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Development of Slum District Application in The City of Bekasi Based on Web

Nur Hikmah¹, Nuke L Chusna², Ali Khumaidi³

^{1,2,3}Teknik Informatika, Fakultas Teknik

^{1,2,3}Universitas Krisnadwipayana, Jl. Kampus Unkris, jatiwaringin, Jakarta, 17411, Indonesia

E-mail: nurhikmah@unkris.ac.id, nukelchusna@unkris.ac.id, alikhumaidi@unkris.ac.id

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ABSTRACT

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The Government of Bekasi City through The Department of Public Housing, Settlement Areas and Lands (DISPERKIMTAN) has a program to reduce slum areas with the City Without Slum Program (KOTAKU). District data collection is currently being carried out manually by the team and then the data is entered into the information system which can only be accessed internally. Existing data are not updated quickly so it is sometimes difficult to determine policies related to development assistance. Rukun Tetangga (RT) and Rukun Warga (RW) are part of the government structure closest to the community so that if data collection is carried out by them, the data will be fast and updated. This slum application development was developed using the SDLC model of waterfall method, while the stages include analysis, system design, system implementation, and system testing. Testing the application using a black box and the results are in accordance with the scenario and expectations.

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1. Introduction

The Department of Public Housing, Settlement Areas and Lands (DISPERKIMTAN) Bekasi City is one of the regional technical institutions and has the responsibility of assisting the Regional Head in exercising authority in the field of public housing, residential areas as fulfilling the needs of Bekasi city infrastructure facilities. In carrying out its duties and functions, DISPERKIMTAN must follow regional developments. DISPERKIMTAN has several fields, one of which is the settlement area and slum area arrangement, this sector is to implement the city government in the field of public housing, housing and land affairs based on the principles of autonomy and assistance tasks[1].

Program Kota Tanpa Kumuh (Kotaku) is one of the efforts of the Directorate General of Human Settlements of the Ministry of Public Works and Public Housing to accelerate the handling of urban slums and support the "100-0-100 Movement", namely 100 percent access to safe drinking water, 0 percent slums, and 100 percent access to proper sanitation. In its implementation, the Kotaku program uses a collaborative platform between the central government, provincial government, city/district governments, communities and other stakeholders by positioning the community and district / city government as the main actors (skipper). The prevention and improvement of the quality of slum settlements is covered by standard regulations. Undang-Undang (UU) no. 1 Tahun 2011 on Housing and Settlement Areas[2], also Peraturan Pemerintah (PP) No. 14 Tahun 2016 concerning the Implementation of Housing and Settlement Areas, which is very helpful on how to carry out quality improvements and / or eliminate slum areas[3]. In addition, another regulation that can be used as a reference in implementing slum area arrangement is Peraturan Menteri PUPR No. 2 Tahun 2016 [4].

The general objective of this program is to increase access to basic infrastructure and services in urban slum settlements and prevent the emergence of new slum settlements in order to support the creation of habitable, productive and sustainable settlements. Realizing this objective is carried out through the following activities: (a) Construction / rehabilitation of settlement infrastructure, both at environmental and regional scales; (b) Strengthening the capacity of the community and local government and (c) Development of supporting infrastructure for community livelihoods. In accordance with the PUPR Regulation No. 14 of 2018 concerning the Prevention and Improvement of the Quality of Slum Housing and Slum Settlements[5], which consists of 7 aspects and 16 criteria for slum settlements, namely: 1. Building conditions, 2. Environmental road conditions, 3. Drinking water supply conditions, 4. Environmental drainage conditions ,



5. Wastewater Management Conditions, 6. Solid Waste Management Conditions and 7. Public Open Space Conditions.

Based on the results of a study from DISPERKIMTAN Kota Bekasi which includes 12 Districts and 56 sub-districts, 430 hectares, that the location data collection is done manually and then the data is entered into an information system that can only be accessed internally. Existing data are not updated quickly so it is sometimes difficult to determine policies related to development assistance. Rukun Tetangga (RT) and Rukun Warga (RW) are part of the government structure closest to the community so that data collection on areas where there is an indication of slums and their houses and residents, a physical description of the area of facilities and infrastructure, and a detailed description of residents can be presented

Based on the above background, the Bekasi City slum application was developed which was built based on web technology and was online. The application of slum areas is expected to support housing and settlement control activities in Bekasi City so that all these activities can run according to the standards and management of aid provision by the Government.

2. Method

The research stage uses the SDLC (System Development Life Cycle) method, which means the system development life cycle, where SDLC is used for the manufacture and development of existing systems on the object of research to be studied, using the waterfall method. In the SDLC waterfall model development method, there are 5 stages, namely, analysis, system design, system implementation, system testing, and maintenance[6]. In this study, stages ranging from analysis, design, manufacture, testing to system implementation. Based on these stages, the authors designed and built a slum area application in Bekasi City. The data techniques used to obtain data and information in this study are:

A. Observation

This method is carried out by direct observation at the location of the study based on the data provided by DISPERKIMTAN.

B. Interview

Data techniques are carried out through face-to-face and direct question and answer between the researcher and the resource person. Where at this stage, researchers met and asked directly to DISPERKIMTAN. In addition, interviews were also conducted with several RT and RW in the Bekasi City area.

C. Literature review

This method is to follow the data by reading reference books related to research. In addition, a search for research journals and theses related to the object under study is also conducted.

There are 7 stages carried out in this research, namely:

A. Observation

The first stage was making observations or direct observations at the research location, namely Pondok Gede and Jati Asih districts and each of the 4 sub-districts.

B. Data Collection

Data collection is carried out to collect primary data and secondary data. The data collected by researchers includes data from observations, namely location environment data and user needs to build applications. The data collection technique used by the author in this study is in addition to observation, namely the interview method, where the researcher takes some data from the user, namely the head of the RT and RW, by asking questions, then another data collection technique is the literature study method.

C. System Requirements Analysis

The system requirements analysis is carried out when all the required data are available. The purpose of analyzing system requirements before designing is so that the requirements of the system can be identified so that the design process can be done more easily. Analyzing system requirements means analyzing what should be in the system according to the needs of system users.

D. Design System

This stage, it will be described in the form of a system requirement design which includes application architecture design, interface design, and database design based on the results of the analysis that has been done previously.

E. System Development

This stage is carried out by building a system or implementing the system design that has been carried out which includes coding programs, implementing databases using MySQL, implementing the interface using the PHP programming language.



F. Testing System

The next research stage is system testing. At this stage, black box testing is used which tests the interface functionality of the system that has been made, and also checks for errors that occur in the system.

G. Implementation System

This stage, it consists of implementing the results of planning and implementation to users where the system is used by the Bekasi City government

3. Result and Discussion

The result of this research is a slum area application that can display the recorded data which can then be used to provide information related to slum areas. So, the impact of this application is that the Bekasi city government can find out the slum area and the results of handling slum areas in an updated manner. Observation and data collection to determine the needs of system users. This stage must be done correctly so that the application is designed according to user expectations.

A. System Requirements Analysis

In the slum district application design, there are 3 functional requirements, namely RT / RW to input and update data, users to display information and admin to manage user. The following is a use case diagram of the slum application in Figure 1.

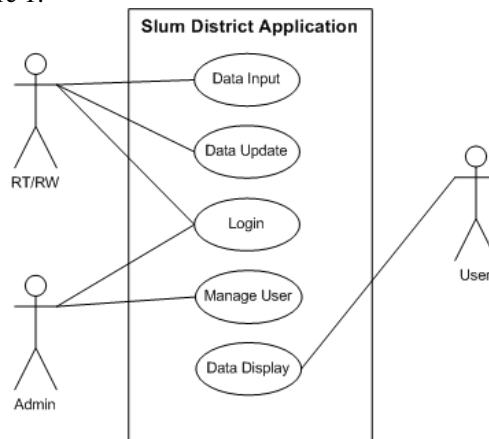


Fig 1. Use Case Diagram of Slum District Application

Figure 2 is a sequence diagram of data input and update. Users can open web-based applications and the main page will appear. For data input action by pressing the input button and then the user can fill in according to category and save data. Likewise for the data update action, the user selects the update button and changes the field value and then saves it.

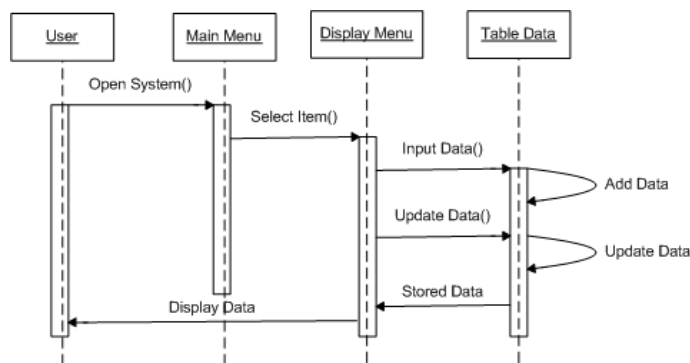


Fig 2. Sequence Diagram of Input dan Update Data

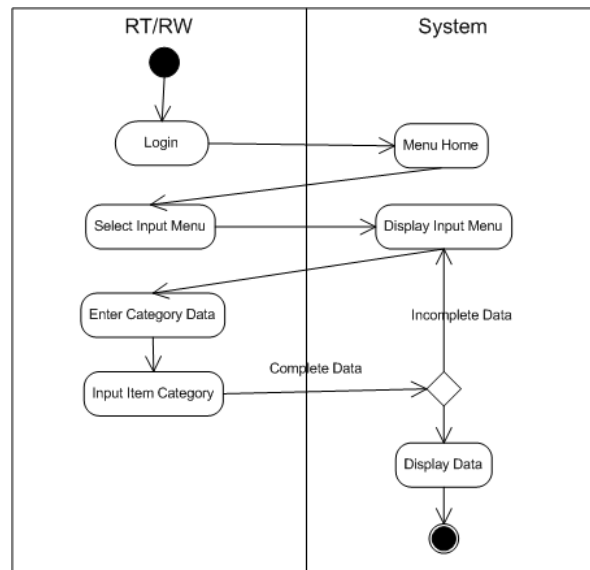


Fig 3. Activity Diagram of Data Input

Figure 3 is a diagram of the data input activity. The data input activity diagram connects RT / RW users to the system as actors who can add data to the database. The application will display the menu home and after the user has login, the input menu will be displayed. Then the user can input data according to the category, if it is not complete, it will return to the input menu and when it is complete the data is stored and will be displayed.

Class diagram shows the classes that exist from a system and their logical relationship. Classes are determined / discovered by examining objects in sequence diagrams[7]. In this application of slum district there are 10 class diagrams which can be seen in Figure 4.

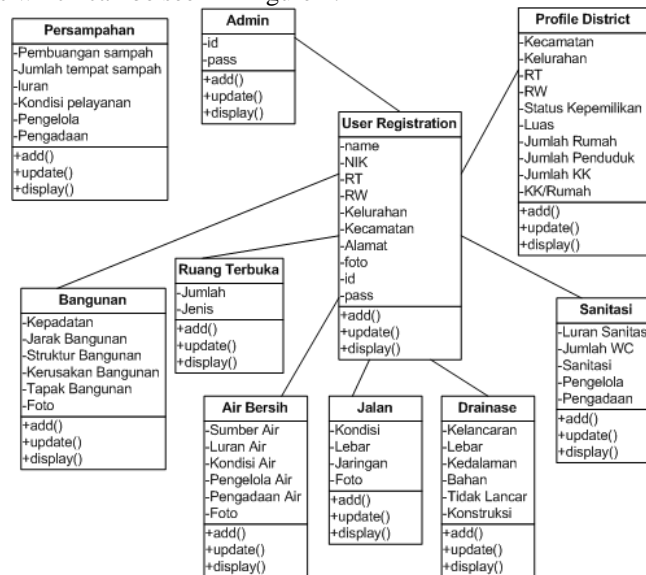


Fig 4. Class Diagram of Application of Slum District

B. System Development

This system architecture is an approach to application design and planning that focuses on users and user needs. This requires special attention to web content, business plans, usability, interaction design, information and web architectural design. For optimization, it is developed with responsive web so that it can be opened even with a device with minimal memory [8]. Based on the results of observations and studies, almost 30% of RT / RW users of communication devices are not Android-based. The database used is MySQL and application development applies the MVC concept, using the programming language PHP, javascript and HTML. System architecture can be seen in Figure 5.



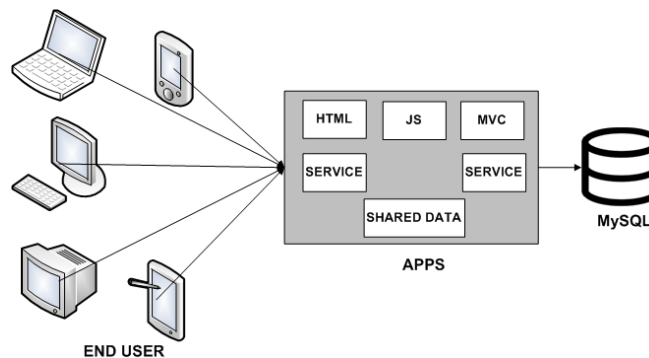


Fig 5. System Architecture of Slum District Application

C. Testing System

Testing is done to detect errors in applications that have been developed. Testing aims to evaluate application frameworks that meet application design objectives[9]. Functional testing can be seen in table 1, as admin, RT / RW and users. The test method used in the slum application is Black Box Testing. The test is carried out to test whether all functions have functioned properly according to the design results.

Table 1. Scenarios and Result Testing

Requirement	Test Scenarios	Expected Results	Result Testing
Home Menu	Users open through a browser	Display the home menu page and data display	Ok
Login	User enters username and password	If the username and password are correct it will enter the main page	Ok
Sub menu input	A list of input appears by category	The input list can be filled and stored	Ok
Sub menu update	A list of data appears by category	List data updated and saved successfully	Ok
User Registrastion	User data can be inputted with all conditions	User data can be saved	Ok

4. Conclusion

The results of developing a slum application in Bekasi City have been successful, it can be seen in the results of its function testing. The development uses the SDLC method and has gone through the stages of analysis, system design, system implementation, and system testing. The analysis and design process has been carried out well so that the system can work optimally. Where RT / RW users can input and update data with the minimum device and the recorded information can be seen by related parties. User management is easier because it is coordinated with government agencies. With the application of this slum area, it will make it easier for the government of Bekasi City to determine policies related to the distribution of assistance and development of certain priority district.

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