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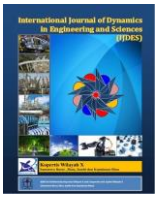

MAPPING OF BLOOD DONORS BY BLOOD TYPE IN ASAHAN REGENCY BASED ON WEB GIS

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Abstract

Indonesia is an archipelagic country with a very wide area and a very large population. This large population has a major influence on blood donor activities. Blood donation activities are defined as voluntary blood collection activities from donors to be given to patients in need. Blood donation activities are carried out by the Indonesian Red Cross through the Blood Transfusion Unit. Asahan Regency is one of the regencies in the Republic of Indonesia, more precisely located in North Sumatra Province. In this district, public awareness of the importance of blood donation and blood donation activities to help patients is still very lacking. This causes the blood stock to be reduced and even empty. Along with the development of technology, the emergence of Geographic Information Systems that can store data and show information about the location of a place. For this reason, a web GIS or webmap was made on mapping blood donors based on blood type in Asahan Regency based on a web GIS in order to assist in data collection and provide information to stakeholders and the public regarding information on the distribution of donors in Asahan Regency.

Keywords: Geographical Information System, Web, Blood.

1. Introduction

Indonesia is a country that includes the largest area in the world. In addition, Indonesia is also dubbed a maritime country or an archipelagic country because it has very wide waters [1]. According to BPS, in 2020 the total population of Indonesia is around 270.20 million people [2]. Supposedly, one of the advantages of the large population is the availability of blood stocks that can be given to patients in need.

The administrative area of the Asahan Regency government consists of 25 sub-districts, 177 villages and 27 urban villages with different areas. The total population of Asahan in 2016 was 712 684 people, with a population growth rate from 2011-2016 of 1.08 percent. Residents are all people who are domiciled in the geographical area of the Republic of Indonesia for six months or more and those who are domiciled for less than six months but aim to settle down. Residents of an area are people who live in that area, and or people who are legally entitled to live in that area based on possession of an official letter in the form of proof of citizenship or the like.[3]

Blood donation is a voluntary blood donation activity carried out by the local community to be stored in a blood bank as stock with the aim of helping blood transfusions for people in need. Blood donation activities are carried out by the Indonesian Red Cross (PMI) in their respective regions and can be carried out at PMI headquarters, schools, villages and

other places [4]. With the development of Information Technology, the Indonesian Red Cross (PMI) of Asahan Regency needs to implement a Geographic Information System for data management of voluntary donor members as an effort to optimize blood donation and blood transfusion activities. Blood is a very important part of the human body as well as in terms of human blood grouping, namely there are four types of human blood that are commonly known and are important blood groups, namely blood groups A, B, AB and O. In the process of blood transfusion from one person to another. other people, the introduction of blood type must be done to avoid things that are not desirable.[5]

The database is a collection of data that has a logical relationship and is well organized in files or tables. The files or tables are stored in electronic-based storage media [6]. Databases can be used in WebGIS or webmaps as a medium for storing geographic information for a location.

Geographic Information System (GIS) is a system designed to capture, store, manipulate, analyze, organize and display all types of geographic data [7]. By using a web base, maps become more interactive, so that geospatial data and information can be disseminated [8]. That is, Webmap or webgis can provide information about the world of health that is displayed geospatially [9].

For this reason, it is hoped that this webmap-based GIS can help the government and stakeholders regarding the distribution of blood donors in Asahan Regency.

2. Method

The basic functions of a Geographic Information System or GIS are collecting data, verifying data, managing data, processing data, analyzing data and visualizing data [10]. The research method used in this study is a quantitative research method, with the aim of knowing the number and location of objects.

1) Interview

That is the technique of collecting data by way of questions and answers with PMI staff of Asahan Regency.

2) Observation

The technique of collecting data is by observing or coming directly to the research location, especially to record address data or location coordinates.

3) Documentation

Documentation is the stage of making reports on the data that has been obtained after conducting research in the field.

4) System Design

The design of this system is assisted by UML which is used for making diagrams, such as the UML use case.

5) System Implementation and Testing

Implementation is the application of a previously designed system. Before being used by the user, this system must be tested first to reduce the risk of fatal errors when used by users who access this webgis**.**

3. Result and Discussion

A. Webgis System Development

1) Usecase Diagram

Usecase is a diagram that describes the relationship of one or more actors with the geographic information system that will be created. Use cases must be able to describe the sequence of actors that produce measurable values [11]. The form of use case images the diagram is as follows:

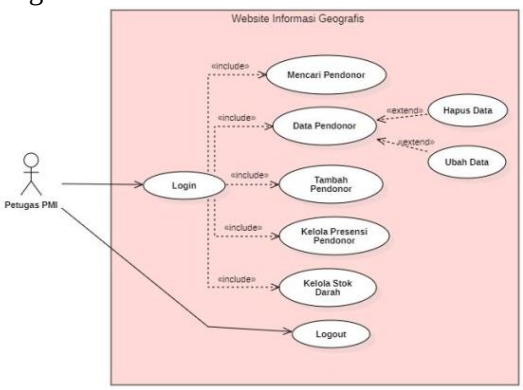

Figure 1. Usecase Diagram

B. Implementation and Result

The implementation and the results can be seen in the following pictures:

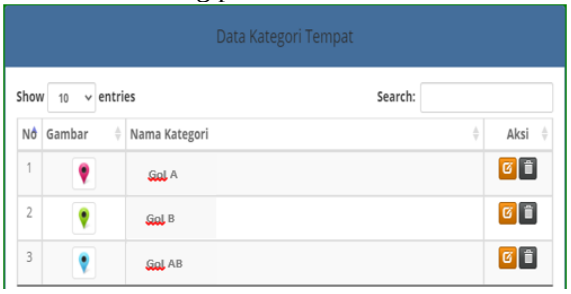

Figure 2. Blood Type Data

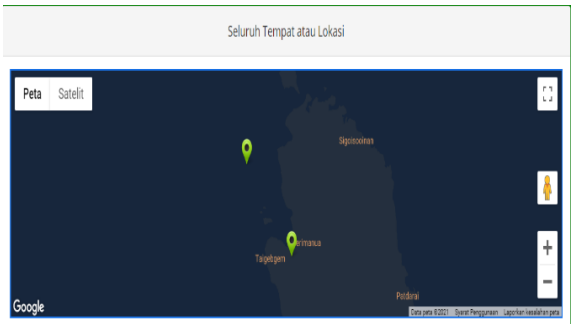

Figure 3. Distribution Locations

4. Conclusion

Based on research, implementation and testing, it can be concluded that this webgis based mapping of the distribution of blood donors in Asahan Regency is able to collect all data on the location of donors with blood types A, B, AB and O. The information generated and displayed can be seen and used by the stakeholders as a place to add information about the distribution map of blood donors based on blood group in Asahan Regency based on GIS web.

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