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WEBGIS LOCATION OF ODP, PDP, POSITIVE AND DEATH STATUS DUE TO COVID-19 IN ASAHAN REGENCY

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ABSTRACT

Covid-19 is a virus that is currently spreading throughout the world including in Indonesia. Many ways have been done by the government so that victims due to Covid-19 do not continue to grow. In Asahan Regency, there have been several victims from Covid-19, actions and treatments have been taken. However, detailed data and information regarding the location of the population affected by Covid-19 are still not effective and complete. As technology develops, a Geographic Information System appears that can store data and show information about the location of a place. For this reason, a webgis of ODP, PDP, Positive and Death status of Covid-19 in Asahan District was made to help collect data and provide information to the stakeholders regarding the information on the location of people affected by Covid-19 in Asahan Regency.

INTRODUCTION

Covid-19 first occurred in December 2019 in Wuhan City, Hubei Province, China. It is estimated that the origin of pneumonia cases originated from the cattle market in the city [1]. Since the first case in Wuhan city, there has been a surge of similar cases in other provinces in China every day and peaked between January and February. This case continues to spread to various countries in the world. This case was first reported in Indonesia on March 2 2020 with two cases [1]. This infectious disease is caused by the SARS-Cov-2 virus [2]. Covid-19 is a round virus and has a crown that attacks the respiratory system in humans [3]. Until the beginning of June 2020, the number of victims of the Covid-19 virus reached 7,193,438 cases with a death toll reaching 408,613 people worldwide [4]. In Indonesia the number of Covid-19 patients reached 32,033 cases with a mortality rate of 1,883 people [5]. Whereas in Asahan Regency the number is 6 cases with 1 person died [6]. According to data in 2015, the population of Asahan Regency is approximately 712,684 inhabitants [7]. Patient status in this study was divided into ODP, PDP, positive, and died.

ODP (Insider Monitoring) is a person who has a fever ≥38 ℃ or has a respiratory system disorder and has a history of travel from the affected area. PDP (Patient Under Supervision) is a person who has a fever ≥38 ℃ or has a respiratory system disorder and has a history of contact with positive patients with Covid-19.

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Positive is a person who is declared to have Covid-19 disease based on test results, such as Rapid Test, PCR, and TCM. Death status is a patient who died from positive Covid-19 [8]. Splashes of saliva (droplets) spread the virus very quickly [9]. According to WHO, elderly people are very susceptible to Covid-19[10]

A database is a collection of data that has logical and well organized relations in files or tables. The files or tables are stored on electronic storage media [11]. The database can be used on the GIS Web as a means of storing geographical information of a location.

Geographic Information System (GIS) is a system designed to capture, store, manipulate, analyze, organize, and display all types of geographic data [12]. By using a web-base, making maps more interactive, so that geospatial data and information can be disseminated [13]. That is, WebGIS can provide information about the world of health which is displayed geospatial [14].

For this reason, it is hoped that this Web-based GIS can help the government and related institutions such as the Covid-19 Task Force of Asahan Regency to collect data on the locations of the people affected by Covid-19 in Asahan District.

METHOD

The basic function of a Geography Information System is to collect data, verify data, manage data, process data, analyze data, and visualize data [15]. The research method used in this study is a quantitative research method, with the aim of knowing the number and location of objects.

- Interview
  Namely data collection techniques by way of question and answer directly with the Covid-19 Task Force Asahan Regency.
- Observation
  Data collection techniques by making observations or coming directly to the study site, especially to record address data or location coordinates.
- Documentation
  Namely the stages of making a report of the data that has been obtained after conducting research in the field.
- System Design
  The design of this system is assisted by UML which is used for diagramming. UML includes usecase diagrams, activity diagrams, sequence diagrams.
- System Implementation and Testing
  Implementation is the application of a system that has been previously designed. Before being used by the user of this system must be tested in advance to reduce the risk of fatal errors when used by users who access this website.

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RESULT AND DISCUSSION

To help in system development. This WebGIS was developed using several UML.

- Usecase Diagram

This diagram illustrates the relationship between one or more actors with the geographic information system that will be created. Usecases must be able to describe the sequence of actors that produce measurable values [16]. The form of the usecase diagram is as follows:

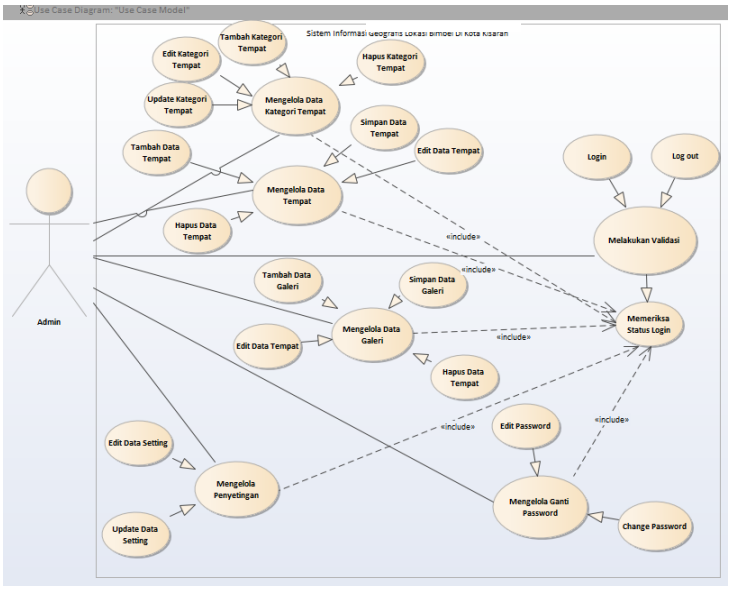

Image 1. Usecase Diagram Admin

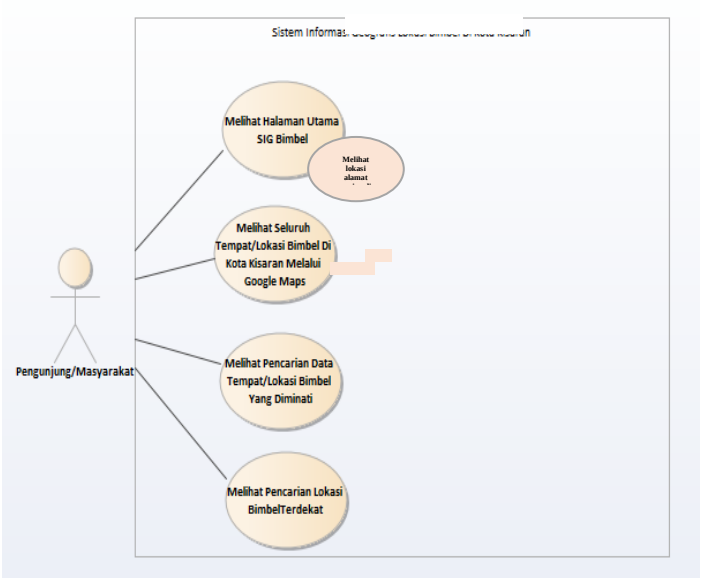

Image 2. Usecase Diagram User

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Actors in this system are defined into two actors namely admin and user (government / agency). Admin can login to the system and have access rights to perform data processing operations relating to information on the location of residents who suspect, positive, or died due to Covid-19 in Asahan Regency. While the user is a government official or agency person who can see and read the information provided by the system regarding the distribution of the location of the population suspect, positive or died due to Covid-19.

- Activity Diagram

Activity diagrams are activities, objects, states, state transitions and events. That is, the activity workflow diagram illustrates the behavior of the system for the activity [16].

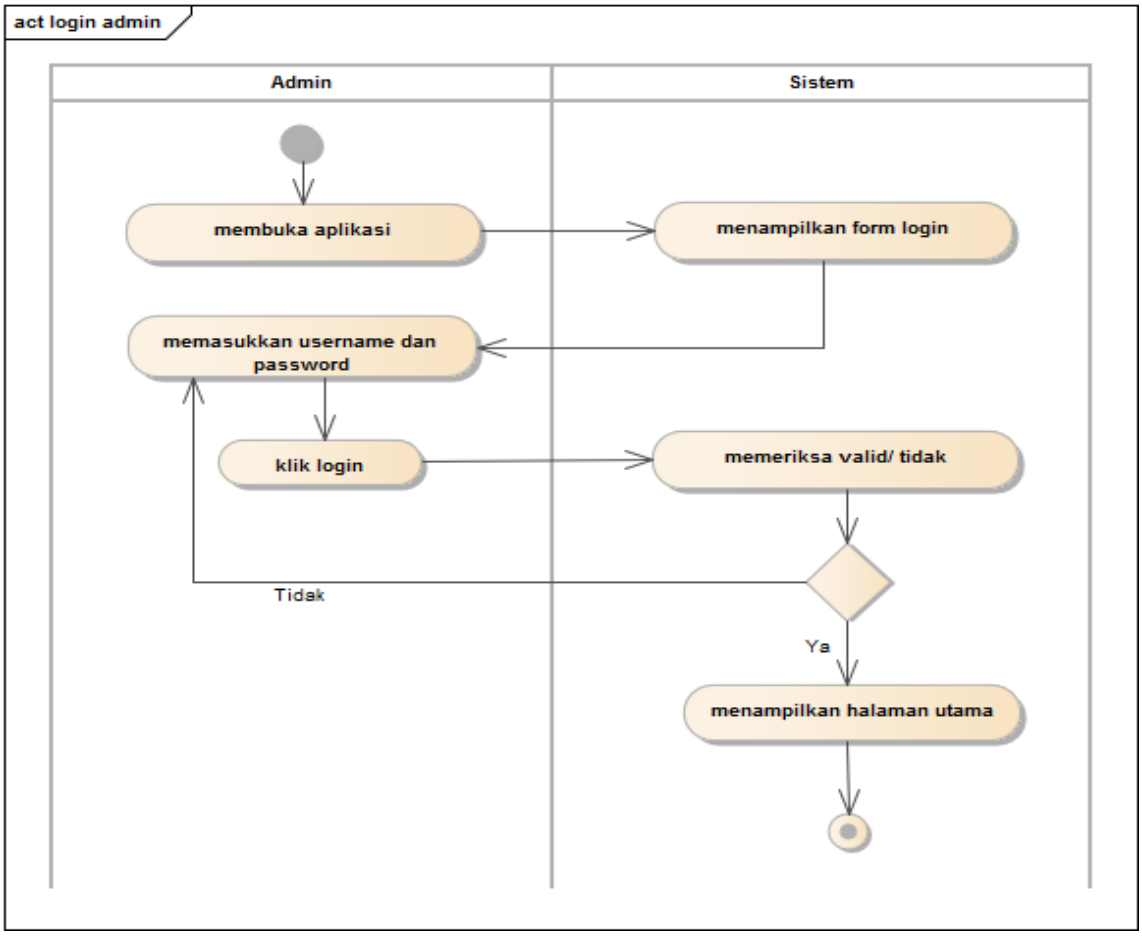

Image 3. Activity Diagram Login Admin

- Sequence Diagram

  Sequence Diagrams are made to make it easier to see interactions between actors, systems, and databases dynamically [17].

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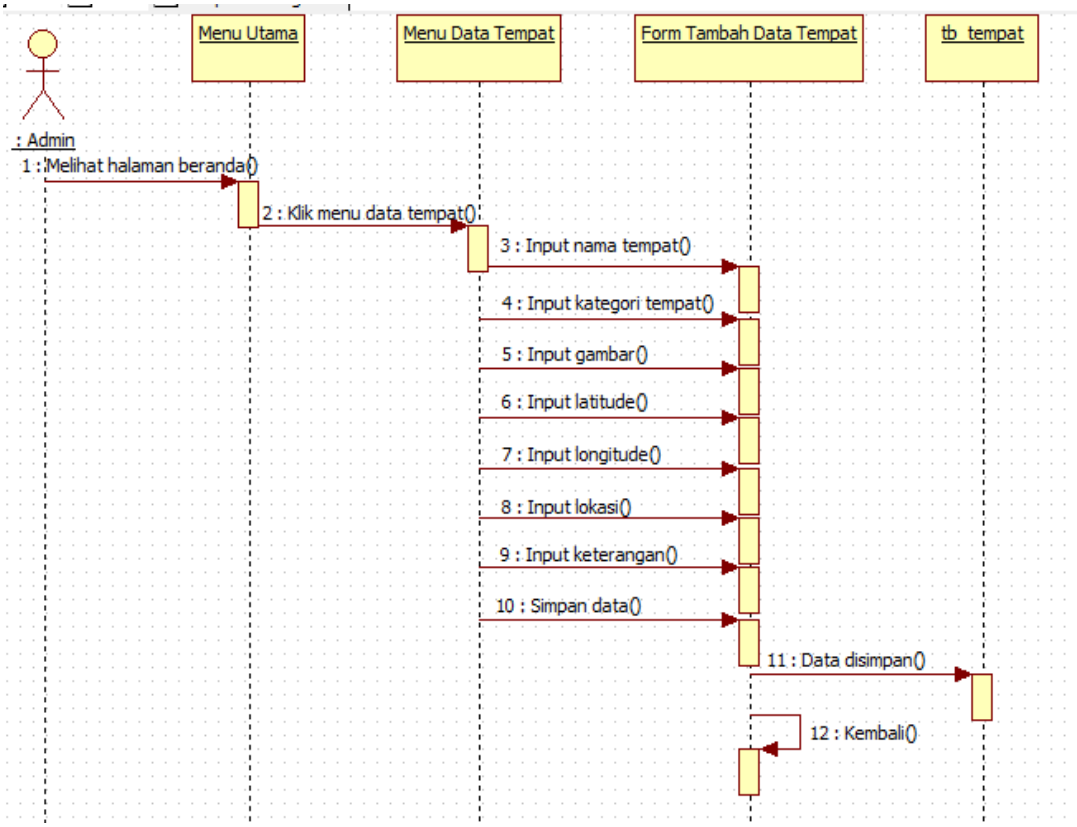

Image 4. Sequence Diagram Admin

After the development phase, the Web-based Geographic Information System can be implemented and tested by the user.

Image 5. Category Page

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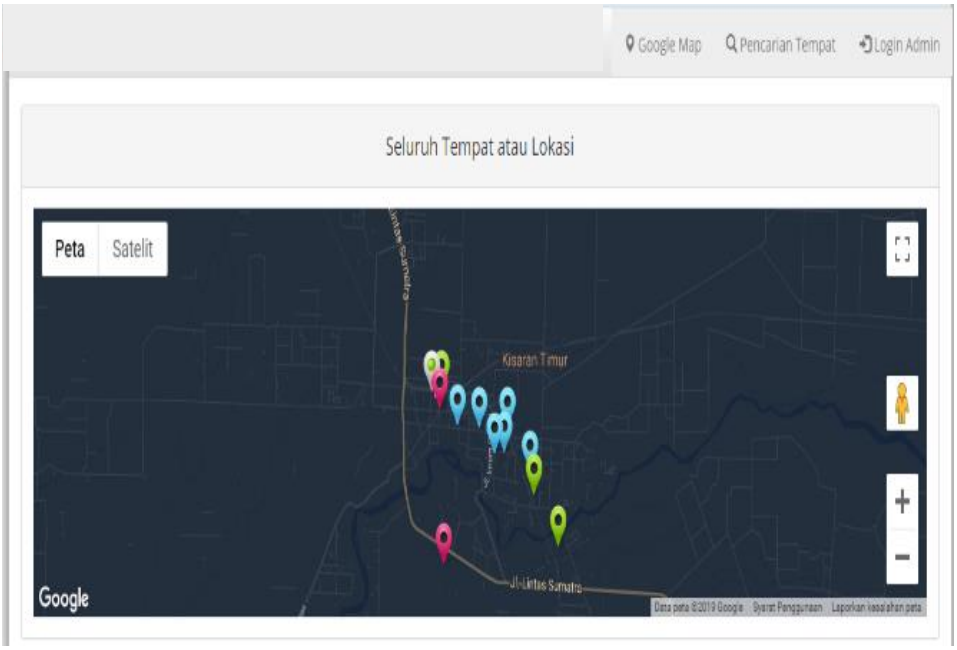

Image 6. Locations Map Page

Image 7. Search Locations

CONCLUSION

Based on research, implementation, and testing, it can be concluded that the webgis-based population location mapping is able to collect all the location data of residents with ODP, PDP status, positive and died Covid-19 in Asahan Regency. The information generated and displayed can be seen and used by the stakeholders as a

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means of collecting data and enhancing their information about the location of the population in Asahan Regency which is ODP, PDP, positive, and died from Covid-19.

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