MOBILE RESPONSIVE USER INTERFACE DESIGN IN INFORMATION SYSTEMS DATA GROUPING RESIDENTS OF KLAMBIR LIMA KEBUN

Randi Rian Putra[1]*, Eka Putra[2]
[1] Information Technology, Universitas Pembangunan Panca Budi, Indonesia
[2] Computer System, Universitas Pembangunan Panca Budi, Indonesia

*Corresponding author: randirian@dosen.pancabudi.ac.id

ARTICLE INFO	ABSTRACT
	Kelurahan is the division of administrative regions in Indonesia under sub-districts. The sub-district is led by a lurah with the status of a Civil Servant. Kelurahan Pahlawan is a government agency that handles all population data. To be able to improve the grouping of citizen data and its reports to a higher agency, namely the district, steps are needed to develop a data grouping information system. The information system for grouping data on the residents of the village of Klambir Lima Kebun is a system that was built based on a user interface design with a responsive mobile system that was tested based on usability with the human centered design method. Human centered design is an approach method in the development and design of a user-focused system according to aspects of the needs and habits of the user. In the village of Klambir Lima Kebun, all information about the population has not been worked out optimally and there is no program to support work in the office. Office employees have difficulty grouping population data, still using the manual method or still in paper form. With the design of this system, it can help village officials in carrying out the process of grouping citizen data and speeding up service to the community as well as providing more effective and accurate information.

INTRODUCTION

Kelurahan is the division of administrative regions in Indonesia under sub-districts. The sub-district is led by a lurah with the status of a Civil Servant. Kelurahan Pahlawan is a government agency that handles all population data. To be able to improve the grouping of citizen data and its reports to a higher agency, namely the district, steps are needed to develop a data grouping information system.

Information System is a system that has data storage, data grouping, data collection, and information dissemination. Technological developments are now starting to develop rapidly, all aspects demand ease, speed and accuracy in obtaining and processing information.

The information system for grouping data on the residents of the village of Klambir Lima Kebun is a system that was built based on a user interface design with a responsive mobile system that was tested based on usability with the human centered design method. Human centered design is an approach method in the development and design of a user-focused system according to aspects of the needs and habits of the user.

In the village of Klambir Lima Kebun, all information about the population has not been worked out optimally and there is no program to support work in the office. Office employees have difficulty grouping population data, still using the manual method or still in paper form. With the design of this system, it can help village officials in carrying out the process of grouping citizen data and speeding up service to the community as well as providing more effective and accurate information. Prototype is a user interface design where it looks using real visuals like users using real applications. The prototyping design of this cash data

collection information system is designed in a simple interface so that users can feel comfortable and easy when using the application. And also the usability of this application can later be used properly by the user.

LITERATURE REVIEW

Information Technology

According to (Alpiandi,2016). Information Technology is a technology used to process data, including obtaining, compiling, processing, storing and manipulating data in various ways to produce quality information. The information produced must be relevant, accurate and timely so that it can be used for personal, business, educational, government purposes and utilized for decision making decision (Wahyuni et al., 2020) (Geasela et al., 2018)**.**

Basic Concepts of Information Systems

With the development of technological advances that have a lot of influence the development of information in an educational or academic field and in various other fields(Putra, 2021). From Research (Buchori, Hartanto A.D. 2014) Information is data that has been processed into in a form that has meaning for the recipient and has real value so that it can be used as a basis for making decisions. The basic concept of information is data that is processed into a form that is more useful and more meaningful to those who receive it(Putra, 2018). The system consists of elements that interact to achieve certain goals. A system has certain characteristics or properties. There are two groups of approaches in defining the system, namely those that emphasize procedures and those that emphasize components or elements (Putra, 2019).

User Interface

ISO sets standard definitions for user interface (UI) namely all interactive system components (software or hardware) that provide information and control to users to complete certain tasks with interactive systems. Some of the elements included in the UI are windows, icons, menus, pointers. In addition to the aesthetic aspects that appear visually, user design The interface must be able to convey its function. According to a Nielsen study, usability is the ultimate goal of user interface design. The components that determine the usability of a design are the ease of learning, efficiency, user retention regarding application functions after several uses, user errors, and user satisfaction(Rianingtyas & Wardani, 2019). The user interface is one of the factors that determine the increase in traffic on a website. Because users interact with programming logic through the user interface. And the design of the user interface itself is very important considering that the more effective and efficient a design is, the more comfortable the user will be to linger on the website (Aziza, 2019).

Human-Centered Design Method

The Human-Centered Design method is an approach method in the development and design of a system that focuses on the user according to the aspects of the needs and habits of the user. Difficulty in accessing information on the website is a problem faced by users and from a visual perspective the website cannot be responsive when accessed via mobile. The initial stage carried out in this method is observation which aims to find and better understand the problems faced by the user to conduct testing to find out whether the solution provided is understandable and easy to use by the user.

METHOD

Literature studies used to discuss those related to the topic to be raised, references used as references to research related to user interface and user experience along with the Human – Centered Designe method (Ariawan et al., 2020). This study uses a prototyping method with a Human- Centered Design, where in his journal (Putu et al., 2021), the Human Centered Design (HCD) method is a new paradigm in the development of web-based systems. Human Centered Design is an interface design process that focuses on the purpose of the usability, environment, tasks, user characteristics and workflow in the design. Technique(Tasril et al., 2022).

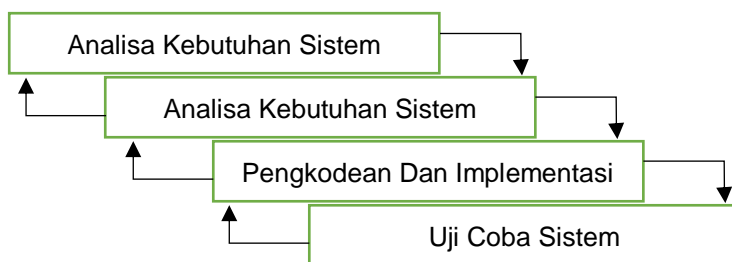The stages of the waterfall model can be described as in Figure 1 below:

Figure 1. Waterfall Model

1. **System Requirements Analysis**

   At this stage the system requirements analysis process is carried out, which describes all system requirements and makes a complete specification of the contents of the system. In this stage all system requirements are described in full, starting from the software and hardware needed for system development.

2. **System and Software Design**

   At this stage the focus is on system design. At this stage there are two levels: high level design (system architecture) and low level design. High-level design includes designing data structures, software models, and defining the necessary procedures. While low-level design is designing the user interface display which includes application layouts, navigation and others.

3. **Coding and Implementation**

   At this stage, the process of translating the design into a language that is understood by the computer is carried out. these languages are translated into programming languages so that computers can understand them. In this study, researchers used the PHP Hypertext Preprocessor (PHP) programming language to translate into computer language and was carried out by a programmer. translation refers to the design that has been made at the design stage.

4. **System Testing**

   After the previous stages have been completed, the next stage is the system testing process. System testing is needed to minimize errors in the system. Testing is done by using Black-Box Testing. Black-Box Testing aims to determine the function of the system, whether the system has been running according to its function or not. The black-box testing technique in this study used the boundry values analysis (BVA) technique, which is a software testing technique in which the test is designed to include representatives of boundary values (Liana, 2015). The testing process uses Black-Box, namely by testing one by one input on the system. The results of the test are used as evaluation material for the system(Alimuddin et al., 2020).

RESULTS AND DISCUSSION

System Design With UML (Unified Modeling Language)

The purpose of the system design is to determine the design of making an information system for library services at Stabat 1 Public Middle School. The design of this system begins with the design of use case diagrams, activity diagrams, sequence diagrams and class diagrams(Putra, 2019).

1. **Admin Use Case Diagrams Design**

   The following is a use case diagram of the Information System Design for Data Grouping Residents of the village of Klambir lima kebun.
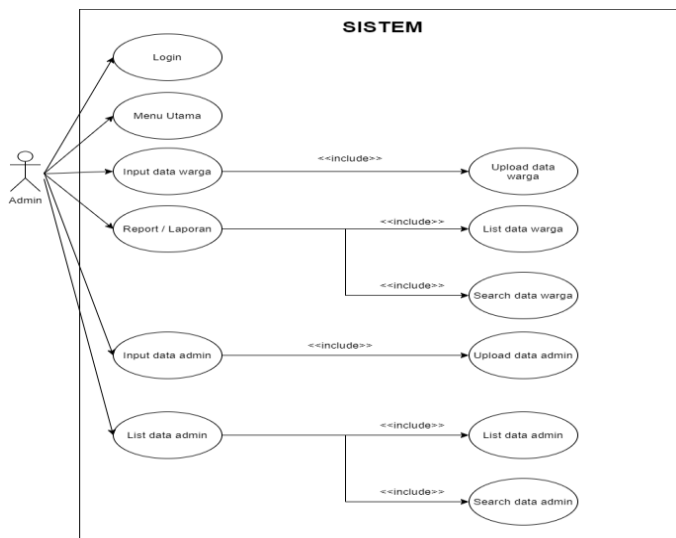
Figure 2. Use Case Diagram Admin

2. User Use Case Diagrams Design

The following is a citizen use case diagram from the Information System Design for Citizen Data Grouping in the village of Klambir Lima Kebun.
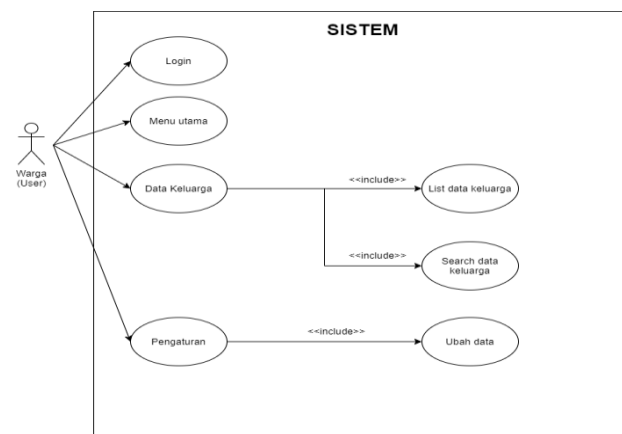

Figure 3. Use Case Diagram User

3. Admin Activity Diagram Design

In the activity diagram there are several activities that are passed by the admin and the system. In admin, the admin can enter the system using the specified username and password, at this point, the system will verify whether the account is registered or not, if it is registered then the admin will be directed to the system's home page.
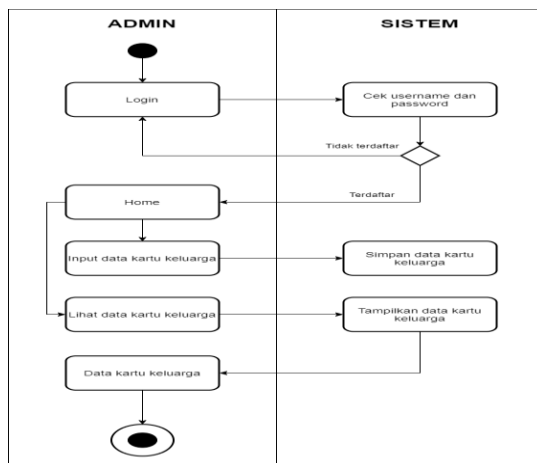
Figure 5. Activity Diagram Admin

4. **User Activity Diagram Design**
   user activity diagram, there are several activities that are passed by residents and the system as shown below.
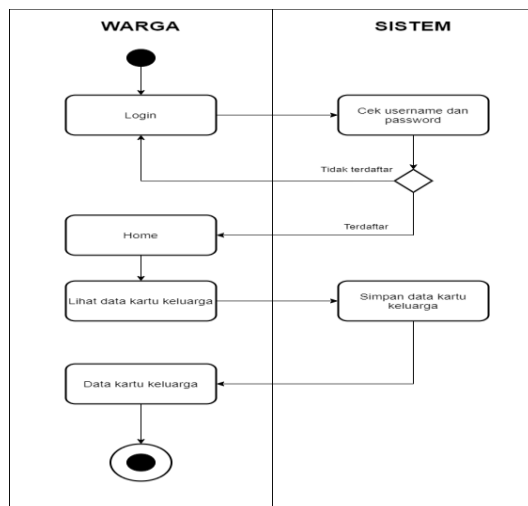

Figure 6. Activity Diagram User

5. **Admin Squency Diagram Design**
   In the sequence diagram admin has several main features in the system including login, card input sequence diagram admin, admin has several main features in the system including login, input ka family, view family card data, manage family card data and print family card data reports.
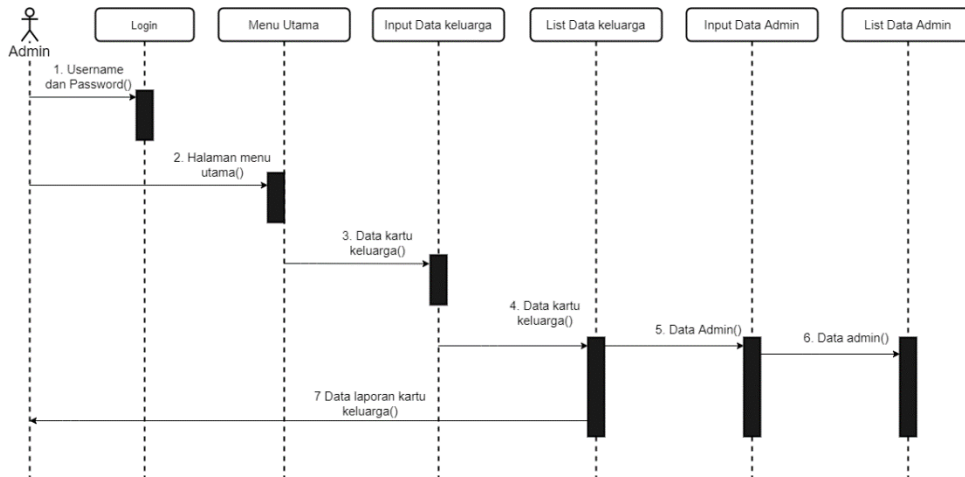
Figure 7. Squency Diagram Admin

6. User Squency Diagram Design

In the sequence diagram, the citizen user has several main features in the system, including login and viewing family card data.
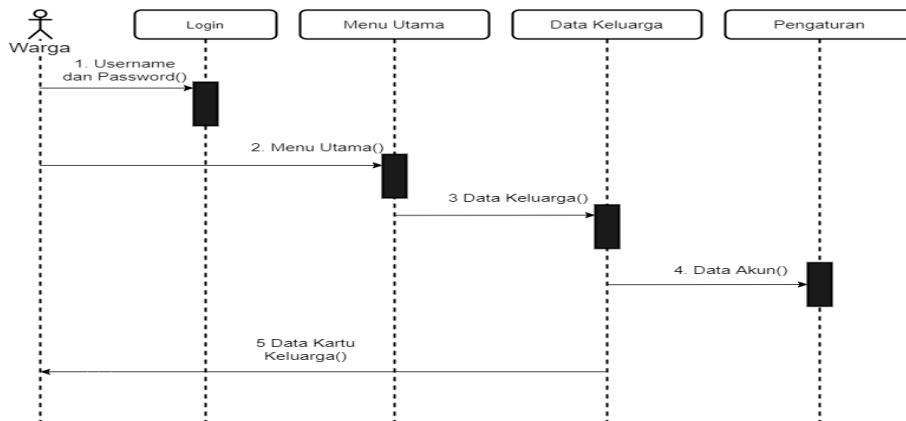

Figure 8. Squency Diagram User

7. Class Diagram

Class diagram design is a form of design from the table results from the system database.
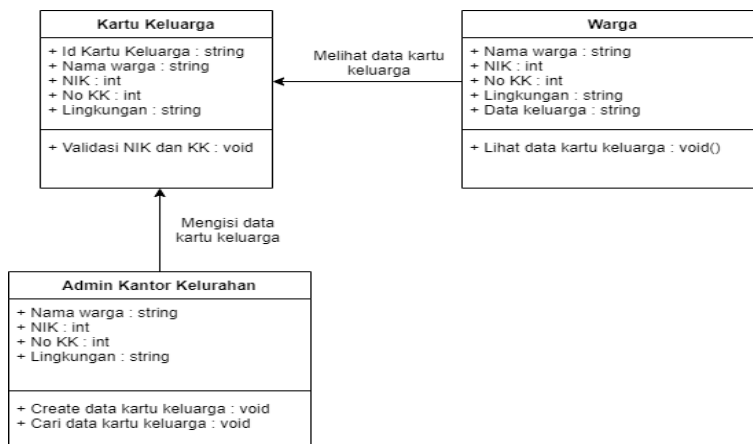

Figure 9. Class Diagram

Interface Design System

The following is a draft of the Design and Build of a Citizen's Data Grouping Information System village of klambir lima kebun(Aziza, 2019)

1. **Login Page Design**

   The image below is a login page design. On this page, admins and residents will be able to enter the system by filling in the provided username and password.
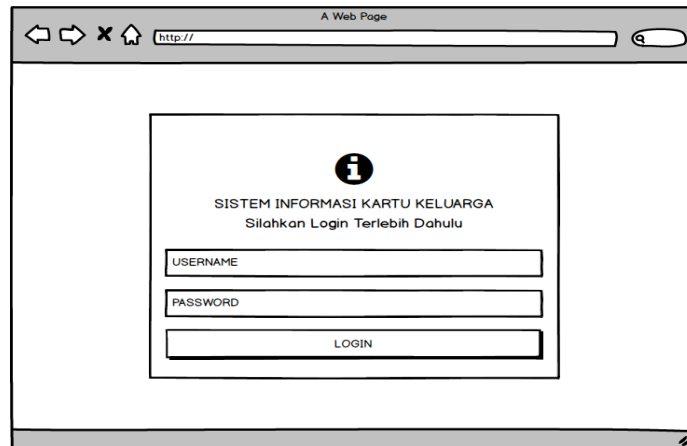

Figure 9. Login Page Design

2. **Admin Home Page Design**

   The image below is a design for the admin home page. in this view the admin can see the menus that have been provided by the system.
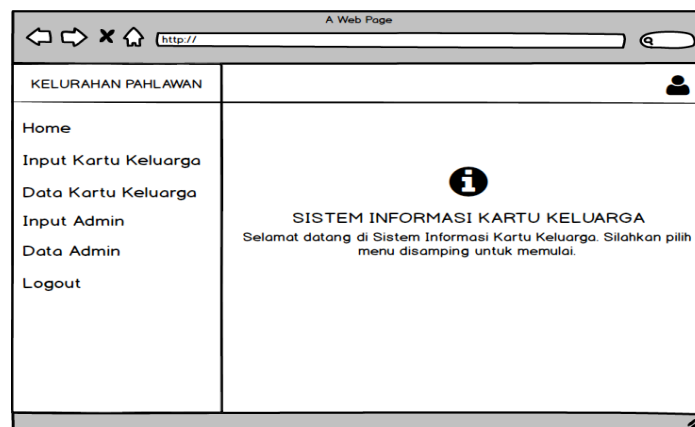

Figure 10. Admin Home Page Design

3. **User Home Page Design**

   The image below is the design of the citizen's home page. In this view, residents can choose menus that have been provided by the system.
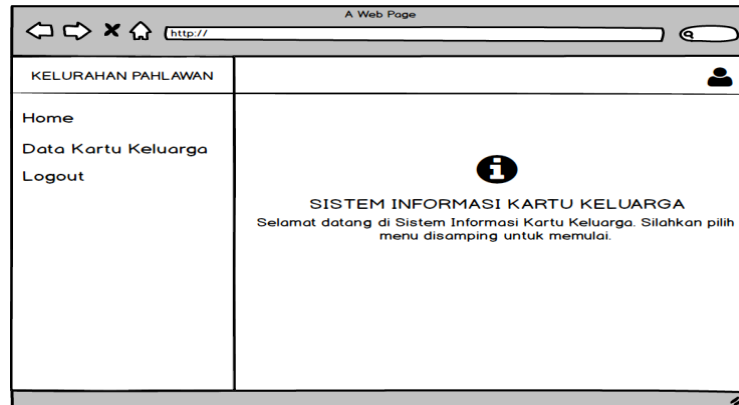
Figure 11. User Home Page design

CONCLUSION

The following is a conclusion from the discussion of the research that has been designed and produces conclusions as follows:

1. The application design process is made using the prototyping method which is useful for designing systems according to user requirements. The results of the prototype are tested on prospective users in stages so that they can produce a good application design.
2. With the design of an information system for grouping citizen data, it can make it easier for the village to build a system and get an information system according to the needs of the problems that are being faced by the village of klambir lima gardens.
3. the results of the usability test show that the application gets category b points, which means that it can be accepted well for prospective users in the klambir lima kebun village environment.

REFERENCES

Alimuddin, M. B., Arifin, Z., Hariono, T., Wahab, K. A., & Jombang, H. (2020). Rancang Bangun Sistem Pendataan Warga Nahdlatul Ulama Untuk Optimasi Pelayanan. *Saintekbu*, *12*(2), 74–82. https://ejournal.unwaha.ac.id/index.php/saintek/article/view/385

Ariawan, M. D., Triayudi, A., & Sholihati, I. D. (2020). Perancangan User Interface Design dan User Experience Mobile Responsive Pada Website Perusahaan. *Jurnal Media Informatika Budidarma*, *4*(1), 161. https://doi.org/10.30865/mib.v4i1.1896

Aziza, R. F. A. (2019). Analisa Usability Desain User Interface Pada Website Tokopedia Menggunakan Metode Heuristics Evaluation. *Jurnal Tekno Kompak*, *13*(1), 7. https://doi.org/10.33365/jtk.v13i1.265

Geasela, Y. M., Ranting, P.-, & Andry, J. F. (2018). Analisis User Interface terhadap Website Berbasis E-Learning dengan Metode Heuristic Evaluation. *Jurnal Informatika*, *5*(2), 270–277. https://doi.org/10.31311/ji.v5i2.3741

Putra, R. R. (2018). Penerapan Web Promosi Pada Bagan Deli Medan Belawan Menggunakan Pemograman PHP Database Mysql. *Jurnal Teknik Dan Informatika*, *5*, 45–48. http://jurnal.pancabudi.ac.id/index.php/Juti/article/view/222

Putra, R. R. (2019). Sistem Informasi Web Pariwisata Hutan Mangrove di Kelurahan Belawan Sicanang Kecamatan Medan Belawan Sebagai Media Promosi. *Jurnal Ilmiah Core IT: Community Research Information Technology*, *2*(7).

Putra, R. R. (2021). *Perancangan Sistem E-Voting Dalam Pemilihan Osis Pada Smk Yapim Taruna Marelan*. *14*(2), 23–31.

Rianingtyas, A. K., & Wardani, K. K. (2019). Perancangan User Interface Aplikasi Mobile Sebagai Media Promosi Digital UMKM Tour dan Travel. *Jurnal Sains Dan Seni ITS*, *7*(2). https://doi.org/10.12962/j23373520.v7i2.36874

Tasril, V., Prayoga, J., Jayusman, S. F., Usability, U., Design, H., & Dharmawangsa, U. (2022). *USER INTERFACE DAN UJI USABILITY MENGGUNAKAN PENDEKATAN HUMAN-*. *16*(July), 371–382.

Wahyuni, S., Putra, R. R., & Wadisman, C. (2020). Pengembangan Sekolah SMA/SMK Yapim Taruna Marelan Dengan Sistem Informasi Akademik Berbasis Web. *INTECOMS: Journal of Information Technology and Computer Science*, *3*(1), 52–59. https://doi.org/10.31539/intecoms.v3i1.1337