

## Design and Implementation of E-Government Applications to Improve Public Service Efficiency in Margahayu District

Rafli Ferdiansyah, Novi Rukhviyanti

Sekolah Tinggi Manajemen Informatika dan Komputer Indonesia Mandiri Bandung, Indonesia

Email : [rafliferdiansyah880@gmail.com](mailto:rafliferdiansyah880@gmail.com), [novi.rukhviyanti@stmik-im.ac.id](mailto:novi.rukhviyanti@stmik-im.ac.id)

---

### KEYWORDS

district; public service; E-Government

---

### ABSTRACT

Improving the efficiency of public services in Margahayu District is crucial in facing the development of information and communication technology. In this context, the implementation of E-Government applications is an attractive option because it has the potential to overcome traditional administrative constraints and increase transparency and public participation in public decision making. The implementation of the E-Government application in Margahayu District is expected to provide benefits in improving the efficiency of public services, this writing aims to improve public services to the community, simplify the administrative process, and manage public service data at the sub-district level. The focus of the study uses methodological measures including literature study to understand the concept of E-Government, relevant technologies, and successful implementation in similar contexts, data collection through interviews with related parties in Margahayu sub-district and analysis of existing public service data. Application design using the Waterfall software development model. The results showed that the E-Government Application can improve the efficiency of public services in Margahayu District such as creating, managing population letters, being able to see the results of reports on what types of residence letters have been made, and facilitating service officers in the process of administering and managing public service data in Margahayu District.

---

Attribution-ShareAlike 4.0 International (CC BY-SA 4.0)



---

### 1. Introduction

Improving the efficiency of public services in Margahayu District is crucial in facing the development of information and communication technology. In this context, the implementation of E-Government applications is an attractive option because it has the potential to overcome traditional administrative constraints and increase transparency and public participation in public decision making. However, at present, Margahayu District still faces problems in the efficiency of public services, including manual administrative processes, limited information transparency, and low community participation. According to (Kiran, Kumar, Sanghavi, Doble, & Ramakrishna, 2018), "The implementation of E-Government applications has become the focus of attention of many local and

central governments because of its potential to increase efficiency and transparency in public services."

Obstacles in the efficiency of public services in Margahayu District arise due to administrative processes that still rely on manual and convoluted methods. In addition, information related to sub-district government policies and programs is less transparent, making it difficult for the community to obtain relevant information. Limited community participation is also a challenge that needs to be overcome in order to achieve better public services.

According to (Baskoro, Maipita, Fitrawaty, & Dongoran, 2023), "The use of information technology in E-Government applications has had a positive impact in increasing government transparency and public participation in the public decision-making process."

The implementation of E-Government applications in Margahayu District is expected to provide benefits in improving the efficiency of public services. With this application, people will more easily access government information and services. Active community participation in providing input and responses to services will increase, so that public services can be more responsive and accountable. As stated by (Alavi & Leidner, 2001), "E-Government applications provide the potential to increase public participation in public decision-making through more open access to information and direct input."

The purpose of this study is to design and implement E-Government applications that can improve the efficiency of public services in Margahayu District. With this application, it is expected that accessibility and transparency of information related to public services will increase, and administrative processes can become easier and more efficient. This research contributes to developing the latest information technology-based E-Government applications. Thus, the results of this research can be a reference and inspiration for the development of ser upa applications at the regional and national levels. In addition, this research also has relevance in the development of computer science, especially in the field of information technology and the application of technology in public services. According to (Norris, Anderson, Wager, & Keszler, 2003), "The application of the latest information technology-based E-Government applications can open up new opportunities in the provision of public services that are efficient and accessible to the public."

By designing and implementing an effective E-Government application in Margahayu District, this research hopes to make a significant contribution in improving the efficiency and quality of public services. It is also expected to provide practical and sustainable solutions in facing the challenges of public services in the growing digital era (Nurbaity & AB, 2019).

By designing and implementing an effective E-Government application in Margahayu District, this research hopes to make a significant contribution in improving the efficiency and quality of public services. The title of this study, "Design and Implementation of E-Government Applications to Improve Public Service Efficiency in Margahayu District" is an important foundation in responding to public service challenges in the growing digital era. With this application, it is hoped that people can easily access public services and government agencies can manage administrative processes more efficiently (Abdulwahida, Mutaliba, Yusofa, & Alib, 2014).

The purpose of this writing is to design and implement E-Government applications that can improve the efficiency of public services in Margahayu District.

## 2. Materials and Methods

In designing and implementing *E-Government* applications, the author will adopt qualitative and quantitative research approaches. The methodological steps to be carried out are as follows:

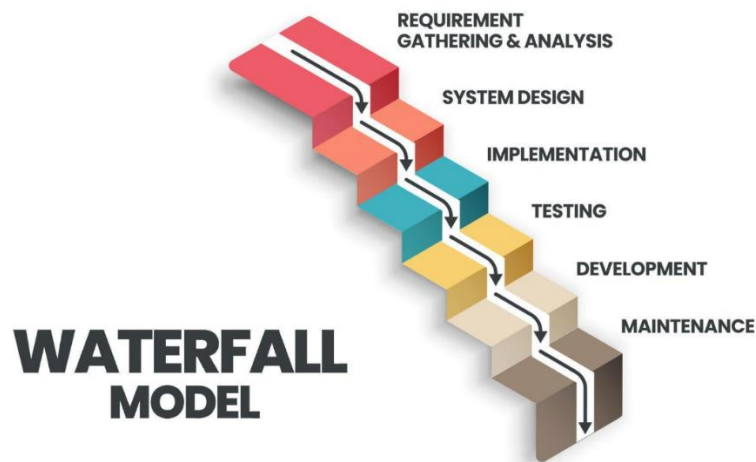
Study the literature to understand the concept of *E-Government*, relevant technologies, and successful implementation in similar contexts. *E-Government* is the use of information and communication technology to improve government services to the community. This has the potential to increase government efficiency, transparency, and accountability, and also plays a role in

increasing public participation in government affairs. Some of the technologies relevant to *E-Government* include the internet, intranet, extranet, mobile technology, big data, as well as cloud computing. Many countries in the world have implemented *E-Government* with varying degrees of success. Examples of successful deployments include USA.gov and Grants.gov in the United States, the eGov system in Singapore that improves efficiency and transparency, and the Aadhaar program in India that provides digital identities to more than 1 billion people (Syafri, 2015).

Despite its great potential, *E-Government* also faces challenges. Limited technological infrastructure, lack of digital literacy of the community, changes in work culture in the government, and the need for information security are obstacles that must be overcome. However, *e-government* represents a fundamental change in the way government operates, potentially making it more efficient, transparent, and accountable.

Data collection through interviews with related parties in Margahayu sub-district and analysis of existing public service data. In an effort to improve public services in Margahayu District, data collection was carried out through interviews with related parties. This data involves interactions with various individuals and agencies in the region (Agung & Handayani, 2022). Furthermore, existing public service data is carefully analyzed. The aim is to gain a deeper understanding of the needs of the community and potential improvements in order to improve and improve the quality of public services in the sub-district.

Application design using the right software development model. According to (Wahid, 2020) the *Waterfall* method is still used in software development today and is used to build software systematically and sequentially through predetermined stages. This method is suitable for large-scale software projects that involve a lot of human resources and complex work procedures, but has the disadvantage of being difficult to adapt if there are changes in specifications at a stage of development. As per figure 1.



**Figure: 1 Waterfall Model**

The first step in the *waterfall* method is to prepare and analyze the software needs to be developed. Data and understanding obtained may come from interviews, surveys, literature reviews, observations, and discussions. After understanding the concept of the *waterfall* method, the next step is to explore the stages involved in implementing this method. *Requirement Gathering and Analysis, System Design, Implementation, Integration & Testing, Development and Maintenance* (Sun, Ku, & Shih, 2015)

### 3. Result and Discussion Implementation

After making an analysis and design regarding the needs of the E-Government Application to Improve the Efficiency of Public Services in Margahayu District, the next step is the implementation stage. Implementation is the process of previous design using the programming language used to produce the expected system (Al-Naimat, Abdullah, Osman, & Ahmad, 2012).

#### Table Relationships

The table relations in the implementation of the E-Government Application to Improve Public Service Efficiency in Margahayu District are as follows:

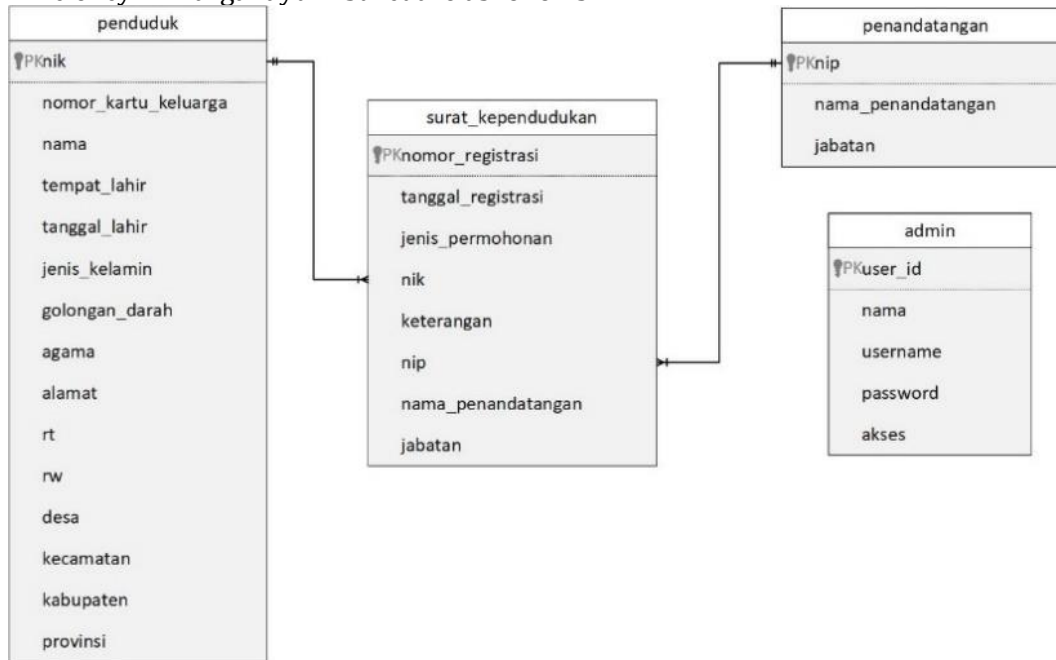


Figure 1 Table Relation

#### Interface Implementation Login Interface Display

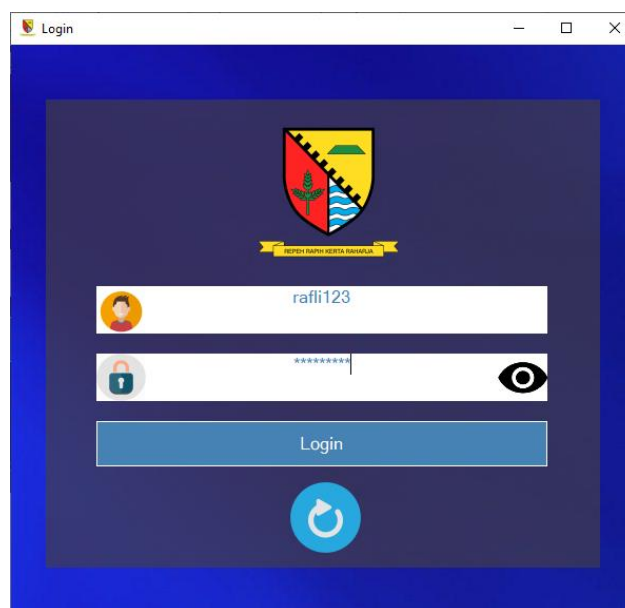


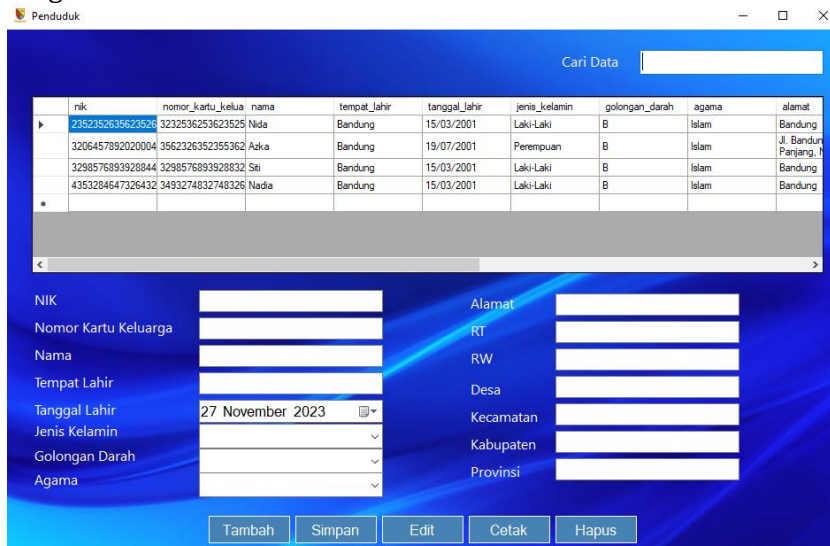
Figure 2 Login interface

### Main Menu Page Interface



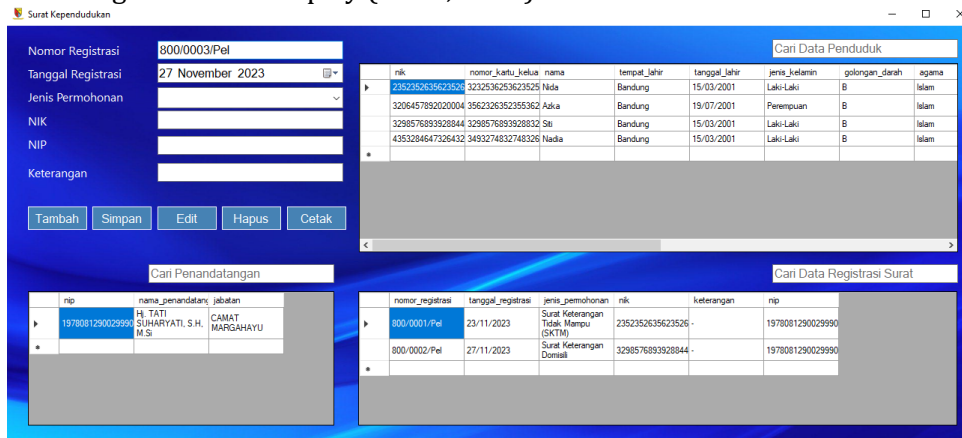
**Figure 3 Main Menu Page Interface**

### Population Page Interface



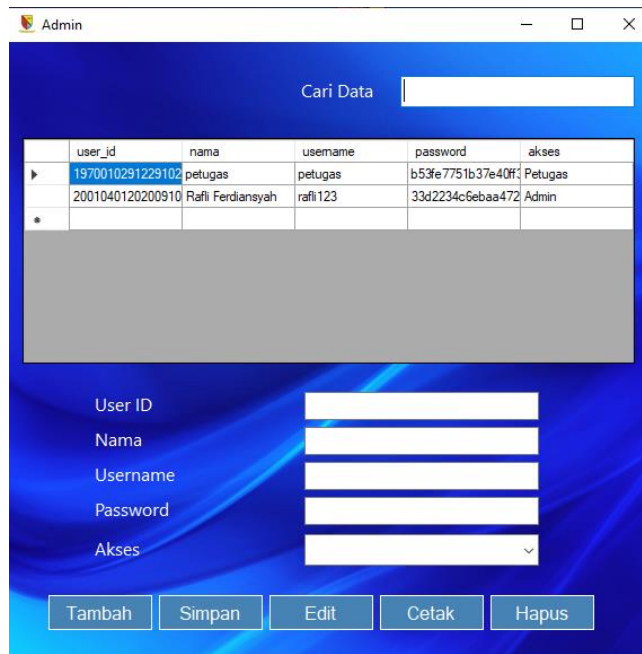
**Figure 4 Population Page Interface**

### Residence Letter Page Interface Display (Drew, 2011)



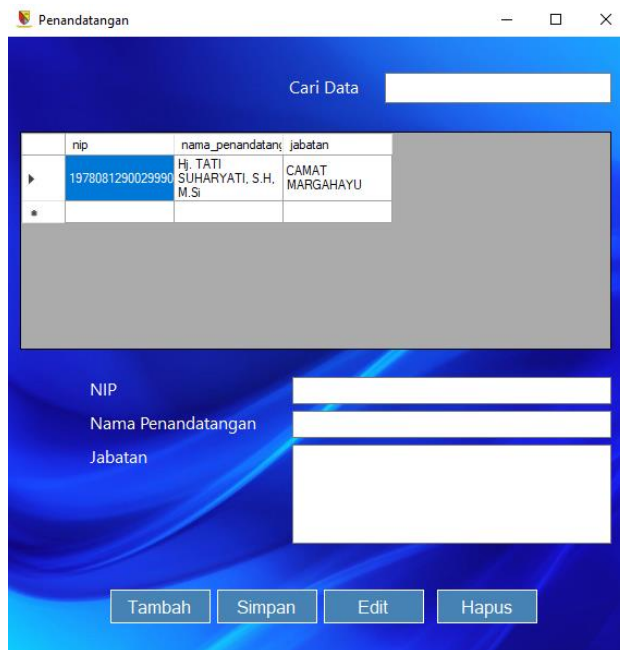
**Figure 5 Interface of Residence Letter Page**

### Admin Page Interface



**Figure 6 Admin Page Interface**

### Signer Page Interface



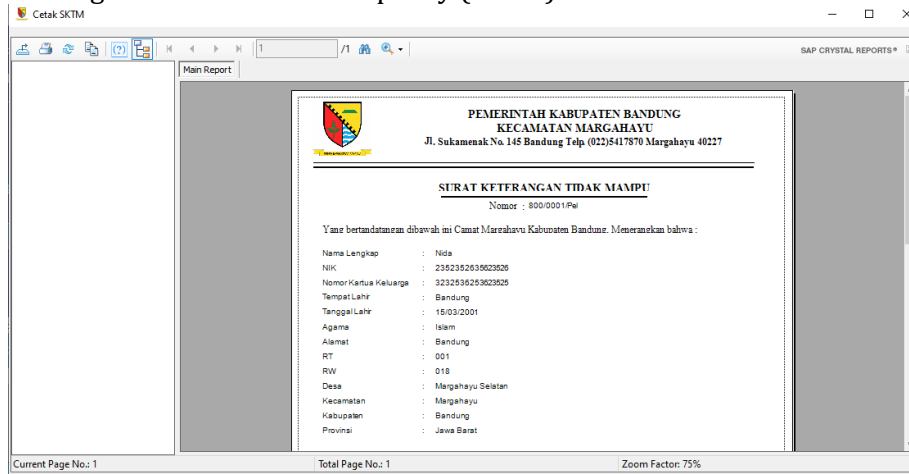
**Figure 7 Signing Page Interface**

### Interface Display of Residence Letter Recapitulation Page



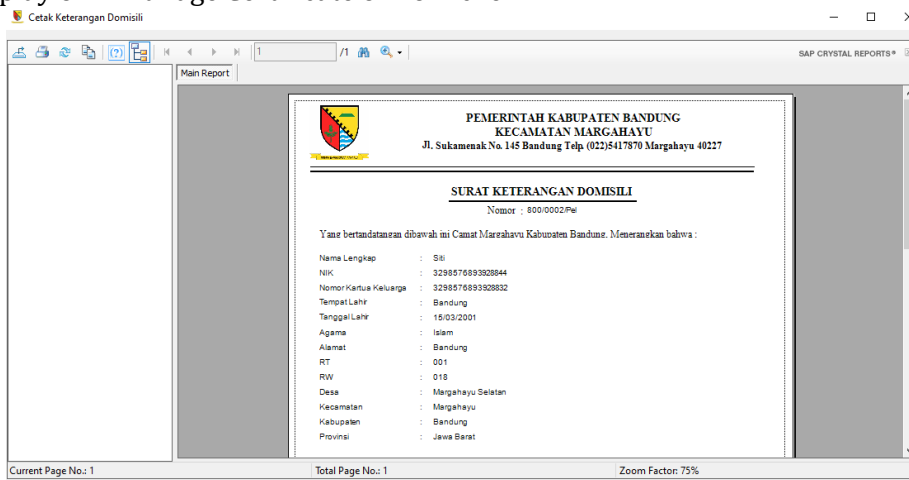
**Figure 8 Interface of Residence Letter Recapitulation Page**

### Interface of Print Page of Certificate of Incapacity (SKTM)



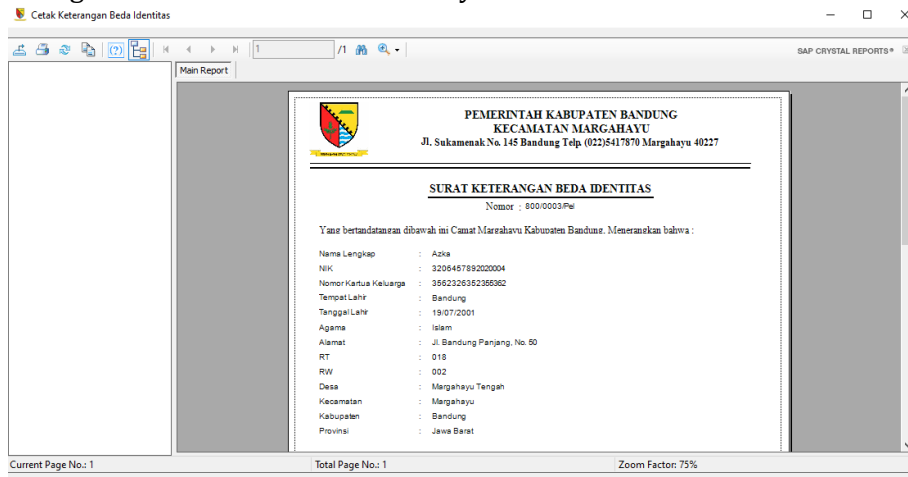
**Figure 9 Printed Page Interface of Certificate of Incapacity (SKTM)**

### Interface Display of Print Page Certificate of Domicile

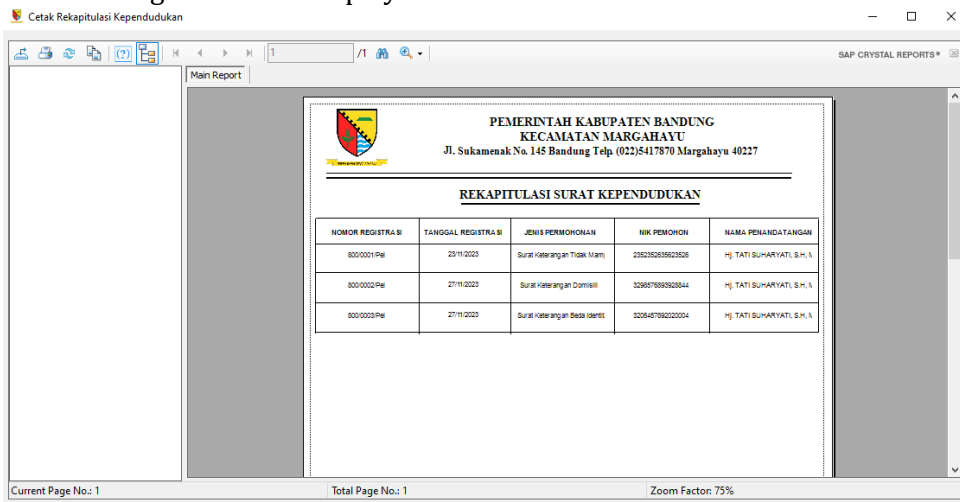


**Figure 10 Interface of Print Page of Certificate of Domicile**

Display of Print Page Interface of Different Identity Certificate



**Figure 11 Interface of Print Page of Certificate of Different Identity Recapitulation Print Page Interface Display**



**Figure 12 Interface of Print Page Recapitulation of Residence Letter**

**System Testing**

Software testing aims to find errors, incompatibilities, or flaws in the software. Testing is also done to ensure that the software meets the needs of users (Mkude & Wimmer, 2015). Therefore, at this stage the results of testing the system built on the E-Government Application to Improve Public Service Efficiency in Margahayu District can be seen the test plan in the following table:

**Black Box Testing**

This Black Box method tests the functions of the application as a whole. Here are the results of the tests conducted on this application.

**Table 1 Login Testing**

Input	Function	Output	Result
Login	To enter the main menu page	Login page view	Succeed
Main Menu	To go to the resident page, residence letter page, admin page, residence letter recapitulation page, and signatory page	Main menu page view	Succeed



Input	Function	Output	Result
Inhabitant	To manage population data such as add population data, save population data, edit population data, print population data, delete population data, and search population data	Resident page view	Succeed
Residence Letter	To manage residence letter data such as adding residence letter data, save residence letter data, edit residence letter data, print residence letter data, delete residence letter data, and search for residence letter data	Residence letter page view	Succeed
Admin	To manage admin data such as add admin data, save admin data, edit admin data, print admin data, delete admin data, and search admin data	Admin page view	Succeed
Signatories	To manage signing data such as add sign data, save the signer data, edit the signer data, delete the signer data, and search for the signer data	Signer page views	Succeed
Recapitulation of Population Letter	To print a recapitulation of the residence letter	Display of the recapitulation page of the residence letter	Succeed

Based on the test results, the *black box* test which includes *input*, *process*, and *output* tests has met the results of the software design (Ibrahim & Hamid, 2013).

### System Maintenance

Maintenance is an effort from software developers to always be able to maintain stability in the system and keep everything in it running properly. In maintaining the system, here are the steps that the author can take as follows:

#### 1. Backup Data

Along the way, it is not impossible for the author's system to experience interference from outside parties who want to disrupt the system. This can be overcome by backing up data regularly.

#### 2. Update System

*System Update* here is optional, intended by making improvements to the system that allow the system to not run properly.

### 4. Conclusion

Based on the research that the author conducted on E-Government Applications to Improve Public Service Efficiency in Margahayu District, it can be concluded from the research conducted as follows:

After this application, hopefully the E-Government Application can make it easier to carry out public services such as creating, managing residence letters, and being able to see the results of reports on what types of residence letters have been made on the E-Government Application, so that it can facilitate service officers in the process of administration and management of public service data in the District.

## 5. References

- Abdulwahida, Hayder Sabah, Mutaliba, Ariffin Abdul, Yusofa, Shafiz Affendi Mohd, & Alib, Suhad Jaffar. (2014). Designing and implementation Iraqi e-government front office online system. *Journal of Knowledge Management, Economics and Information Technology*, 4(1.1), 1–11.
- Agung, Anak Agung Gde, & Handayani, Rini. (2022). Blockchain for smart grid. *Journal of King Saud University-Computer and Information Sciences*, 34(3), 666–675.
- Al-Naimat, A., Abdullah, M., Osman, W., & Ahmad, F. (2012). E-government implementation problems in developing countries. *2nd World Conference on Information Technology (WCIT-2011)*, 876–881.
- Alavi, Maryam, & Leidner, Dorothy E. (2001). Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS quarterly*, 107–136.
- Baskoro, Danny Ajar, Maipita, Indra, Fitrawaty, Fitrawaty, & Dongoran, Faisal Rahman. (2023). Digitalisasi Sistem Informasi dan Administrasi Desa Sebagai Upaya Menuju Desa Cerdas di Desa Kolam, Percut Sei Tuan, Deli Serdang, Sumatera Utara. *Dinamisia: Jurnal Pengabdian Kepada Masyarakat*, 7(3), 624–635.
- Drew, Mohammed Alshehri; Steve J. (2011). E-government principles: implementation, advantages and challenges. *International Journal of Electronic Business*, 9(3), 255–270.
- Ibrahim, Mahmood Khalel, & Hamid, Mohammed A. Jabbar. (2013). Secure e-government framework: design and implementation. *International Journal of Science, Engineering and Computer Technology*, 3(5), 186.
- Kiran, A. Sandeep Kranthi, Kumar, T. S. Sampath, Sanghavi, Rutvi, Doble, Mukesh, & Ramakrishna, Seeram. (2018). Antibacterial and bioactive surface modifications of titanium implants by PCL/TiO<sub>2</sub> nanocomposite coatings. *Nanomaterials*, 8(10), 860.
- Mkude, Catherine G., & Wimmer, Maria A. (2015). E-government systems design and implementation in developed and developing countries: results from a qualitative analysis. *Electronic Government: 14th IFIP WG 8.5 International Conference, EGOV 2015, Thessaloniki, Greece, August 30--September 2, 2015, Proceedings 14*, 44–58. Springer.
- Norris, B. J., Anderson, J., Wager, J. F., & Keszler, D. A. (2003). Spin-coated zinc oxide transparent transistors. *Journal of Physics D: Applied Physics*, 36(20), L105.
- Nurbaity, Siti, & AB, S. (2019). *The Importance of Improving the Quality of Civil Servants to Implement E-Government Service Delivery in Industrial Era 4.0: A Case Study Approach of Government Institutions in Jakarta*.
- Sun, Po Ling, Ku, Cheng Yuan, & Shih, Dong Her. (2015). An implementation framework for E-Government 2.0. *Telematics and Informatics*, 32(3), 504–520.
- Syafrida, Fakhriani Nurhayati. (2015). *Analisis Penerapan Tax Amnesty di Indonesia dalam Rangka Meningkatkan Penerimaan Negara pada Sektor Perpajakan*. Bakrie University.
- Wahid, Aceng Abdul. (2020). Analisis metode waterfall untuk pengembangan sistem informasi. *J. Ilmu-ilmu Inform. dan Manaj. STMIK*, no. November, 1–5.