Design of Mobile-Based Geographic Information System Potential of Agricultural Land in Sub-District Completed

Putra Malem Barus
STMIK Kaputama Binjai, Indonesia

*Corresponding Author
Email : putrabarus236@gmail.com

Abstract
Communication The rapid development of information technology provides tremendous benefits to the community. For this reason, an application is needed to make it easier for people to get information. Various techniques, methods, and new approaches are implemented to improve and develop technology in an effort to obtain fast, precise, and accurate geographic information. A system must have the ability so that the system can be said to be useful for its users. A GIS must have at least four capabilities, namely the ability to manipulate attributes, and the ability to display input and output using images. Mobile applications have a user interface with a unique interaction mechanism provided by the mobile platform. Mobile applications have also been specifically designed for mobile platforms (eg IOS, Android, or Windows Mobile).

Keywords: GIS, Mobile, Technology

INTRODUCTION

Completed sub-district is one of the twenty-three sub-districts in Langkat Regency which is located at 30 30' 30" - 30 42' 00" North Latitude and 980 23' 05" - 980 27' 47" East Longitude with an area of 167, 73 km2. Finished sub-district has 81% of the total area of sub-district agricultural land. Completed sub-district has 14 villages/kelurahan and 113 neighborhoods and hamlets. The population with a livelihood in agriculture reaches 44.9% of the total working population, which is 13,769 (BPS Langkat, 2019).

Analysis of land suitability for food crop agriculture is carried out for mapping land resources and evaluating land that can be designated as sustainable food agricultural land through Langkat Regency government policies. This is done to avoid land use conflicts while protecting agricultural land from conversion.

Geographic information system is a system capable of providing spatially referenced data or geographic coordinates or others. GIS can also combine data, perform data analysis, organize data which will eventually produce output that can be used as a reference in making decisions on problems related to geographic information systems. Geographic information system (GIS) has become one of the means for delivering information. Especially for information - information related to spatial data. Where there have been many GIS currently that have been developed by governments in many regions in Indonesia, for example for mapping agricultural production in the form of visual mapping mapping.

To strengthen the background of the problem, the authors include journals related to Agricultural Land studied by Nikmah Rahmawati with the title Geographic Information System for Mapping and Analysis of Agricultural Land in Pekalongan Regency. . This system was created because there is no system that handles land mapping and agricultural land analysis that can be used to obtain information about mapping and analysis of agricultural land in Pekalongan Regency. .

RESEARCH METHODS

For this research method the author uses two The way to collect the thesis data can be selected, namely:

1. Library Research Research

    Library research is a research process that the author does by studying various forms of written materials, both in the form of books, articles on the internet, documents, other scientific works including magazines.

2. Field Research (Field Research)

    Field research is a research process carried out directly on the object of study itself which is the main problem.

In this field research the author collects data through:

a. Interview (Interview)

    The author did a question and answer with the staff of the Department of Agriculture Office Employees to be completed to collect data.

b. Observation (Orientation)

    The author observes the data retrieval system manually by opening a report on the report given by the District Agriculture Office.

c. Orientation (Orientation)

    In this method, the Penuls participate directly working on the data collection that is done manually.

With the design above, the designed database contains tables of each relation. The structure of the database tables consists of the following:

No Column Name Type Size Description

1. *id_admin Int 10 Admin code / Primary Key
2. Admin_Name Varchar 20 Admin Name
3. User_admin Varchar 20 Username Admin
4. Password_Admin Varchar 10 Password Admin

No Column Name Type Size Description

1. *id_user Varchar 8 User code / Primary Key
2. Password Varchar 30 Username

No Column Name Type Size Description

1. * id_kelurahan Varchar 10 Village code /Primary Key
2. Village_name Varchar 20 Village name

RESULTS AND DISCUSSION

Analysis And Design

Based on Figure 1. it can be explained that there are several stages used in making the application program for Mobile-Based Geographic Information System Design for Potential Agricultural Land in the Finished District, namely as follows:

1. Preparation

   This stage is the initial activity, namely by determining the background of the problem and then formulating the problem, then given the boundaries of the problem that will be focused on in the preparation of this research and determining the objectives and benefits of carrying out the research.

2. Theory Study

   At this stage, a theoretical study of the existing problems will be carried out. The study was conducted to determine the concepts used in the study.

3. Data Collection

   This stage is intended to collect supporting data obtained from experts, books, documents, research reports, and information obtained from the internet.

4. Data Analysis and Data Processing

   At this stage, analysis and processing of supporting data that has been obtained in the previous stage will be carried out.

5. Testing and Implementation

   At this stage will be testing the data variables and data implementation as well as the preparation of system programs. This stage is based on the results of the previous data analysis.

6. Final Stage

   In the final stage of designing this decision support system, conclusions and suggestions will be discussed for further program development.

Use Case Diagrams

     use case is a function of a system, so that the user or application can understand the application to be built. The use case more precisely describes the workflow that will occur between the user and the system from the beginning of the system creation to the end.
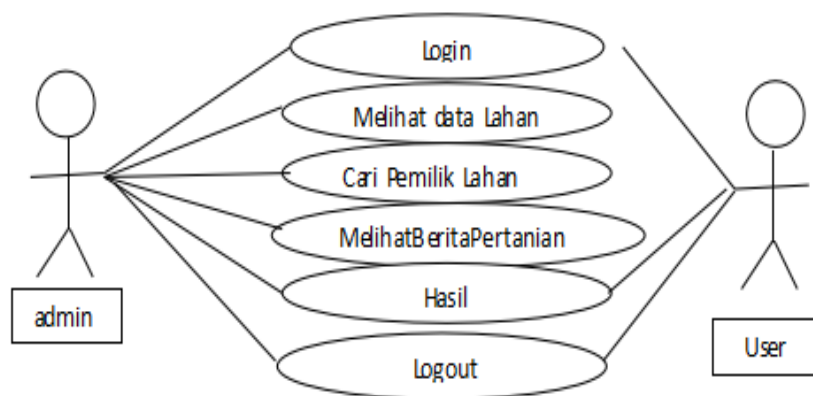

Figure 1. Use Case Diagram

Design Activity Diagrams

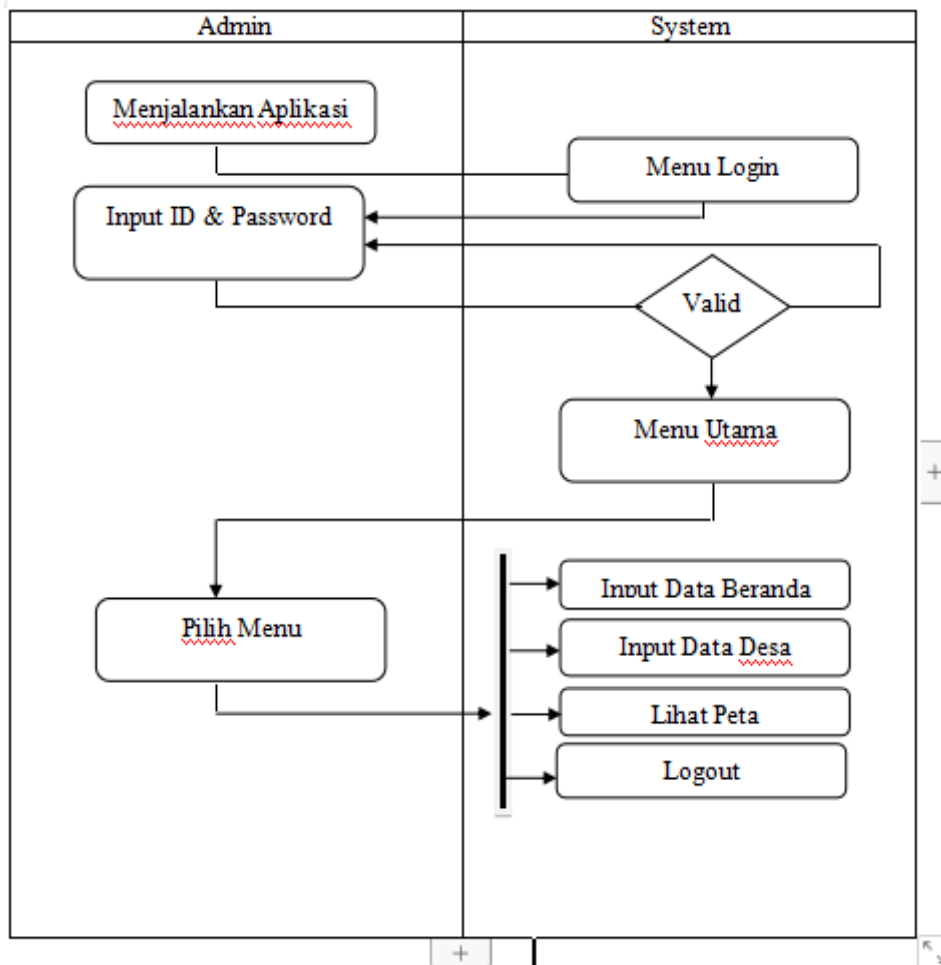Activity Diagram is a diagram that describes the activities of the system not the actors.

Figure 2. Activity Diagram Design

Bandwidth Management Display Using SpeedTest

The test process is carried out using the Speedtest.net website in order to get the Download and Upload values according to the configuration that has been done previously.
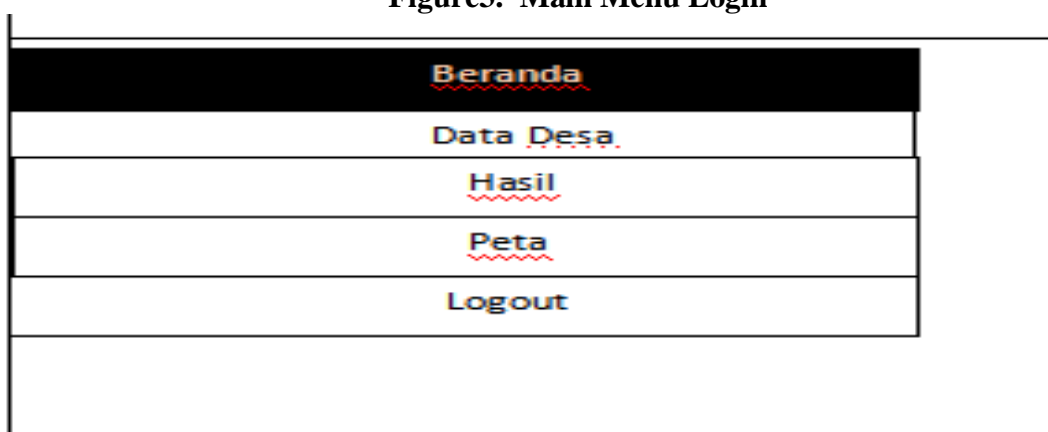
Figure3. Main Menu Login

Figure 4. Main Menu Form Design

CONCLUSION

Based on the discussion and evaluation of the previous chapter, the following conclusions can be drawn:

1. With this application, information about agricultural land in the Finished District can be accessed anywhere using the internet network.
2. This GIS Mobile application can be opened on Android-based mobile devices.
3. Besides being able to view data about agricultural land, this application can also produce other information related to plants

REFERENCES

Al-mahalli, Imam Jalaluddin, Translation of Jalalain's Tafsir Following Asbabun Nuzuul volume 1, Bandung, 2006.

Aslianti, Geographic Information System Application for Cultural and Historical Tourism of the City

Makassar Web Based. Undergraduate Thesis, Faculty of Science and Technology, Alauddin State Islamic University, Makassar, 2011.

Budiyanto, Eko, Geographic Information System Using Arcview GIS, Publisher: Andi, Yogyakarta, 2002.

----------------,Geographic information system with Arcview GIS,Publisher :

Andi, Yogyakarta, 2010. Ministry of Religion of the Republic of Indonesia (2007), the Tajweed Qur'an and its Translation. Publisher PT. Sygma Examedia Arkanlema. Bandung

Febrianto, Adi, "Interpretation of Spot 5 Satellite Imagery for Land Use Mapping West Semarang District, Semarang City," http://digilib.unnes.ac.id (20 June 2010).