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Geographic Information System of Farmer Group and Area in Samarinda City Web-Based

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ABSTRACT

Presenting geographic data information by using a GIS (Geographical Information System), GIS is an organized series of hardware, software, geographic data, and personnel designed to efficiently obtain, store, update, manipulate, analyze, and display all forms of geographically referenced information. The difficulty of finding the location of the Farmers Group the Department of Agriculture of the City of Samarinda, it is very important to know the location, especially when the service will hold agricultural counseling for faster delivery of information, therefore an appropriate use of technology is needed to provide accurate information. The purpose of this study is to provide convenience to users in finding locations, finding routes to locations, and other information about farmer groups and their lands in the city of Samarinda. Based on the case studies in this study, it can be concluded that the author will build a web-based geographic information system for mapping farmer groups and their lands in the city of Samarinda.

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1. INTRODUCTION

Samarinda is the capital city of East Kalimantan Province with a fairly large area of 718 km² with hilly geographical conditions with altitudes varying from 10 to 200 meters above sea level. Farmer's Group is a collection of farmers/breeders/planters formed on the basis of common interests, common environmental conditions (social, economic, resource) and familiarity to improve and develop members' businesses. Farmer groups can also be interpreted as non-formal organizations in rural areas that are grown and developed "from, by and for farmers".

The Farmers Group was formed based on the vision that modern agriculture does not always use agricultural machines, but also needs an economic institution that is capable of touching and driving the economy in the Village's larger.

The problem encountered in the field is the difficulty of finding the location of the Farmer Group by the service, it is very important to know the location, especially when the Office will hold agricultural counseling for faster delivery of information, therefore it is necessary to use the right technology to provide accurate information. Currently, web-based geographic information system applications have become a necessity. Many activities in the field use GPS, laptops, and geographic information system software to perform real-time mapping. With the development of information technology, users or information seekers can obtain mapping information online via an Android smartphone or through a computer or laptop that is connected to the internet, not only faster but also more efficiently.

In this modern and sophisticated era, technology has become a part of everyday life. Almost everything that

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is usually done manually computerized to be more efficient and effective in the process, as well as when you want to find information all the desired information can be searched through computers ranging from simple information to complex information, including information about geography today to get information about geography can be obtained through internet media . Because with the internet, information is not limited by space and time. By using the internet, the process of information obtained will be easier, faster and more accurate.

One way of presenting geographic data information is by using a GIS (Geographical Information System), GIS is an organized series of hardware, software, geographic data and personnel designed to efficiently obtain, store, update, manipulate, analyze, and display all forms of geographically referenced information (Adil, 2017).

According to Nasih (2016) from the Indonesian College of Informatics & Computers (STIKI) Malang from the research he did entitled Geographic Information System for Agricultural Spatial Planning in Kepanjen District Web-Based. The purpose of this study is where this information system is able to provide the public with information about agricultural information in Kepanjen District based on geography. The system offered can display a map of agricultural land, a map of barns, a map of farmer groups. Users can filter agricultural land, barns, and farmer group maps based on each village in Kepanjen District. In addition, this system can display reports on the availability of food and agricultural superior products in the form of a ready-to-print file.

Then according to Ariyani (2016) from Andalas University from a research she did entitled Development of a Web-Based Geographic Information System for Farmers Groups in Banuhampu District. In this journal, the aim is that a web-based geographic information system for farmer groups in Banuhampu District can assist extension workers in searching for group locations. The application was built using the waterfall method including the stages of analysis, design, coding, and testing. From the analysis stage, it was found that the functional requirements of the system include determining the user's position, searching by name, nationality, group type, group class, leading commodity, leading sector, national chart based on leading sector and route to farmer group location, sending market price information and viewing shipping history market price information to farmer groups.

Three students, namely Ariyani et al. (2017) from the Department of Information Systems, Faculty of Information Technology, Andalas University from a study entitled Searching for Farmers' Groups Using Geographic Information Systems for Extension Officers in Agam Regency. The purpose of this study is an information system based on the location of farmer groups to be a solution for extension workers in finding information for each existing farmer group. Software is built from a series of sequential processes that include the stages of analysis, design, coding, and testing. The analysis found that the functional requirements of the system were formulated with the ability to search based on the name of the farmer group, nationality, type of group and superior commodity and display the route to the location of the farmer group.

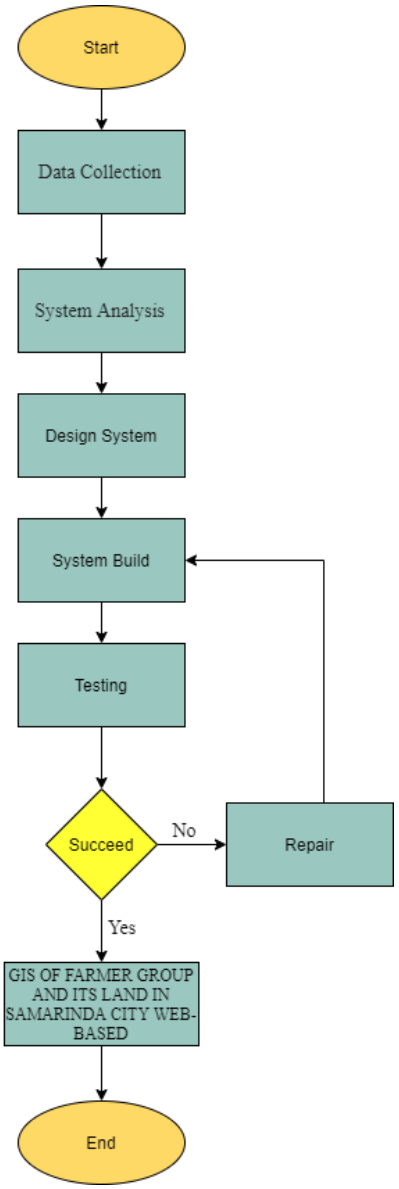
Three years ago, a study was conducted by Pratama (2017) from the Faculty of Engineering, Department of Informatics, University of Muhammadiyah Ponorogo, entitled Designing a Geographic Information System for Farmers' Groups in Ponorogo Regency Web-Based. The purpose of this study is that this system is expected to be a means of grouping farmer groups based on the results of their commodities. With the increase in internet users in Ponorogo district, the authors create a geographic information system for farmer groups based on a Georaphic Information System (GIS) and also display the names of farmer groups and commodities in the farmer groups. Making the location of farmer groups is very important because it can provide information to the community.

Students from STMIK Ichsan Gorontalo have also conducted research. Ahmad (2018) entitled Mapping the Location of Combined Farmer Groups at the Gorontalo Provincial Agriculture Service. The purpose of this journal is to facilitate the search for Gapoktan locations that will be provided with agricultural assistance and counseling in the Gorontalo Province and to design an android-based Gapoktan location mapping at the Gorontalo Provincial Agriculture Office. Related to Gapoktan in more detail. Based on whitebox testing, the appropriate results are obtained and the application can run well on several types of android phones.

2. METHOD

2.1. Research Procedure

Stages of the research procedure using the waterfall model. This model takes a systematic or sequential approach in building the flow of research procedures. The following is a flow chart of this research procedure shown in Picture 1.



Picture 1. Research Procedure

2.2. System Design

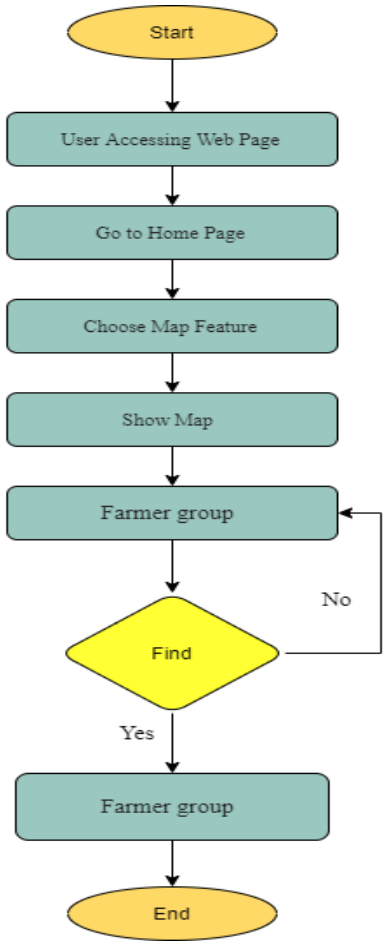
Design a system whose contents are an operating step in the data processing process and procedures to support system operations.

2.2.1. Flowchart

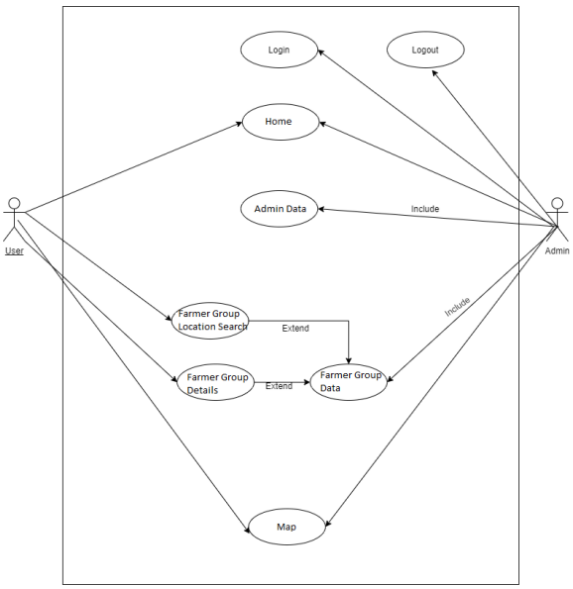
The process design is described by a flowchart, it can be seen in Picture 2.

2.2.2. Usecase Diagram

The process design is described by Usecase Diagram, Picture 3.



Picture 2. Flowchart Application System



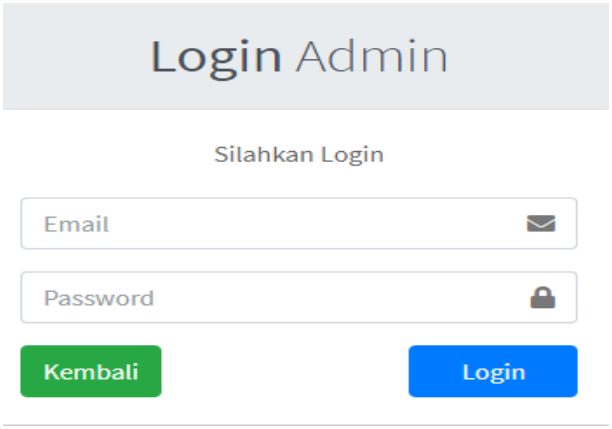
Picture 3. Usecase Diagram Application

3. RESULT AND DISCUSSION

The results of making this application are as follows:

a) Login View

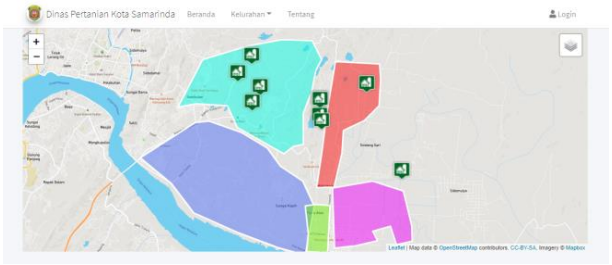
On the page login displays a form for the Admin to use the login web page, it can be seen in Picture 4.



Picture 4. Login View

b) Home View

On the home page, several pages can be used by the people and admin, which can be seen in Picture 5.



Picture 5. Home View

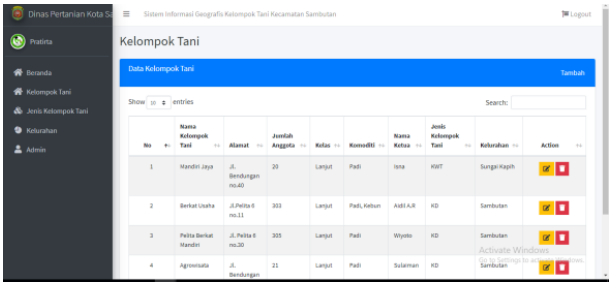
c) Admin Menu Display

On the Admin menu page displays information related to data from farmer groups, village data, type data and other Admin data, can be seen in Picture 6.

Picture 6. Admin Menu Display

d) Farmer Group Menu Display

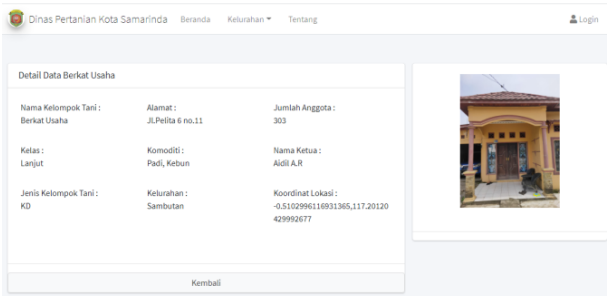
On the Farmer Group menu page, it contains functions to Add Farmer Group data, Edit Farmer Group data, and Delete Farmer Group data, can be seen in Picture 7.



Picture 7. Farmer Group Menu Display

e) Farmer Group Detail View

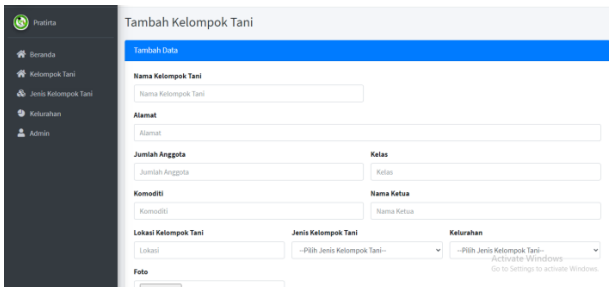
On the detail page of the farmer group containing the complete data of the farmer group, it can be seen in Picture 8.



Picture 8. Farmer Group Detail View

f) Add Farmer Group View

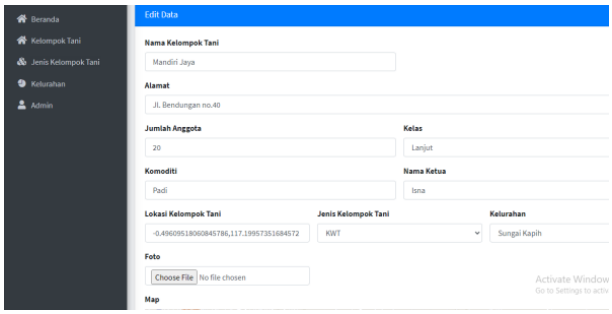
On the Add Farmer Group page displays a form to add data to the Farmer Group, it can be seen in Picture 9.



Picture 9. 3.1.6. Add Farmer Group View

g) Farmer Group Edit View

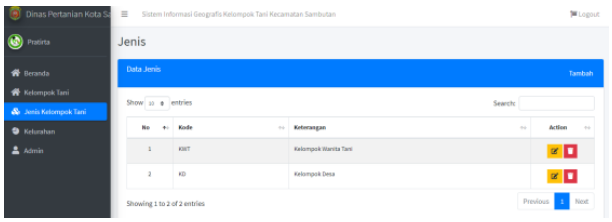
On the Edit View of the Farmer Group displays a form to change the data of the Farmer Group, it can be seen in Picture 10.



Picture 10. Farmer Group Edit View

h) Menu Display Types of Farmers Groups

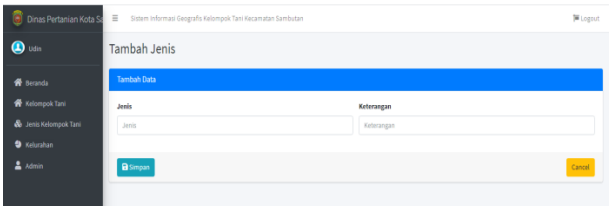
In the menu of types of farmer groups displays a description of the type/code of farmer groups, can be seen in Picture 11.



Picture 11. Menu Display Types of Farmers Group

i) Display of Add Types of Farmers Groups

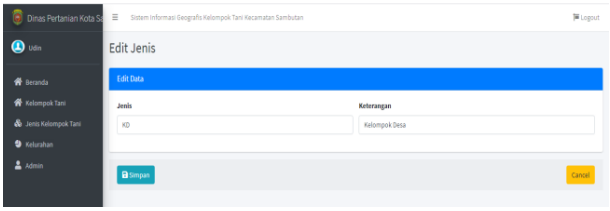
This page displays a form to add data on types of farmer groups, which can be seen in Picture 12.



Picture 12. Display of Add Types of Farmers Groups

j) Display of Add Types of Farmers Groups

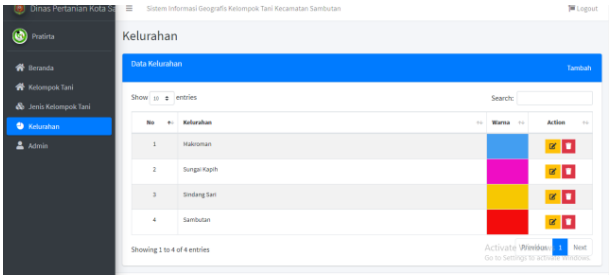
On this page displays the form to change the type of farmer groups, can be seen in Picture 13.



Picture 13. View Edit Types of Farmers Groups

k) Village Menu Display

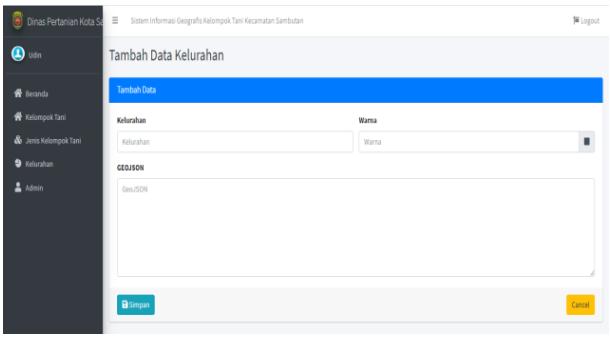
On this page to display village data, it can be seen in Picture 14.



Picture 14. Village Menu Display

l) Display Add Village

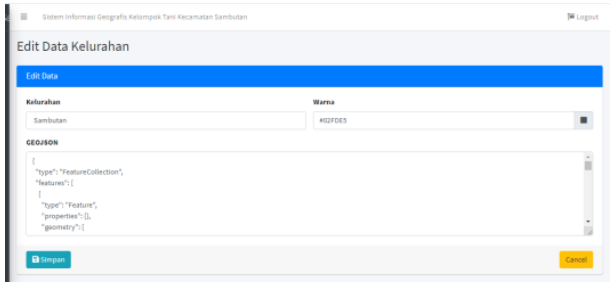
On this page displays a form to add village data, can be seen in Picture 15.



Picture 15. Display Add Village

m) Village Edit View

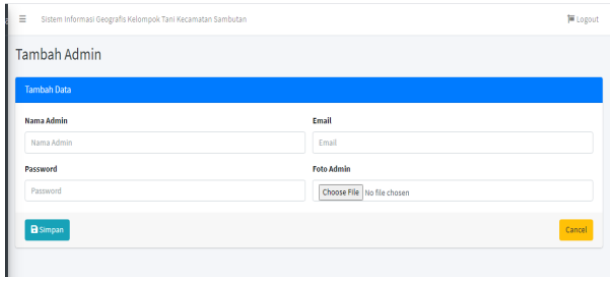
On this page displays a form to change village data, it can be seen in Picture 16.



Picture 16. Village Edit View

n) Add Admin Display

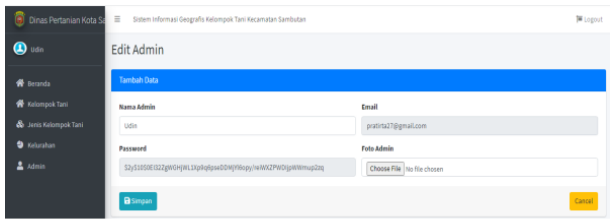
On this page displays a form to add a new admin, can be seen in Picture 17.



Picture 17. Add Admin Display

o) Edit Admin Display

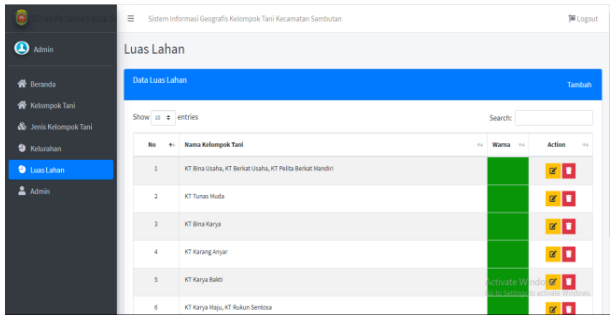
On this page displays a form to change Admin data, can be seen in Picture 18.



Picture 18. Edit Admin Display

p) Display of Land Area

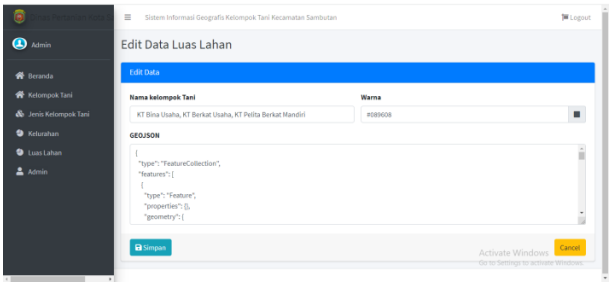
On this page displays a form to display data on land area of farmer groups, can be seen in Picture 19.



Picture 19. Display of Land Area

q) View Edit Land Area

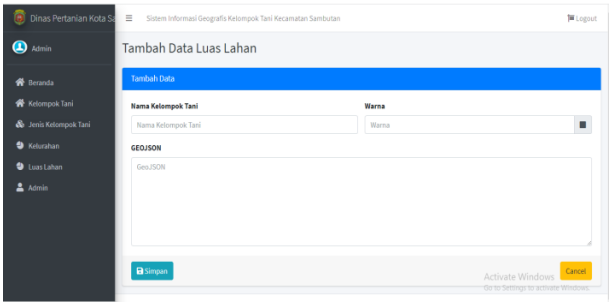
On this page displays a form to change Land Area data, can be seen in Picture 20.



Picture 20. View Edit Land Area

r) Display of Adding Land Area

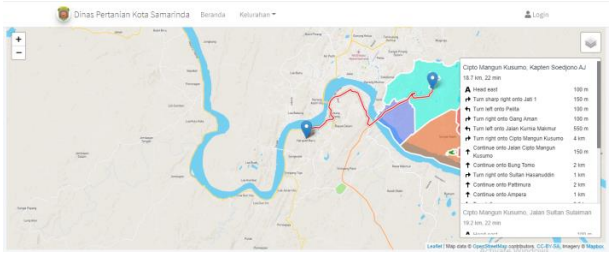
This page displays a form to add data on Land Area, it can be seen in Picture 21.



Picture 21. Display of Adding Land Area

s) Route Menu Display

On this page displays the closest route to the desired location of the farmer group, which can be seen in Picture 22.



Picture 22. Route Menu Display

4. CONCLUSION

Based on the results of the review and implementation that has been carried out, it can be concluded that the application of a geographic information system for farmer groups and their land in the city of Samarinda-based Web can be designed and built so that it is easier and more efficient for employees of the agricultural office of the city of Samarinda to work and can make it easier for users to see related details. farmer group information and find the closest route to the location of the farmer group.

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