design and Analysis of Web-Based Agricultural Information Systems Using the View Controller Model Architecture" written by Michael PI Tuhuteru in 2013. In his research it can be concluded that the Agricultural Information System can help facilitate and assist the admin section in the process of inputting information data, activities, programs and production data so that they can be seen by employees or the public. Research has not been said to be perfect because it still needs some further development to get maximum results [15].

Research conducted by Wakim and Indra Sensuse Fund with the title "System Integration Model with Service Oriented Architecture (SOA) and Model View Controller (MVC) Approaches at the Indonesian Institute of Sciences Science and Technology Development Research Center" in 2017 uses REST technology that produces four services namely staffing services, asset services, inventory services and financial services. The results of this study are expected to be applied to other agencies or work units. Based on the analysis, SOA approach and MVC method function in providing integration and data exchange needs so that they can solve the problem of integrase between applications in the administration section [8].

Other research entitled "Programming View Model Framework Controller Programming Technology in Academic Advisory Information System (Case Study: STMIK Amik Riau)" by Susandri 2016. This research has successfully implemented MVC programming using an igniter framework code in the integrated academic advisory system (SIMPAN) application with an existing system (e-krs and e-khs) in the Amik Riau STMIK environment [18]. b. Model View Controller Model View Controller Model is a concept that is quite popular in web application development, starting with the Small Talk programming language [4]. MVC is a model or method for creating applications by separating the data (model) from the view (view) and how to process it (controller) [2].

Model Represents the data structure of the website in the form of a database or other data, for example in the form of text files or xml files. Usually in the model will contain classes and functions to retrieve, update, and delete website data [4]. Because a website usually uses a database in storing data, the part of the model will usually relate to SQL query commands [4]. The model, is used to manage information and notify observers when information changes [3].

View is the part that regulates the display to the user. Can be said in the form of a web page [6]. As much as possible in the view does not contain the logic of the code but only contains variables that contain data ready to be displayed [4]. In the view there is no code to connect to the database. View is only devoted to displaying data from the model and controller.

Controller The controller is the link between the Model and View [14]. Inside this controller there are classes and functions that process requests from the view into the data structure in the model. The controller also does not contain code to access data [4]. His job is to accept requests sent from clients. Data requests will be processed or forwarded to other

components that process data. In the end, the processed request will be submitted to the view component [2].

This MVC architecture emphasizes the division of program components into three parts namely Model, View and Controller. For a description of the MVC architecture see figure 1.

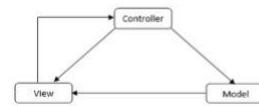


Figure 1. MVC Architecture

Information systems are tools for presenting information in such a way that it is beneficial for the recipient. The aim is to provide information in planning, initiating, organizing, operating a company that serves organizational synergy in the process of controlling decision making [11]. Population Administration

Administration includes activities that must be carried out by executive officers in an organization, whose task is to organize, advance and complete the collaborative effort of a group of people deliberately gathered to achieve certain goals.

Population is a citizen of Indonesia and foreigners who reside in Indonesia (1945 Constitution Article 26 paragraph 2). Population is a matter related to the amount, growth, distribution, mobility, distribution, quality, welfare conditions that are related to politics, economy, social, culture, religion and environment (Law No. 23 Th 2006) [13].

Population Administration is a series of structuring and controlling activities in the issuance of Population documents and data through Population Registration, Civil Registration, Population Administration information management and utilization of the results for public services and development of other sectors [10]. Definition of population administration commonly referred to as population The abbreviation Adminduk can be traced in Law Number 23 Year 2006 concerning Population Administration Article 1 which states that population administration is a series of structuring and controlling activities in the issuance of population documents and data through population registration, civil registration, management of population administration information and utilization of the results for public services and other sector development [12].

Web based application is an application that can be accessed anywhere and anytime as long as there is an internet connection [16]. Can be accessed only with a web browser, no need to install a special application to open it.

### 3. Methods

Population administration service information system is an application that was built to make it easier for admins in the sub-district office and make it easier for residents to see population requirements or data. In making this application adopts the MVC method with the aim of minimizing errors in the admin and can provide accurate data to the population. Division of Population Administration Services

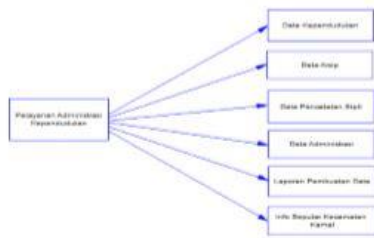


Figure 2. Population Administration Services

Population administration services include population data, archive data, civil registration data, administrative data, data generation reports and info about kamal sub-district.

#### 4. Result

Use case diagrams are modeling to illustrate the behavior of the system to be created and can describe an interaction between one or more actors with the system. Use cases can be used to represent an interaction between user actors or other systems, so that they can simply explain the function from the user's perspective.

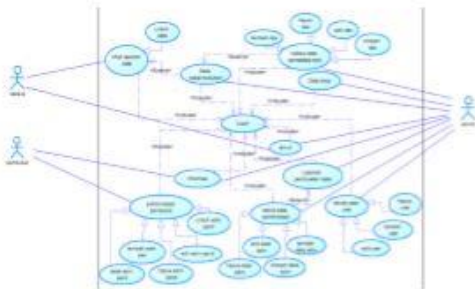


Figure 4. Usecase Diagram

MVC Implementation in Application Design shown in Figure.5



Figure 5. MVC Implementation in Application Design

Conceptual Data Model (CDM). CDM models the logical structure of the entire data application. CDM design as shown in Figure 6.

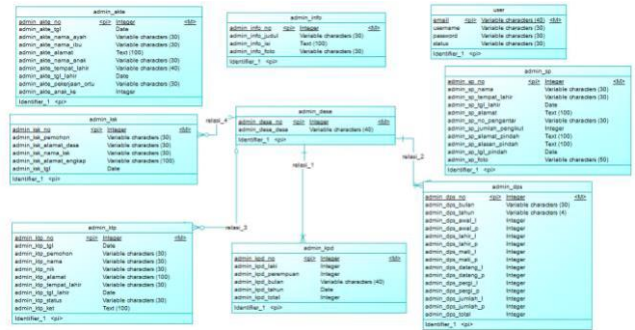


Figure 6. CDM Model

Physical Data Model (PDM) is a physical representation of the database that will be created by considering the DBMS that will be used. PDM can be generated (generated) from a CDM that was previously created. The PDM design is illustrated in Figure 7.

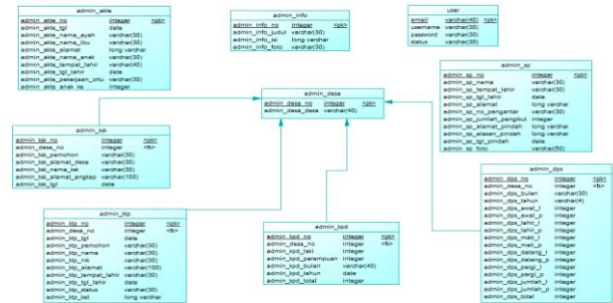


Figure 7. Physical Data Model

#### 5. Conclusion

Based on the research that has been done, it can be concluded that:

- This study resulted in the application of Population Administration Service System using the Code Igniter framework
- This application can manage population data, administration, civil registration data, and data generation reports
- This application provides convenience for residents in the process of making population data.
- This application can be easily used and developed again.
- In the user, there is no fundamental difference if using or not using the Model View Controller architecture in the Population Administration Service System application

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