Development of District Civil Service Applications

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Abstract: This study aims to provide the needs for institutions such as urban villages to provide services, information to residents, making it easier to socialize activities and assist in the administration of correspondence permits from the urban village. The new system needs to be implemented in Kasang Batang Anai Village as a solution to overcome obstacles in accessing information and services in Kasang Batang Anai Village. The application of a population service information system can have a fairly good impact and be beneficial for all interested parties. The development of this system uses the PHP programming language, CodeIgniter framework, XAMPP as a database server for simulation on localhost and the SDLC (Software Development Life Cycle) method. From the results of the development of this information system, the validity test was carried out by experts, then the practicalists are very good. aims to assist the population service process in the form of sending a permit online.

Keywords: Information Systems, Services, Villages, PHP, CodeIgniter, SDLC

INTRODUCTION

Currently, Information System technology such as websites must have become a necessity for government agencies, such as urban villages (Oktaviani & Mulyani, 2016). The development of information globalization supported by technological advances affect the lifestyle and perspective of the people who Accustomed to and being in a technological environment. They want to make things easy, wrong only in the trading business, they don't want to waste time and energy in choosing the things they want ((Saufitro et al., 2018). Sub-district government agencies can use information systems to provide services and information to residents so that it is easier to socialize the activities carried out by the village government itself (Rahayu, 2019). This information system is designed to provide services to residents in the village environment, so this system can be referred to as a population service information system. Where the village concept uses this population service information system, as a substitute for the old way of providing information and services to residents within the village itself.

Each kelurahan still uses the method of bookkeeping or archives so that it is prone to population data redundancy which can result in inaccuracies in population data, and requires a lot of space for archive storage. With a lot of archived data, of course it takes a long time to search for population data, the slow process of searching for population data can also cause the population service process to be slower.

Recognizing the existing problems, as well as realizing the enormous benefits of information technology that is currently developing, a new system is needed that must be implemented in Kasang Batang Anai Village as a solution to overcome obstacles that occur in accessing information and services in Kasang Batang Anai Village. The implementation of the population service information system is expected to have a fairly good impact and be beneficial for all interested parties.

The current phenomenon is in accordance with existing provisions, it is necessary to build a website-based population service information system (Narmila, 2020). This information system provides services, and access to information in the Kasang Batang Anai Village environment becomes easier, faster, and more accurate. With this information system, it can also improve the quality of existing resources in the Kasang Batang Anai Village environment because services and information are more easily known and accessed by the community or residents.

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LITERATURE REVIEW

Information Systems

According to Tata Sutabri, S.Kom. (2005:36) Information system is a system within an organization that brings together daily transaction processing needs, supports operations, is managerial and strategic activities of an organization and provides certain outside parties with the necessary reports. An information system has five main components, namely hardware, software, data, processes, and people(Dewi et al., 2018).

Service

Service is a series of activities which is a process according to(Liatmaja & Wardati, 2013). As a service process that takes place regularly and continuously, it covers all people's lives in society, the process of meeting needs through the activities of other people.

Programming language

A computer programming language is a language for expressing a detailed set of instructions for a computer according to(Ferdianti, 2019). Humans can complete a job by speaking in a language they understand, both Indonesian and English. Likewise with computers to be able to speak and give commands to computers, humans must use computer programming languages.

CodeIgniter

Codeigniter is an open source web application network that is used to build dynamic PHP applications. CodeIgniter is a PHP framework with an MVC (Model, View, Controller) model to build dynamic websites using PHP which can speed up developers to create web applications according to their requirements.(Hidayat & Mariana, 2020). Besides being light and fast, CodeIgniter also has a super complete documentation accompanied by an example of the code implementation.

METHOD

SDLC (Software Development Life Cycle) Method

SDLC is used to build an information system that can run as desired. SDLC (System Development Life Cycle) is a method in the manufacture or development of software engineering used in the process of making or developing a system, this concept leads to computers or information systems according to(F. Ranuharja, 2016).
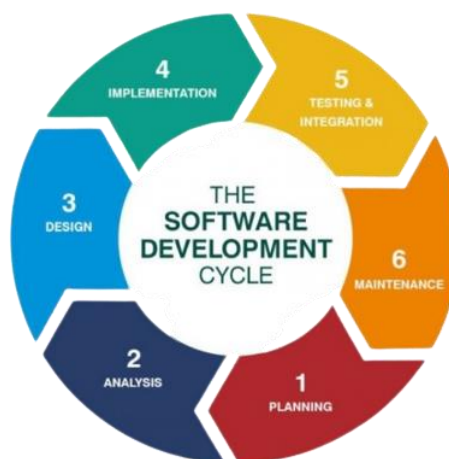

Figure 1. The stages of the SDLC method
Source: www.bigwater.consulting

Planning (planning)

The planning phase is the basic process of understanding why an information system should be built and determining how the authors will build the project. (JOURNAL 5) As the initial stage of system development that defines the estimated resource requirements such as physical equipment, people, methods (techniques and operations), and budgets that are still general in nature. The planning steps are recognizing the problem, defining the problem, and determining the purpose of the system.(Fatah et al., 2021)

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Analysis

System analysis is research on existing systems with the aim of designing new systems or updating existing systems. JOURNAL 1 The analysis phase is the answer to the questions who will use the system, what the system will do, and where and when the system will be used. In this phase the author investigates the existing system, identifies opportunities for improvement and develops a new concept for the system to be made according to the(Hartadi et al., 2016)

Design

The stage after system analysis determines the processes and data required by the new system. The steps taken are to prepare a detailed/graphical system design, which is generally in the form of information and to prepare implementation proposals according to(F. Ranuharja et al., 2021)
Information Design In this stage, the link information of each page is modeled, if the system has a database then the development and database design stages are used. Graphic Design In this stage it is adjusted from colors, layouts, images and graphics(Fajri et al., 2020)

Implementation

Implementation is an activity to acquire and integrate physical and conceptual resources to produce a working system. At this stage, several things are done, namely: Coding, Testing, Installation. And the outputs of this stage are: source code, procedures, training.(Indarta et al., 2021)

Testing (trial)

Testing is done using usability testing. This test is an evaluation of the application software activity to determine how well the user can use the interface when interacting with the system.(F. Ranuharja et al., 2020)

Maintenance (management)

As managers use the system, various modifications are made so that the system continues to provide the necessary support. This modification is called system maintenance.(Inggi et al., 2018)

RESULT

The development of this website can be done through several stages of SDLC development. This process is carried out in stages starting from the planning stage, analyzing user requirements and system flow, the development stage in the form of design and translating the design into the logic of the PHP programming language, testing the application whether the web pages function and the last is web application maintenance. The program structure design uses the MVC model (Model, View, Controller) using the Codeigniter framework. In short, for the development of a civil society service system in the form of correspondence in the kelurahan, the SDLC method can be used. Complete development steps can be seen in the discussion chapter.

DISCUSSION

Planning (planning)

The research was carried out in the Kasang Batang Anai sub-district, Batam, which was willing to be asked for data and observed directly in the field. Using the open source Codeigniter web application to build dynamic php applications with the MVC model (Model, View, Controller)(Hidayat & Mariana, 2020).

Analysis

The current system analysis aims to provide an overview of the running system, which aims to find out more clearly how the system works, so that the strengths and weaknesses of the system can be understood. The current system analysis is as follows:
Business Process Analysis
Business process analysis is a collection of interrelated activities or tasks to solve a particular problem or produce a product or service according to(Agus Heryanto, Hilmi Fuad, 2014). For more detailed information, see the current business processes in table 1.

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No	Business process	Detailed Activities	Related Users
1	Information Management.	The village administration provides counseling and information to residents in the village environment.	Head of Service
2	Service Management.	- Residents receive counseling along with information from the kelurahan. - Residents prepare the requirements file in accordance with the required services. - After the file is completed, the file is collected and submitted to the officer in the specified field. - The officer accepts or rejects the file that has been submitted by the resident, to determine whether or not the service that will be submitted by the resident is processed.	- Resident - Head of Service - Head of Social Welfare - Head of Development
3	Service Data Management.	- Village officials manage data and files that have been received from residents. - Services are processed by village officials, namely making and completing letters needed by residents.	- Head of Service - Head of Social Welfare - Head of Development
4	Report Management	- After the service is processed, and the letter has been printed, it is continued with the recording of service data from various series of fields that have been carried out by residents and the kelurahan party. - The report data that has been prepared by the secretary is given to the head of the lurah to be archived and signed.	- village head - Secretary - Head of Service - Head of Social Welfare - Head of Development

Table 1. Business process analysis table

System Actors Analysis

System actors are people who are involved in the system and their respective functions and duties. For more details can be seen from table 2.

No	System Actors	Information
1	Resident	- Individuals or groups living in the area and environment of Kasang Batang Anai Village. - Receive information related to Kasang Batang Anai Village. - Apply for and receive services from Kasang Batang Anai Village.
2	village head	- Implementing government activities. - Empower and serve the population. - Checking the work of village officials.
3	Secretary	- Assist the lurah in carrying out government activities and managing administration. - Compile data and materials within the village environment. - Reporting the implementation of population service activities.

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4	Head of Service	- Controlling the implementation of service activities - Perform data compilation. - Provide village services and information. - Perform reporting on the implementation of the service sector.
5	Head of Social Welfare	- Carry out services and development in the field of social welfare. - Processing correspondence such as certificates of incapacity, marriage certificates, and divorce certificates.
6	Head of Development	- Carry out services and guidance in the field of development. - Process correspondence such as business certificates and land ownership certificates.

Table 2. Table of the analysis of system actors

Business Rules Analysis

Business rule analysis is an explanation of the business rules that are running on the current system. Can be seen in table 3.

No	System Actors	Information
1	village head	- The lurah must be willing to protect the residents and provide the best service for the residents.
2	Secretary	- The secretary must collect data and information obtained from the cation of each field - The secretary must assist the lurah in carrying out government duties
3	Head of Service	- The service head must carry out service activities within the village environment. - The head of service must control the implementation of service activities. - The head of service must report the progress of the implementation of service activities.
4	Head of Social Welfare	- The Head of Social Welfare must carry out guidance and services in the field of social welfare.
5	Head of Development	- The head of development must carry out guidance and services in the field of development.
6	Resident	- Residents must provide and complete the necessary files before carrying out the activity of submitting the service process

Table 3. Table of business rule analysis

Design

Flowmap or document flowchart is a graphical depiction of the steps or sequence of work procedures in a system. Flowmap will describe how the relationship between actors, processes and data. After analyzing the old system, a new system was designed. Based on the flowmap description below, there are actors including admin, residents, village heads, secretaries and public service sections according to:(Hasibuan et al., 2021). Residents who want to make transactions must first be registered into the system. After being registered as a resident to apply for services, they will interact with the public service section. This system is managed by the admin, who is in charge of managing all user data registered to the system and has full access rights in the system, the flowmap can be seen in Figure 3.
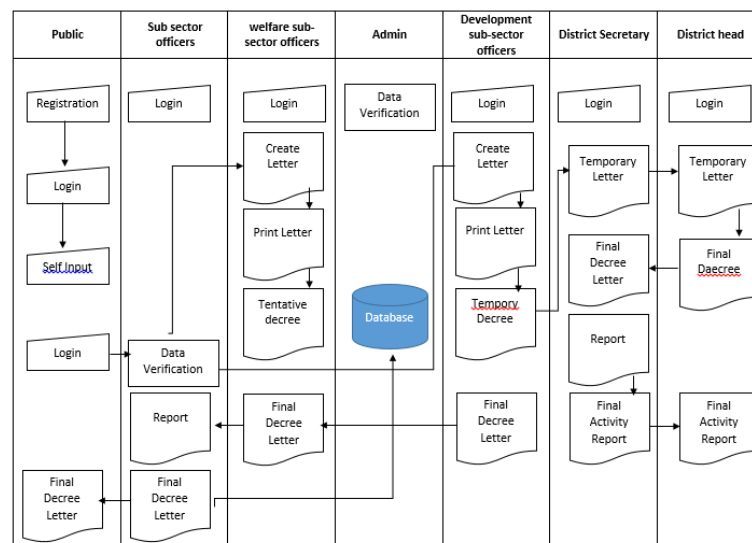
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Figure 2. Flowmap to be proposed

Problem Analysis and Solution

Analysis of problems and solutions is to analyze what problems occur in the field and the solutions given to solve these problems. Can be seen in table 4.

No	Problem	Solution
1	Lack of information obtained by residents.	The system provides complete and easy information for residents to access.
2	Residents who do not understand the procedure for filling out forms.	The system should include procedures and guidelines as well as procedures for filling out forms.
3	The kelurahan party who has difficulty in the process of data entry for resident requests.	The system allows residents to fill in their own data.
4	The slow process of sharing information from the kelurahan to the residents, so that information is not distributed unequally.	The system can present the information provided by the kelurahan to the population quickly and evenly.
5	It takes a long time to search population data.	The system provides features to search for population data accurately and quickly.

Table 4. Table of problem analysis and solutions

Use Case Diagrams

Use case diagrams are about activities and interactions that occur between actors and the system to be built(FF Ranuharja et al., 2022). By using the use case, we can see how the rights of each actor are, what is given and obtained by the actor from the system to be built.
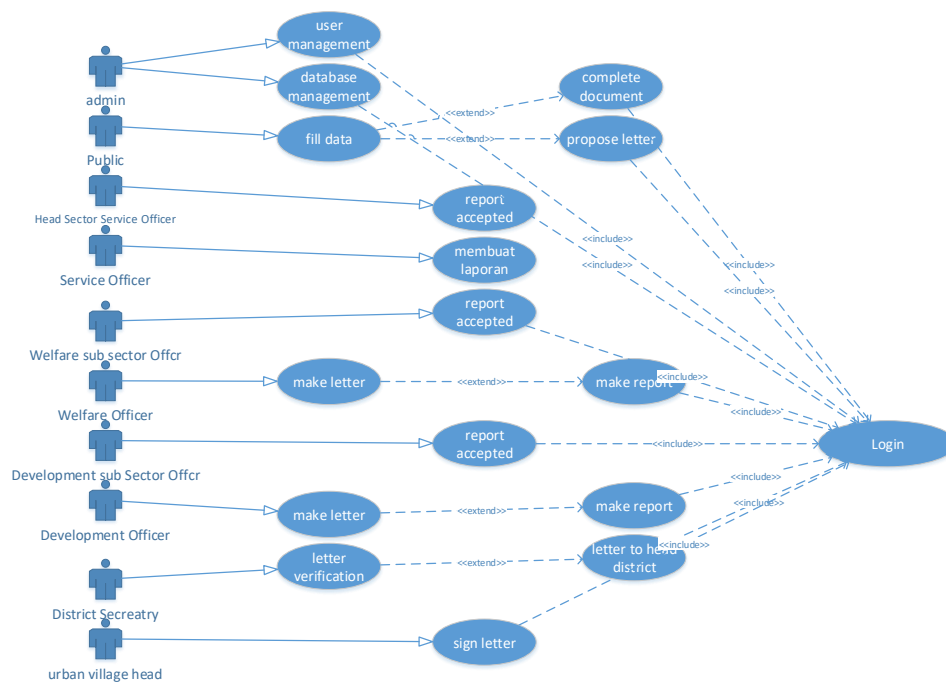
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Figure 3. Use case diagram

Database Design

Database design is done so that there is no data redundancy and duplication of data so that the system built produces useful information. In order to achieve this goal, a normalization process and relations between tables (Entity Relationship Diagram) are required.
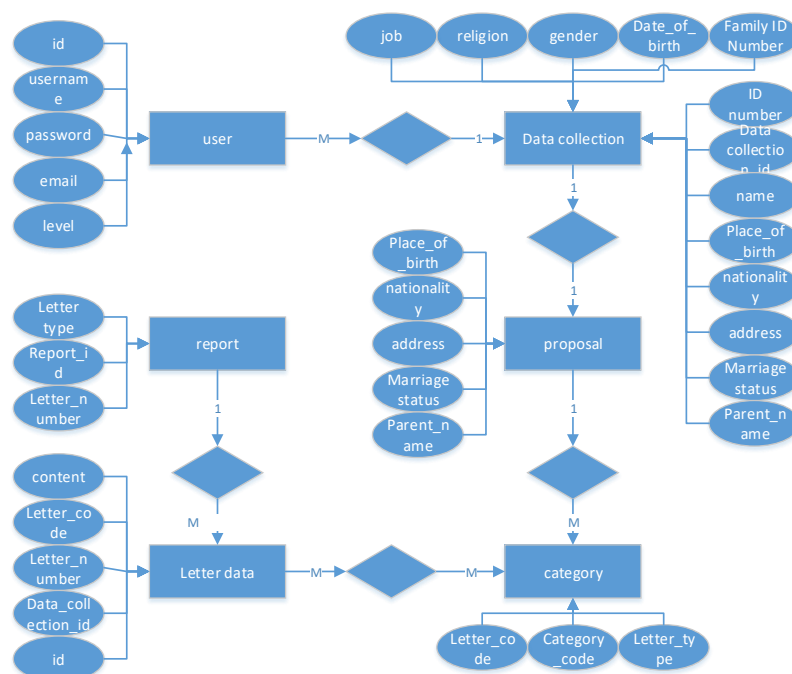

Figure 4. Entity Relationship Diagram

Implementation

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Login
Display layout will facilitate interaction with the system interface as a whole. The following is the result of the display design on the Population Service Information System in the Village Environment.

Figure 5. Display the login page

Admin Dashboard
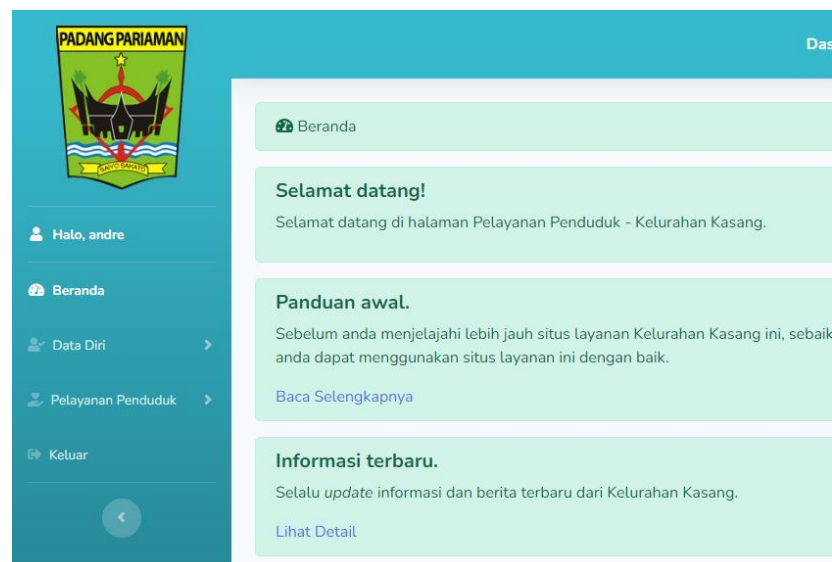The admin dashboard serves to display the main admin page, following the dashboard display on the admin.

Figure 6. Admin dashboard page display

Resident Dashboard
The resident dashboard is the main display of the information system that can be accessed by residents.
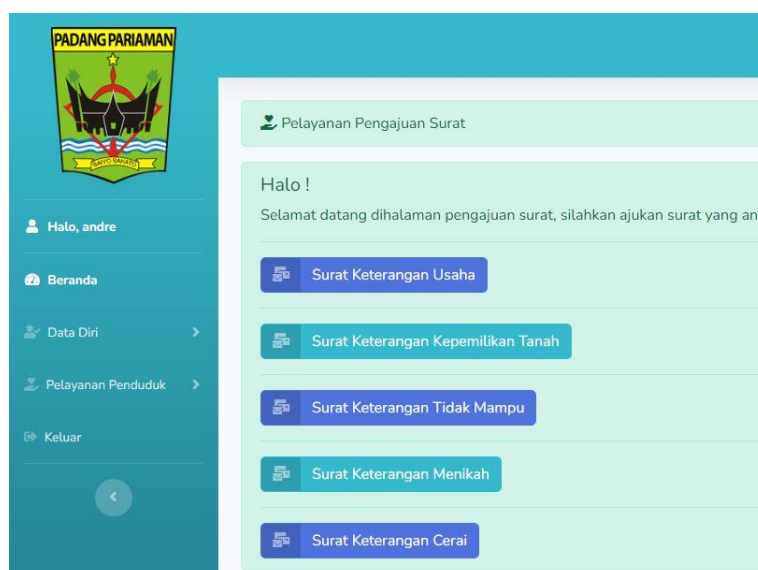
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Figure 7. Public Service dashboard page display

Testing (trial)
Print Letter
There is a menu to create a letter on a page managed by Admin. In this menu, officers can process letters that have been submitted by residents, one way is by printing letters that have been submitted by residents.

Figure 8. Mail output

Practical Instruments
The instrument used in the practicality trial was a practicality questionnaire. Questionnaires are needed to collect data or information needed by the author as research material which aims to determine the feasibility and attractiveness of the Library Information System made by the author as an alternative to processing library data. The following is a grid of practicality questionnaires:

No	Indicator	Items	Amount
1	Content eligibility	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	10
2	language	11, 12, 13, 14, 15, 16	6
3	Serving	17, 18, 19, 20	4
	Total Items		20

Table 5. Practicality Questionnaire Grid

Practical Test

Testing Criteria	Respondent 1	Respondent 2	Respondent 3	Respondent 4

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The product has an attractive appearance	100	95	100	100
product usage is easy to understand	95	95	95	95
Complete product function composition	100	100	95	100
Presentation of information in the product	100	100	100	90
Users control the product independently	100	95	100	95
(∑f)/N	**96**	**93**	**98**	**96**
(∑f)/N		**390**		
Average		**97.5**		

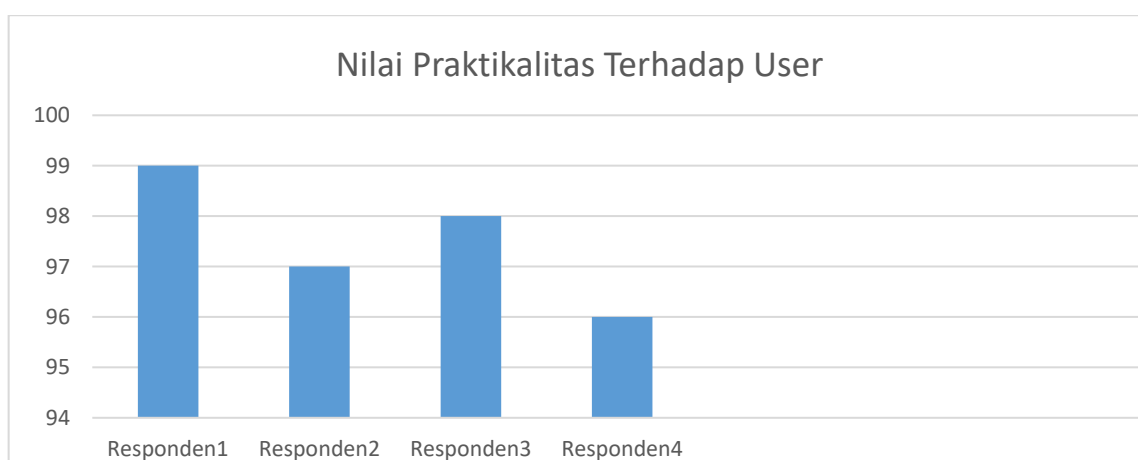Table 6. Table of Practical Test Results

Figure 9. Practicality Value of Users

This practicality test is aimed at 4 actors, namely, public society of the Kasang Batang Anai sub-district, welfare sub-sector officers, development sub-sector officers and village secretary. From the results of the practicality test, the average practicality value is 97.5, which means that the developed application is considered very practical in reducing conventional management work in the Kasang Batang Anai village.

Maintenance (management)

Maintenance is carried out regularly every month to back up population data to another server for the security of village data.

CONCLUSION

Based on the results of research and testing of the website-based resident letter service system in the urban village environment, that the system was designed using PHP and XAMPP as a database server with code igniter as a platform that can be used by urban villages to obtain population data easily and efficiently.

The design of this application helps the process of occupation services in the village so that the population data collection process can be done online and the processing of population data does not take a long time and can help manage correspondence online. In implementing the web-based resident letter service system in the kelurahan environment, an information system trial has been carried out, in the form of: 1) Black Box Trial stating the feasibility of the item features in the information system so that there is no malfunction of the features in the information system. Practicality Trial states the practicality of the information system and the efficiency of the system to users. So it was found that the results of the practicality trial were that 97.5% of the system was easy to understand and helpful for users

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