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# MOBILE WEB-BASED VILLAGE SERVICE APPLICATION DESIGN WITH EXTREME PROGRAMMING METHODOLOGY

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## Abstract

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### Article Info

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Information technology is developing very rapidly which affects the business world and the industrial world, including government agencies. Public services in making population documents are an important type of service that must exist in every village. The Center for the Study of Regional Autonomy conducts a study on the quality of village government services, related to this, it is necessary to continuously improve government services, both physical and administrative. One of them is the problems faced by village government agencies, such as the procedures applied are not clear and the service is still manual so that the processing time becomes longer. This study aims to improve the quality of service which it has an impact on services that are less than optimal for the population, it is hoped that with the design of this program it can be better than the manual system, so that it can run more effectively and efficiently. The data collection method used in collecting data in this study is by conducting interviews with various parties, observing, and reviewing the center in order to find reference materials. The design of this information system uses the Agile Development Methods system development method with the extreme programming model.

Keywords: Information Systems, Applications, Population, Village

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## 1. Introduction

The implementation of this population administration system is directed at the fulfillment of the human rights of everyone in the field of population administration services, as well as increasing the awareness of the population to play an active role in the implementation of population administration. The city government is responsible for managing population data collection, where the implementation of population administration starts from the village/*kelurahan* as the spearhead of population data collection. Technological developments encourage human development in carrying out activities, one of the benefits of technological developments is that it can make it easier to get information quickly.

Information is a resource that has an important role in modern management, which many strategic decisions that depend on it. Smooth government operations, especially in village government, can be presented in applications and reports in a clear, orderly, and fast manner. Computers and technology are one of the most appropriate tools, where currently the use of computers can be applied in various fields. Today's rapid technological advances require agencies to be able to keep up with technological developments, thus an agency needs an information system that can create work efficiency and effectiveness to improve services to the community. Data management will be easier and more efficient if there is a population administration information system.

Currently, the data management system in the village is still recorded in the population data book, besides that the services and information provided to the community are still carried out manually. If a member of the community, for example, wants to make an identity card, family card or transfer of population, the resident must come directly to the village office. In addition, citizens must first look for their data in the population master book. By looking at these conditions, of course, it will take a long time so that it hampers the service process.

Considering the existing problems, it is necessary to create a mobile web-based information system by utilizing current information technology. By utilizing this information technology, the village government can easily interact and exchange information with residents, to facilitate the government's way of providing services to the community.

## 2. Method

The design of this information system uses the Agile Development Methods system development method with the extreme programming model. The extreme programming process flow is planning, design, coding, and testing.

### 2.1. Planning

At the planning phase, the author analyzes and looks for what needs are used by the system to be made, by conducting interviews, to produce a User Story to be used as a reference in the next stage.

### 2.2. Design

At this phase the author develops what is obtained from the previous stage, including the design of the system flow, database and design of the system display will be made.

### 2.3. Coding

This phase is the implementation of the previous stage by making the system in accordance with the design that has been planned to be as expected.

### 2.4. Testing

The test was carried out three times, starting with testing by the author on the alpha version, then by users on the beta version. The results of the programming phase are tested to the user whether the system is feasible or not.

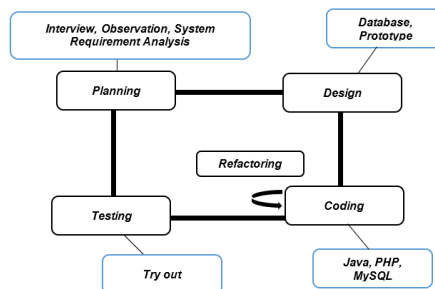


Figure 1. System Developing Flow using Extreme Programming Method  
(Adopted from Roger S Pressman :2010)

## 3. Results and Discussion

Table 1. Previous Research Results

No	Author Names	Research Title and Publication Year	Result
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1	Prayuda Anugrah Ardi Pujianta	Web-Based Population Information System and SMS at the Department of Population and Civil Registration Tanjungpinang City (2015)	No output is produced, and the information generated is very limited, only population information, no statistical data information, this application can only be accessed through the Website. The design still uses the Old Flowmap, DFD and context diagram methods.
2	Paryanta Sutariyani Desi Susilowati	Web-Based Population Administration Information System in Sawahan Village (2017)	This application can only be accessed through the website, there is no Android-based online service system, the design still uses the old method.

From the results of previous research, there are several things that distinguish the application that the author made with existing applications, namely:

- 1) In terms of design, this application is made more complete in terms of use cases, activity diagrams, class diagrams, and sequence diagram if it's compared with previous research.
- 2) The previous application can only be accessed through the Website, while the application that the author created can be accessed via the Website and Smartphone.
- 3) This application is made more complete, including population statistics reports per category, complete document creation including correspondence, population demographics, health data, social perspective data, and much more.

Use Case Diagrams as modeling in making this application, namely:



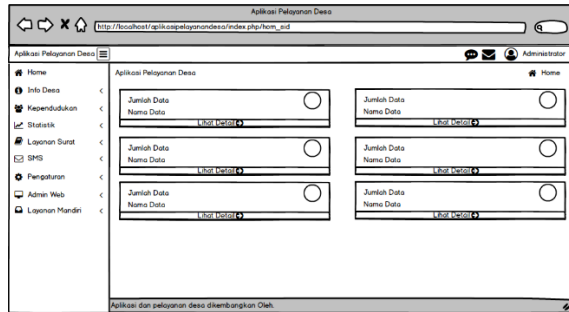
Gambar 2. Sea Level Use Case (Cookburn, 2001) User

The following is a web-based design table for the Application interface

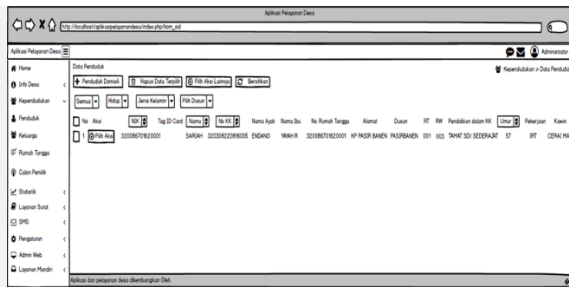
Table 2. Results of Web-Based Application Design

<i>USER</i>	<i>PAGE TYPE</i>	<i>PAGE VIEW</i>
ADMIN	Login	

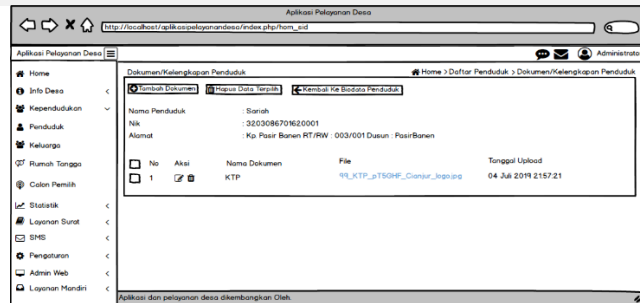
Main Menu



Citizen List



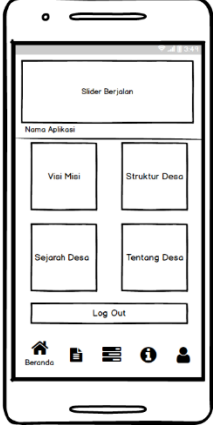
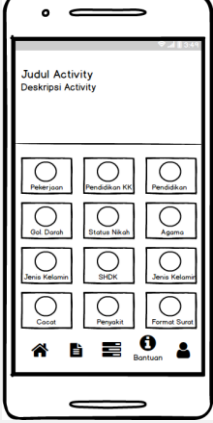
Citizen Document Management



The following is the result of the android-based design of the application interface.

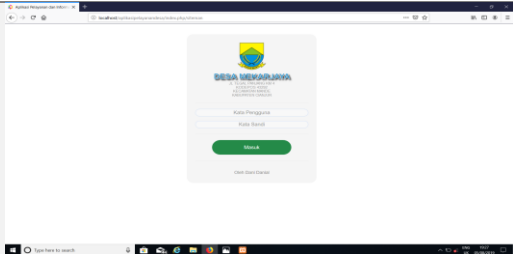
Table 3 Results of Android-Based Application Design

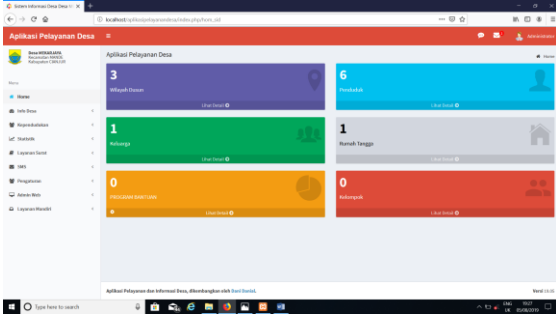
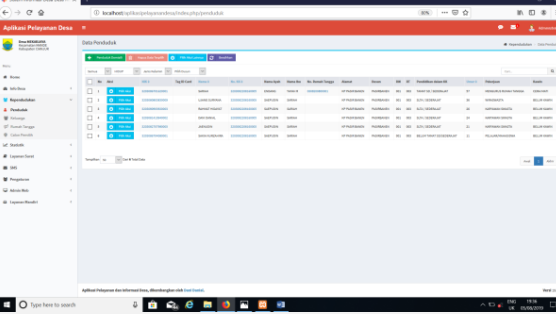
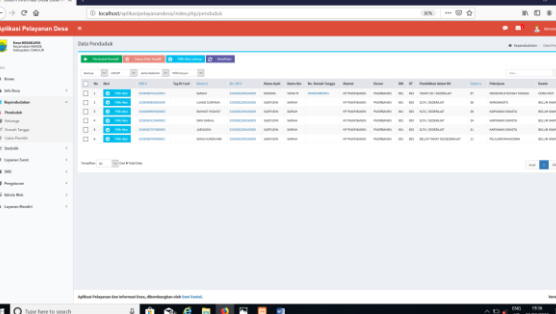
USER	PAGE TYPE	PAGE VIEW
MASYARAKAT	Login	

	Dashboard	
	Help	

The following are the results of implementing web based application

Table 4. The Results of Implementing Web Based Application

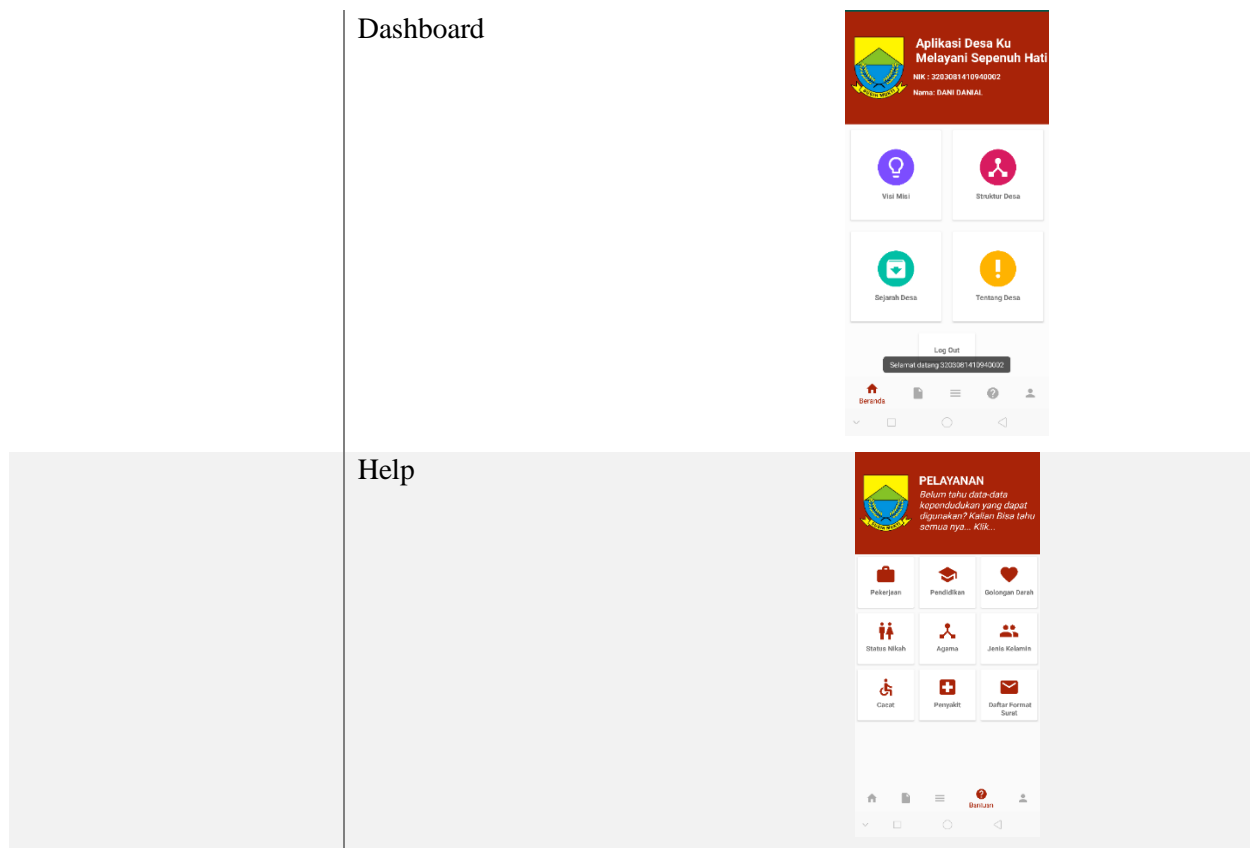
<i>USER</i>	<i>PAGE TYPE</i>	<i>PAGE VIEW</i>
ADMIN	Login	

	Main Menu	
	Citizen List	
	Citizen Document Management	

The following are the results of implementing an Android-based application

Table 5. Results of Implementation of Android-Based Applications

<i>USER</i>	<i>PAGE TYPE</i>	<i>PAGE VIEW</i>
<b>MASYARAKAT</b>	Login	



Black box testing focuses on the functional requirements of the software.

Table 5. Application Testing Results using the Blackbox Method

NO	ITEM PENGUJIAN	DETAIL PENGUJIAN	KESIMPULAN
1	Admin login process	Verification login	Valid
2	Process of managing village identity	Change, save	Valid
3	The process of managing the administrative area	Fill in data, save, change, delete, print, download	Valid
4	Village governance process	Fill in data, save, change, delete, print, download	Valid
5	Population management process	Fill in data, save, change, delete, print, download	Valid
6	Process of managing family card	Fill in data, save, change, delete, print, download	Valid
7	Household management process	Fill in data, save, change, delete, print, download	Valid
8	Process for managing voter candidates	Print, download	Valid



8	The process of managing population statistics	Print, download	Valid
9	Process for managing monthly reports	Fill in data, save, modify, delete, print, download	Valid
10	Process of managing letter format	Fill in data, save, change, delete	Valid
11	Mail service print management process	Fill in the data, save	Valid
12	Mail service archive process	Fill in data, save, modify, delete, print, download	Valid
13	User setup process	Fill in data, save, modify, delete, print, download	Valid
14	Database setup process	Download	Valid
15	Process of managing incoming reports	Delete, Change	Valid
16	Incoming service management process	Fill in data, save delete	Valid

#### 4. Conclusions

The conclusion that can be drawn from the application and village services in this village is that it makes easier for the community to access because it can be accessed from anywhere and anytime using the internet network. With this application, the queues that occur when the public is doing the registration process are minimized, thereby speeding up the service of population documents.

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