

Analysis and Design of Village Management Information Systems (VMIS) based on MVC and E-Government in Indonesia

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ABSTRACT

E-Government is the government's program and commitment in the effort to develop electronic-based governance and transforms to facilitate the activities of society and business to the knowledge-based society. E-Government can be said to be a system that contains collections of modules that can be integrated with others. Considering the many module components in the e-government authors in this study limits only to population modules such as service and management of population data, KK data, data on population mutations such as population (moving, coming, born, dead) built using the Model View method Web-based and online controller. As well as how to simplify the management of the letter, in addition to facilitate the search population data and information about the development of villagers in each village in real time with terintegrasinya data to each village in addition to facilitate and accelerate the service request and manufacture reporting. So with the existence of this system the kecamatan easier to see the development of data of the population of each village and with this system the kecamatan and village easier to manage the data letter and can facilitate in sending mail to each village. With this research, it is expected Sub-district offices can provide improvement of information service and also data processing of its population.

Keywords: Information System, Population, Model View Controller

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1. INTRODUCTION

E-Government is a program and commitment of the government to develop governance based on electronics and transform to facilitate the activities of the community and business community towards a knowledge-based society (Kadir, 2017). Through the development of e-government, the government expects to be able to do a management system and work process within the environment of the government and autonomous local government by optimizing the use of information and communication technology (Dewandaru, 2013). The history of e-government development in Indonesia has begun from the era of President Megawati Soekarnoputri's administration in 2003. Presidential Instruction No.3 of the year 2003 Concerning National Policies and Strategies The development of e-government, instructed the government to take the necessary steps according to the duties, functions, and authorities each for the implementation of e-government development nationally by referring to the National Policy and Strategy for e-government Development (Whitten & Bentley, 2018). E-Government can be said to be a system that contains a collection of modules that can be integrated with others. Seeing the many components of the module in e-government, the author in this study limits only to the population module in which services such as population data and management, KK data, data on population mutations such as residents (moving, coming, being born, dying). As well as how to facilitate the management of letters, other than that it can facilitate the search for population data and information about the development of the population of each village in real-time by integrating the data to each village in addition to being able to simplify and speed up the application and reporting services (Kristanto, 2018). In Sukasari Village the management of population management and services is the responsibility of the district/city, which in practice starts at the village, sub-district as the spearhead of registration. For now, the services that occur in Sukasari Village are going well, but can not be separated

from deficiencies such as the process of processing or sending letters that are still done with a simple system, not yet organized services and management of population data, KK data, data of population mutations such as residential moving, come, be born, die from every hamlet in Sukasari village whose landing process is still carried out with a simple system, so that with a simple system many important events that occur in the population are not recorded / the length of reporting such as events of death, the arrival of residents, moving, and birth, besides that with this simple system data search will be inefficient in terms of time and energy using manual systems. The purpose of this study, namely to realize population administration services and civil records oriented to community satisfaction and partnership towards the creation of accurate population data and information and to realize the creation of good governance. It can also provide convenience services from an agency to carry out processes related to population problems and make it easy for the community to carry out the process of reporting and population registration. Also to help design a system that can speed up the processing of population data, with the system integrated into each village (Nasir, 2016). Based on the background of the problems above, it is necessary to build a village information system that can collect all population data and can also provide information related to Sukasari Village, so the authors are interested in taking the topic of research on population administration systems in Sukasari Village so that with this system the sub-district is easier see the development of population data from each village and with this system the sub-district and village can more easily manage mail data and can make it easier to send letters to each village. With this research, it is expected that the Sub-district Offices can provide improved information services and also the processing of population data.

2. RESEARCH METHOD

In making applications, tools, and materials are used to support the design and manufacture of applications. For the development of this research system using the SDLC (Software Development Life Cycle) model. System Development Life Cycle (SDLC) is the process of making and changing a system and the models and methodologies used to develop a system. SDLC is also a pattern taken to develop a software system, which consists of stages: planning, analysis, design, implementation, testing, and maintenance. The SDLC model used in this study is the Waterfall model. Waterfall Model or Classic Life Cycle is the most widely used model in Software Engineering (SE) (Fathansyah, 2004; Havaluddin, 2011).

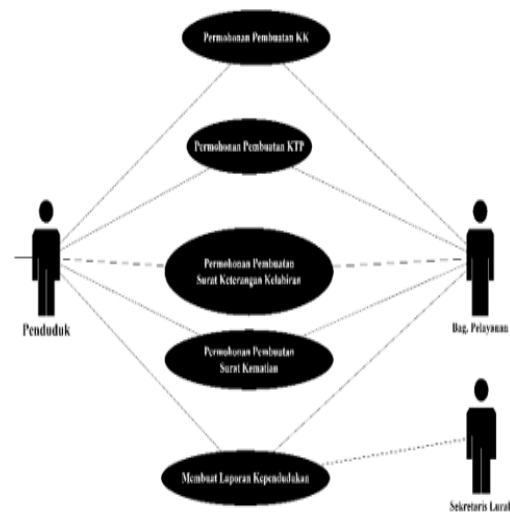


Figure 1. Use Case Diagram Running System

In the current system, each resident visits the village office to carry out an administrative process where the process is quite complicated. Residents report to the service department for administrative requirements and fill out forms and fill in data and return it to the service department for immediate processing and the resident must wait for the process to finish until he gets what he asks for. Activity Diagram of Running System

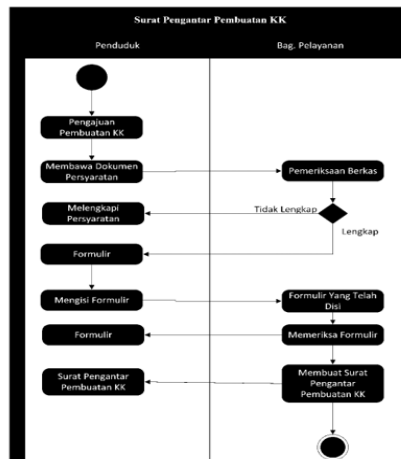


Figure 2. Activity Diagram

In the picture above is the process of filing a family card for residents. Where residents must first make a document filing for making a Family Card and complete the required documents that will be checked by the service if the documents are not complete then it must be completed first. If it is complete then the resident fills out a form that will be first checked by the service before issuing a cover letter for Family Card Making (Dewi, n.d).

Seeing the administration system that is running in the merdeka village that still uses a simple system, it can be concluded that there are some shortcomings in the ongoing procedure, including the inefficient time spent to process population services in serving the needs of the community starting from the request for making a family card (KK), application for making identity cards (KTP), birth certificates (SKKL), death certificates (SKKM). and The difficulty of getting fast and accurate reports in a short amount of time. Therefore the author tries to design and build a population administration information system in the independent village in the hope that it can help solve the problem that is happening.

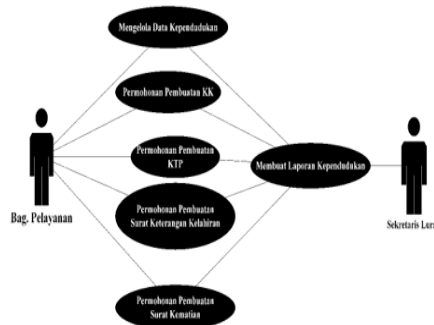


Figure 3. Activity Diagram

In the proposed design, a process that will make it easier for residents and village office authorities to handle the population data administration process is to design a system that mediates between village offices and residents. Residents simply enter the system provided and choose the administrative menu they need and just wait for the process by the village office. The system to be designed is by using the Model View Controller where View Controller Model is a software design pattern that is now widely used in the development of an application or website. This design pattern is now widely used in the popular PHP Framework in the world such as Laravel, Symfony, Code Igniter, and Yii (Laudon, 2007; Jailia et al., 2016). MVC separates the program in three separate parts that are interconnected according to its name, namely: Model, View, and Controller. As the name suggests, three components can be described as the model functions to manage the data, functions, and rules of the application. The function is used to adjust the appearance or output that appears on the screen, not only in the form of data, but also includes other components, such as pictures, videos, diagrams, and so on. The controller is a program that regulates receiving input and runs several commands to run on the model (Al-Khowarizmi et al., 2020; Al-Khowarizmi, 2020; Fauzi et al., 2020; Lubis et al., 2020; Khowarizmi et al., 2020).

3. RESULTS AND DISCUSSION

The Population Information System that has been built is an online web-based system that is accessed using an internet connection. For a while, this Population Information System is hosted on Commercial Hosting that is owned by the author and does not use a government domain. To be able to enter the system must use a browser and enter the URL address as follows localhost/village will display the homepage of the system as shown in Figure 4.

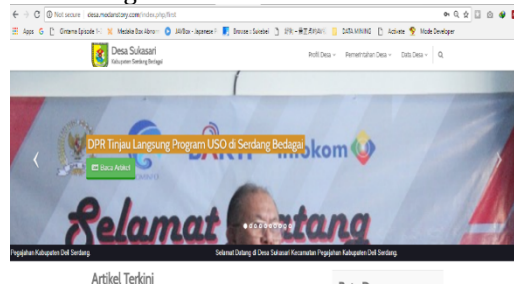


Figure 4. Main Window System

As shown in Figure 4 is the starting page of the system that contains information from Sukasari Village and articles related to the village. To make changes to the content located can be done on the login page. The admin page is the page where the admin has to regulate the contents of system content and data needed by the system. In this system, the admin page is separated from the main page for security matters. To be able to enter the admin page you can enter the URL as follows HTTP://localhost/desa/index.php/Siteman then the login page will appear as shown in Figure 5.

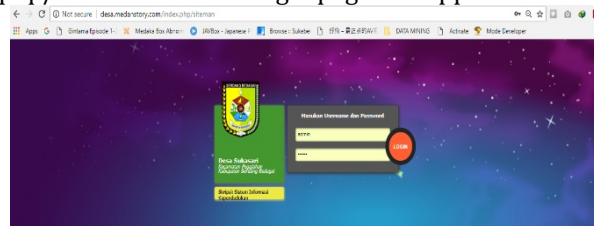


Figure 5. Login System

This view is the login page for Admin. Login is given according to access rights granted. If the username and password entered correctly then the next menu will appear as shown below

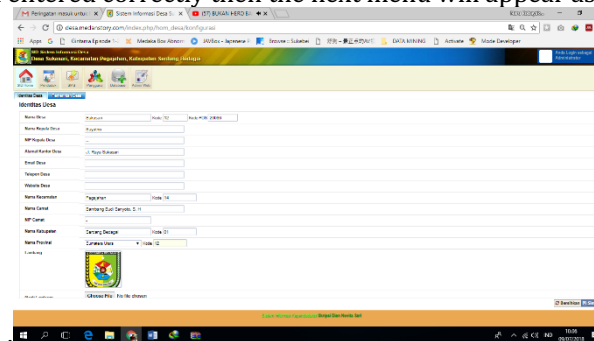


Figure 6. Main System

On this main menu page there are several menus including:

1. Home: on the home menu there are several submenus including:
 - a) Village Identity: this menu provides a place to input village data starting from the village name to the symbol and coordinates of the village area.
 - b) Village Government: In this menu are the names of those in charge of village governance starting from the village head to village honorarium employees.
2. Residents: this menu is data of villagers including:
 - a) Administrative region: this menu is a recapitulation of data of villagers based on the existing hamlet.
 - b) Family: this menu is the data that becomes the head of the family in the village.
 - c) Population: this menu is the personal data of each resident

At this stage, it is a stage to test the input of population data in the Sukasari Village area. The following are the steps in entering population data.

1. Entering population data into the system must begin by creating a "Family". Making "Family" data starts with filling in the "Head of Family" data. This function is used for data on residents who are local villagers, evidenced by the Family Card (KK) document.
2. Click the "Family" Menu

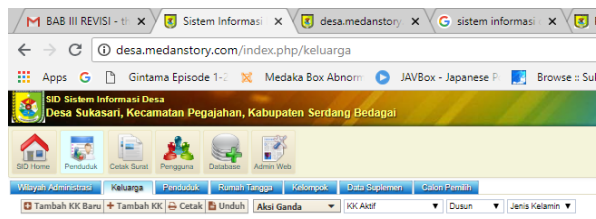


Figure 7. Family Data Window

3. Click the "Add New KK" button
4. The data entry column page appears, beginning with selecting the address "Hamlet", "RW", and "RT". Fill in according to the resident's address. If you don't have RT / RW, you can clear it.



Gambar 7. Add New Family

5. After the address data is filled in, the population data column will automatically appear, including Photo, KK Number, Name, NIK, Gender, Place of Birth, Date of Birth, Religion, Education in KK, Occupation, Marital Status, Relationships in Family, Nationality, No. Passport, No. KITAS / KITAP, NIK father, NIK mother, father's name, mother's name, blood type, and status; select "permanent" status for resident, or "Inactive" if the resident is living/residing outside the temporary village (work, school, etc.).

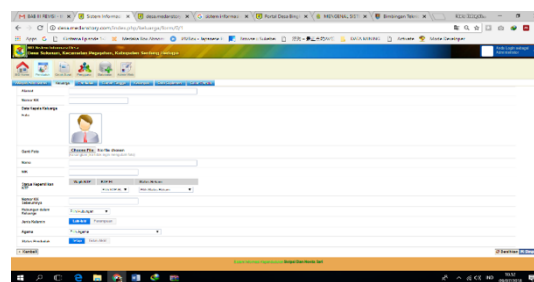


Figure 9. Filling Data

6. Fill in each column according to population data. Make sure all optional columns are filled. Columns that are text-filled can be left blank if no data is available. After all the contents have been confirmed, click "Save". If the page does not want to be saved, check whether there are mandatory fields that have not been filled (there is a notification).
7. The "Family" table page appears with the latest "Family" data display at the very top.
8. Click the "Add Family Members" button in the "Action" column to add family member data in the same way.

A. Statistics of Population

This menu contains statistics on population data in Sukasari Village as a whole consisting of three main menus, namely:

1. Statistics of Population

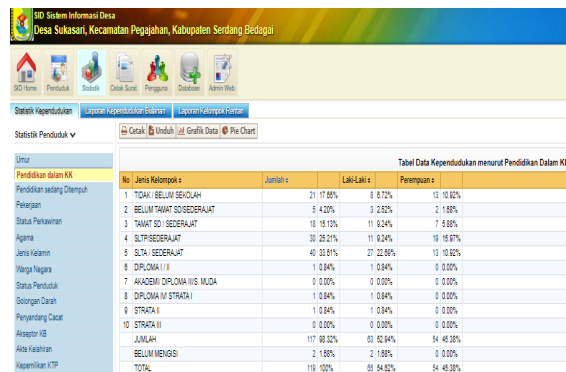


Figure 10. Statistics of Population

Data Population statistics are population data by age and vulnerability factors. On the "Population Statistics" menu there is a population data table which is disaggregated based on "Family Statistics" and "Population Statistics". The list of "Population Statistics" tables includes:

1. Population Data Table by Age
2. Population Data Table according to Education in KK
3. Population Data Tables according to Education are underway
4. Population Data Tables by Occupation
5. Population Data Tables according to Marital Status
6. Population Data Table according to Religion
7. Population Data Table according to Gender
8. Population Data Tables by Citizens
9. Population Data Table according to Population Status
10. Each data table has a function to display data in the form of tables, bar charts (graphs), and pie charts. Each table also has a print function, both print via web-browser and print via export excel.

B. Discussion

In the discussion this research focuses on the population management module in the web-based Village Administration office. This application can be used by all Village Governments in Indonesia who want to use it. The use of this application begins with using a browser which in this study uses the address localhost/village. Next you are asked to enter the username and password that have been registered in accordance with the access rights. As shown in the previous image. After the login is accepted, the system will then navigate to the main menu page. In this main menu there are four (4 menus) of which are: Home Population Information System: this menu contains village data forms that must be inputted first so that the identity of the village that uses it is known. In filling out the form starting from the name of the village to icon (logo) area and the point of the coordinates of the village area. Also in this home, there is a Village Government sub-menu, where this sub-menu works if the admin (staff) is more than one person. Furthermore, the population menu, in this menu all population data that will / have been domiciled and have a Resident Identity Card (KTP) in the Village will enter their data into the population system database, first the admin divides the village area by inputting the names of hamlets in the village by using the Administrative Region submenu. After finishing dividing the area then input the existing population data, the population data input starts from the Basic Data, Birth Data, Education and Employment, Citizenship Data, Parents, Addresses, Marital Status to Health Data. If the population data is already valid and inputted into the system, then the data will automatically be integrated with the Family, Household, Workers Group, Special Needs Supplement Data until it is entered into the Permanent Voters List (DPT) sub-menu. Where integrated data is adjusted to each data displayed in each of these submenus.

Based on the data obtained in Figure 4.37 it is known from the total population data that has been input into the system of 119 residents. From these data, it can be seen that the percentage of the population found in Sukasari Village is more majority to the age range of 25-29 years with a percentage of 18.49% and in addition to the Usua range of 20-24 years with a percentage of 11.76%. Based on education in the KK, the majority of Sukasari Village residents have a high school / equivalent education with a percentage of 33.61% and a junior high school of 25.21%, then 17.16% of them are not attending school and only a small portion of the population attends tertiary education after high school,

the percentage below 1% Based on Religion The majority of the population of Sukasari Village is Muslim, as evidenced by the percentage of 94.12% who attained Islam and Hinduism as much as 5.88%. Whereas based on sex the distribution between Men and Women is classified as evenly with the percentage of Men amounting to 54.62% and Women totaling 45.38%.

4. CONCLUSION

Population Application Information System of Sukasari Village, Serdang Bedagai Subdistrict, provides services to the community in the form of making family cards, birth certificates, death certificates, KTP introductory certificates, and managing population data. Services to the community can be said to be quite good through the use of Population Information Systems. With the storage of data that has been in the form of a database, it is unlikely that data duplication will occur. And is expected to become a population service system that can improve services to the community. The literature study method is carried out to support the survey and observation methods that have been carried out. The collection of information needed in finding references relating to the research conducted.

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