`

DEVELOPMENT OF NEIGHBORHOOD ASSOCIATION MANAGEMENT APPLICATION USING LOCATION BASED SERVICE AND FIREBASE CLOUD MESSAGING BASED ON ANDROID

Alwan Ammar Fauzan[1], Erick Wijaya, S.Kom., M.T.[2]

[1,2] Teknik Informatika – Universitas Komputer Indonesia
Jalan Dipatiukur 112-116 Bandung
E-mail : alwanaf@email.unikom.ac.id[1], erick.wijaya@email.unikom.ac.id[2]

ABSTRACT

Neighborhood is a public institution that is under the Rukun Warga bureaucracy that can assist people in improving fluency task of local government and rural development. The role of Chairman of RT is to help citizens in the population administration affairs such as creating a family card, birth certificates, identity cards Police Notes, and others. The RT environment of lack of media-specific information for managing RT. Since it's built an android-based application using the API technology that can take advantage of cloud firebase their messaging to send notification information sent by a panic button. and location based services know the location of the information taken from an object that is a panic button. One form of implementation of the technology is for the management of RT. The conclusion that the android mobile application built to be easily understood and in accordance with the purpose of research. To develop the system already built the necessary data coverage throughout Indonesia so that applications can be developed extensive and more listed on this application.

Keywords: Neighborhood, Android, Firebase Cloud Messanging, Firebase Cloud Messaging, Panic Button.

1. PRELIMINARY

Neighborhood is a public institution that is under the Rukun Warga bureaucracy that can assist people in improving fluency task of local government and rural development. Neighborhood headed by Chairman of RT elected by local residents. In this case the Neighborhood is a community organization fostered by the government to preserve the life of a society based on gotong royong and family and help smooth the task of the government.

As for some tasks neighborhood association already in the set that perform administrative process and presentation of information that is always accurate data collection as well as citizens, neighbors Pillars report cash money in a transparent manner, managing the environment and information security system activities within the Neighborhood residents in Pandeglang

The role of Chairman of RT is to help citizens in the population administration affairs such as creating a family card, birth certificates, identity cards Police Notes, and others. All of these things require a letter of introduction RT to be forwarded to the other party. In addition, also, the RT active role as a liaison between the community and the government in a way to communicate to all government programs. The relationship between the citizen and the head of the neighborhood near, Chairman of RT contribute to the wider interests such as listening to the aspirations of the people, know the problems of the citizens, and others.

According to sources in the Central Bureau of Statistics, Pandeglang has 35 districts, 326 village, 13 generous nature, 1,900 Rukun Warga, and 5,981 Neighborhood. In carrying out the function areas, each village is divided into several neighborhoods and each RW is divided into several RT. Total RW in Pandeglang 1,900 which includes 5,981 RT RW.

The problems that exist in the head of RT as informing the activities and report to the people who are still using paper as an administrative process which is considered as waste and increase waste paper in the environment around RT. Another problem is the difficulty of distributing

the flow and financial reporting to the citizens and the lack of information about the location of homes such as the location information is the location of the intended residents, such as housing, market, orphanages, boarding houses because there are no special media other than social media used by residents in general. It is also being experienced in sharing information about their activities to all citizens of RT.

From this environment security system (Siskamling), Chairman of RT only use the bulletin board located in Ronda Post to provide information, so scheduling and security patrol activities not so good. It felt less effective because at least people who saw the announcement in because of the busy activities of the residents and also head of the neighborhood in question itself. In addition, the administrative problems that the manufacturing process mail-owned limited time between the Chairman of the Neighborhood and residents of the Neighborhood environment in performing the making of a cause dissatisfaction of citizens with the services provided by the neighborhood association board.

This can be evidenced by the results of an online questionnaire distributed responder are 143 residents, including the Chairman of RT. There are 67 RT (47.2%) acknowledged the difficulty in collecting data of citizens. Unknown 69 chairman (48.6%) were still difficulties in managing financial data RT and 102 residents, or approximately 71.3% still do not know the financial reports RT. RT environment of security there are about 71 residents (49.7%) were still difficulties in managing patrolling activities. and about 46 residents (32.2%) still do not know the schedule of ronda 63 residents (44.1%) have not been informed of the activities of the financial environment of RT and RT cash as making payments monthly dues (expenditures and revenues) there are 84 residents, or about 58.7% do not know. Many are not aware of information about RT around Pandeglang.

With the development of technology that can be utilized Chairman of RT as a solution to overcome these problems. To improve the performance of RT optimal, required a practical technology so that the Chairman of RT no longer work manually. It dikumukakan by Statcounter globalstats, states that smartphone users in Indonesia in 2017 - 2018 as much as 90.64% using the android and is expected to increase every year. Platform on a mobile device that is being increased development and current use is Android.

Based on the above issues, then MANAGEMENT RT and still require an android-based application that can help in the management of the neighborhood of the above problems, the authors are interested in making this application in mobile devices, because these problems can best be addressed by using a mobile device. Thus, it will be made a study with the title "APPLICATION DEVELOPMENT MANAGEMENT ARTICLE OF NEIGHBORS USING LOCATION BASED SERVICE AND FIREBASE CLOUD MESSAGING BASED ANDROID" as an application that can help users between the Neighborhood and Residents to manage and deliver information such as administrative processes and presentation of information that is always accurate as well as the collection of citizens, reports cash Rukun neighbors, manage security system environment,

1.1 Purpose and Objective

The purpose of the writing of this study is to establish a management system of neighborhood environment of the local by using technology from the Google API that location based services and firebase cloud-based messaging android in order to facilitate the neighborhood association in conducting administrative reports, up to information and activities organized by the District Government Pandeglang. While the purpose of this study is as follows:

1. Chairman of the Neighborhood help in making the administrative process and presentation of information will be accurate and always uptodateMasih difficulty of the public get information about the health of the eye, causing a lack of knowledge.
2. Helping with the citizens to know the Neighborhood cash finance in order to know the position of the Neighborhood cash money in a transparent manner either income or expenses in detail
3. Allows citizens to find out the desired location, such as the location of the boarding house, the orphanage, and others that exist around the local neighborhood association environment by using the Google Maps API technology or Location Based Service
4. Chairman of the Neighborhood help manage environment security by using a smartphone that can be better managed and use the Panic Button and Firebase Cloud Messaging if

something happens to the local environment so that citizens can find out quickly and realtime

2. ISI RESEARCH

2.1 Research methods

Software development method used is perangakat waterfall paradigm. that there are various processes as follows:
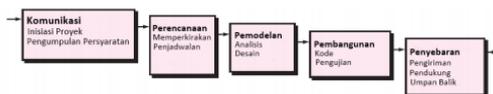

Figure 1 Cycle Model Waterfall

1. Communication

   At this stage, needs analysis related to the mobility of citizens and RT in Pandeglang with the many administrative and activities in Pandeglang is not accompanied by a neighborhood association management information is not effective enough. And a stage for collecting data by performing a questionnaire to get the facts.
2. plan

   This phase will continue the communication process, from data collection and analysis results obtained from a user requirement documents or documents relating to the user keiningan in making the application and planning of manufacture.

3. modeling

   During this stage, be the implementation of the requirement of making application in the form of presentation of the interface as well as a series of application architecture design for front-end applications to provide informative information to users of the application of the results pengelolahan back-end systems.
4. Development

   At this stage, the application design is implemented in the form of a code or a series of program unit. Implementing at this stage using firebase as a back-end system built and Android Studio as the front-end.
5. spread

   After analysis, modeling, and coding the application can already be used. At this stage we got the result and also feedback from the use of applications that have been designed.

2.2 Problem analysis

Analysis of the problem is the detail of the issues before the application is built with this application is that development can help resolve the problem. Here is a problem that is based on the analysis conducted by researchers:

1. Difficult to citizens seeking information on the activities, and report information to people because they use the paper as an administrative process which is considered as waste and waste paper adds to the environment around RT.
2. The difficulty of distributing the flow and financial reporting to citizens because there are no special media other than social media used by the citizens in general because of ignorance of citizens in knowing the financial RT.
3. Head of RT only use the notice board located in Ronda Post to provide information, so scheduling and security patrol activities not so good. It felt less effective because at least people who saw the announcement in because of the busy activities of the residents and also head of the neighborhood in question itself.

2.3 Built Systems Analysis

1. Analysis system to be built to do to get a complete picture of the system to be built and the results will be described in the form of Flowmap according to the application.

Figure 2.1 Flow System To Be Built

2.4 Analysis technology used

This analysis aims to technology that will be used in the development of this system. The technology used on systems that are being built are:

1. Google Maps: Google Maps is a location-based service technology that can display the geographical position of the existence of a particular object or to identify a person's location so that users get information about a location of a specific location with the help of GPS (Global Positioning System).

2. FCM (Firebase Cloud Messaging): Firebase Cloud Messaging (FCM) is Baas (Backend as a Service), which is now owned by Google. Firebase this is a solution offered by Google

for Mobile Apps Developer job easier. With the Firebase, apps developers can focus on developing applications without having to give a great effort for the affairs of the backend. How to use the FCM is sending a push notification to another device so that it can use the FCM registration token of the device.

2.5 System Architecture Analysis

Architecture analysis aims to identify the system architecture to be built. Here is a system architecture used in the development of this application.

Figure 2.2 System Architecture

Applications do use FCM for the location, then use Firebase as Real Time DB. The database is used to store all the data used is MySQL. Web services and databases deployed to a Virtual Machine in the Google Cloud Platform.

2.6 Use Case Diagram

Use case diagrams are used to describe the relations between the actor with the activity on the system. Use case diagrams explain the process of what is happening on the system and how it relates to the actors. Use case diagrams in this application can be seen in the following figure:

Figure 2.6 Use Case Diagram

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2.7 Activity Diagram

Activity Diagram is a visual form of workflow includes activities and actions, which can also contain options, repetition, and concurrency.
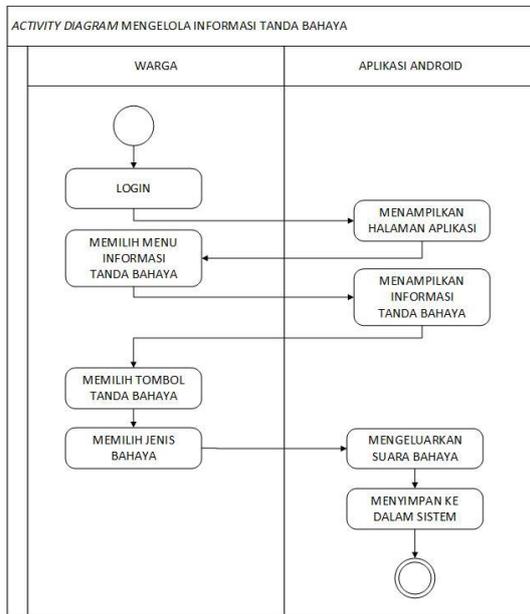

Figure 2.7 Activity Diagram Danger Signs

2.8 Class Diagram

Class diagram illustrates the classes that will be created to build the system. Class diagram has attributes and methods. Below is the class diagram in an application that is built
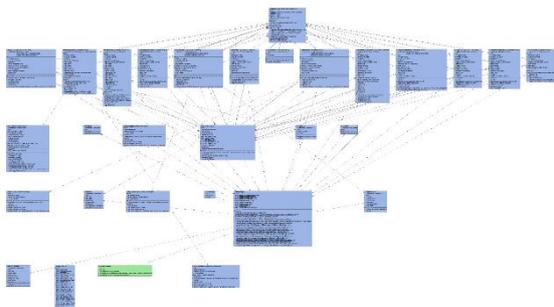

Figure 2.8 Class Diagram

2.9 sequence Diagram

Sequence Diagram is an overview of the work flow interaction between each object in each use case. This interaction is by sending data between objects that interact.
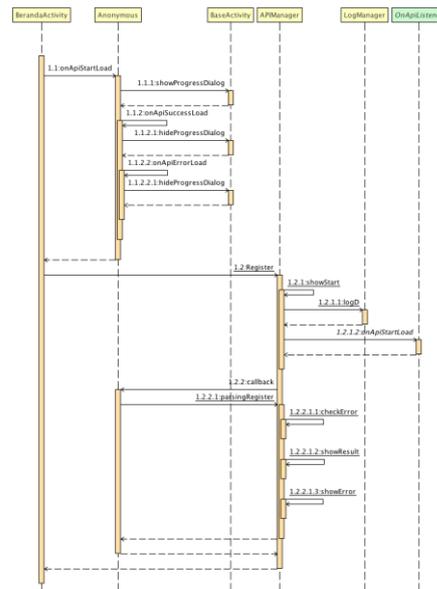

Figure 2.9 Sequence Diagram Send warning

2.10 Functional Application Testing Results

In the present study the functional testing of applications which we did using blackbox. Blackbox testing using the method. Here are the functional testing of applications using blackbox method in this study.

1. Test Result Information danger signs

Table 2.3 Test Result Information danger signs

No.	Scenario	Expected results	Observation	Conclusion
1	Date: 25-01-2019 Info: accidents Description: 08.00	entered into the list of alarms	Data has been entered into the database	Be accepted
2	Date: 25-01-2019 Info: accidents Description: 08.00	provide information message "Complete Data	Data are incomplete, will not be entered into the database	Rejected

2.11 Beta Testing

Beta testing is testing that can be done to assess the details of an application. This beta test is part of acceptance testing. This test can be conducted to determine the response of users to the applications that are built in order to assess the extent to which users can feel the benefits.

2.12 Acceptance Testing Results

Acceptance testing is done by distributing questionnaires to the respondents who have tried the application is already built. This questionnaire has raised questions with answers. There are 5 pieces of selection which has a Likert scale of 1 to 5. Here is the detail of Likert scale:

Table 2.4 Scale *Likert*

answer	Score
very aware	5
knowing	4
Doubtful	3
Do not know	2
Very Do not know	1

a. Calculate the maximum amount criterion value
- Total Rate = 5,
- Number of Respondents = 50,

Kriterium = Jumlah Penilaian × Jumlah Responden

Then the maximum value of the criterion is 5 x 50 = 250

b. Counting the number of answers from respondents as a percentage

Formula:

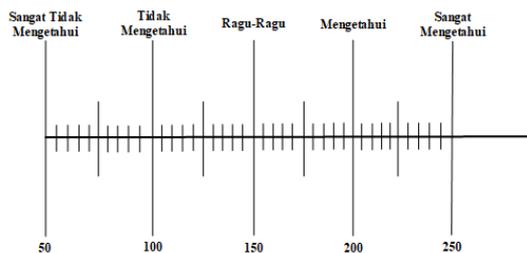$$P = \frac{\text{Total nilai}}{\text{Skor ideal}} \times 100\%$$

Information:
P = percentage value sought
Total score = number of frequency multiplied by the value that the set answers
Score Ideal = highest score performed by the number of samples

c. Scores have been obtained are then put into the form of rating scale intervals as follows:

Interval Figure 2.10 Rating Scale

The following are the results of the calculation of the percentage of each answer on the questionnaire:

Table 1 Questionnaire Questionnaire Testing

No.	Question
1	Does this application can help you in providing information on the Neighborhood?
2	Does this application aware scheduling information security environment?
3	Does this application aware scheduling information security environment?
4	Is this application to find out information activities in the RT?
5	Is this app helps you manage the creation of patrolling?
6	Does this application know RT financial statements in detail?
7	Is this application to know the collection of citizens?
8	With the android application development RT management can facilitate you?

2.12 Conclusion Testing Results

Based on test results from Blackbox method that has been done, that the output of the application that was built is in conformity with the scenario and the expected application functionality, would also based on the testing of applications that have been built already passed the blackbox testing. The application acceptance testing has been done to evaluate the response of users to the applications that are built. Here are the results rekaptulasi acceptance test results:

No.	Question	Score	Percentage	Decision
1	Does this application can help you in providing information on the Neighborhood?	228	91.2%	Approaching Very aware
2	Does this application aware	240	96%	Approaching Very

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	scheduling information security environment?			megetah ui
3	Is this application to find out information activities in the RT?	228	91.2 %	Approac hing very aware
4	Does this application in paying dues, the citizens know the flow of income and expenditure budget?	240	96%	Approac hing very aware
5	Is this app helps you manage the creation of patrolling?	224	89.6 %	approach ing know
6	Does this application know RT financial statements in detail?	245	98%	Approac hing very aware
7	Is this application to know the collection of citizens?	245	98%	Approac hing very aware
8	With the android application development RT management can facilitate you?	246	98.4 %	Approac hing very aware

3 COVER

3.1 Conclusion

The conclusion of a study can be taken after a process of implementation and testing. Here are some points that can be concluded in a study based on the results of the testing that has been done:

1. Applications E-RT has been to facilitate the Chairman of the Neighborhood in managing RT becomes more simple and efficient, so that the administrative process and presentation of the information to be accurate and up to date.

2. E-RT applications already can help people to know the Neighborhood cash finance in order to know the position of the Neighborhood cash in either income or expenditure transaparan in detail
3. Applications E-RT has been able to help people to find the desired location, such as the location of the boarding house, the orphanage, and others that exist around the neighborhood Neighborhood locals have become more systematic and efficient, making it easier for citizens to find a place that was required.
4. Applications E-RT was able to help the Chair Neighborhood and Residents in managing the security environment more quickly and efficiently, thus minimizing the evil that exists in the environment RT.

3.2 Suggestion

In the process of testing a user feel things can still be improved in applications that have been built. Suggestions in this study are based on questionnaire responses testing has been done. The suggestions for application development are as follows:

1. Added ability to get integrated applications to the agency in terms of increasing the panic button features such as integration for security, fire, natural disasters and accidents.
2. Adding a location to be utilized coverage throughout the territory of Indonesia.

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