



# Geographical Information System for the Layout of the Simalungun Protestant Christian Church (GKPS) in Medan City

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## ABSTRACT

Geographic Information System is an information system that is used to enter, process, and produce geographically or geospatially referenced data, to support decision making in a plan. In this final project, the author creates a Geographic Information System (GIS) for the layout of the Simalungun Christian Protestant Church (GKPS) in Medan City. This information system will later have a visualization in the form of a web that is used to map the GKPS for the Medan city area. Basically, GKPS is the Church of the Simalungun tribe, most of the services use the Simalungun language. In developing a Geographic Information system for the layout of the Simalungun Protestant Christian Church in Medan City using the PHP programming language, as a method for obtaining recommendations, MySQL as the database system.

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## 1. INTRODUCTION

The need for geographic information is increasingly needed by many parties, for example information on distances between regions, locations, facilities, natural resources sought, and many other information. (Muludi et al., 2016). This information is needed by users for various purposes such as research, development and regional planning as well as natural resource management. It's just that data dissemination has been done using existing media which includes print media/maps, cd-rom (Radinal, 2017), and other storage media that are felt to be inadequate to the needs of users who are required to come and see the data directly in its place. So to get all this information, a Geographical Information System (GIS) is needed. (Priyatna et al., 2020), (Hasibuan, 2014).

This GIS technology allows us to view information about certain locations that we want. As well as knowing the location of the church in the city of Medan. Most congregations think that all churches are the same, but they are not (Maqin, 2020), (Ridwan et al., n.d.). When viewed from the function of all churches are the same, but in reality they are not the same. Some groups make a few exceptions to the name of their church by including their church name with their own group name such as GKPS (Simalungun Protestant Christian Church) (Dimont, 2018). In the city of Medan there are lots of churches which are houses of worship for Christians, but only a few are

GKPS. The problem is that only a few people know the location of GKPS, not many know about it (Handoko, 2020). (Pasand, 2020).

## 2. RESEARCH METHOD

### 2.1. Field Study

Is a method that is carried out by conducting direct studies in the field to collect data, namely direct observation to the study location. The data collection techniques carried out by the author are:

- a. Observation, the author visited one of the GKPS in Medan to obtain the required information, such as the Helvetia Medan GKPS.
- b. Interview, namely data collection by conducting question and answer with the management of GKPS Helvetia in Medan

### 2.2. Library Studies (Library Research)

The author conducted a literature study to obtain data related to thesis writing from various sources related to the theory of information systems such as geographic information system design, web application design, Php and MySQL.

### 2.3 System Test

At this stage it explains how the results of the system evaluation are carried out. Black-box testing is a testing method in which the assessment of the application lies not in the specification of the logic/function of the application, but in input and output. With the various inputs provided, it will be evaluated whether a system/application can provide output that is in accordance with the expectations of the tester.

### 2.4 Location

The research location in writing this thesis was done by the writer at GKPS Helvetia Jl. Melati Raya Perumnas Helvetia Medan. I chose this location because data for each church in the entire city of Medan is available here, especially GKPS (Simalungun Protestant Christian Church).

## 3. RESULTS AND DISCUSSIONS

### 3.1 Results Display

#### a. Main Menu Display

On the main menu page of this geographic information system as the first page when this application is run. This page contains menus such as Home, About, and Login. This can be seen in Figure 1.

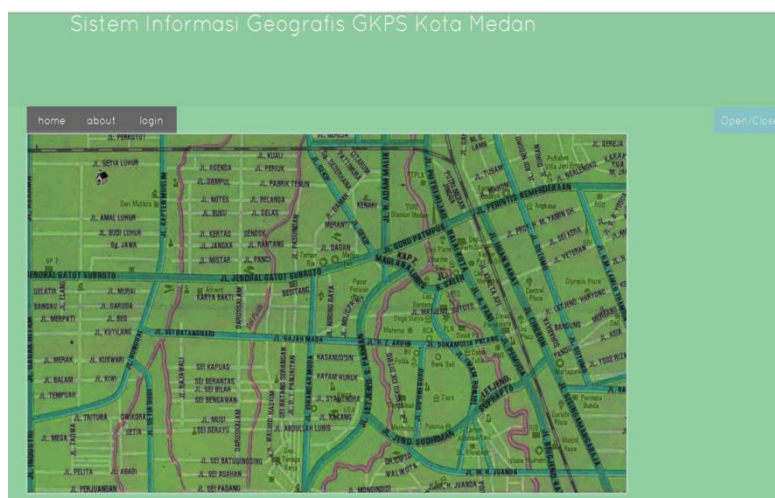
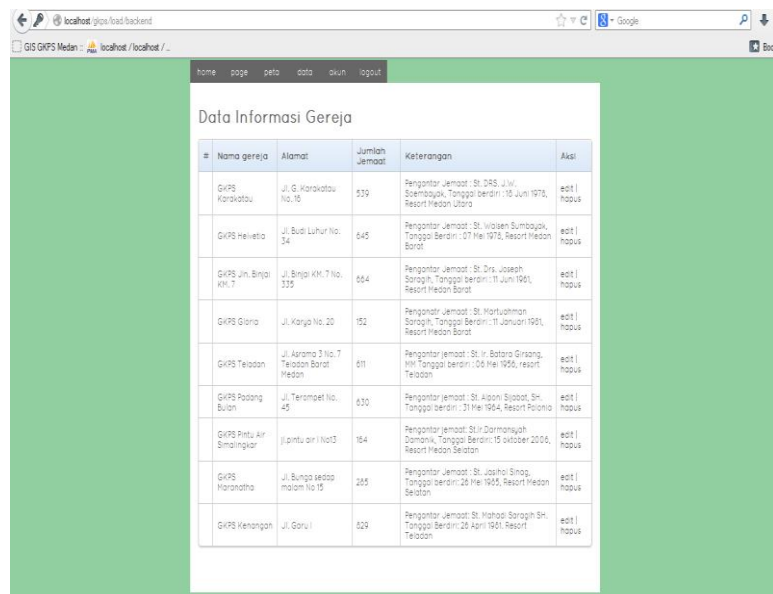


Figure 1: Main Display of Geographic Information System

b. Display of GKPS information data for the city of Medan

The GKPS information list page is a page that displays the Layout Geographic Information system of the Simalungun Protestant Christian Church (GKPS) in Medan City. The display form of the GKPS Information data page for the city of Medan can be seen in Figure 2.



#	Nama gereja	Alamat	Jumlah Jemaat	Keterangan	Aksi
	GKPS Karakatau	Jl. G. Karakatau No. 16	539	Pengantar Jemaat : St. DRS. J. W. Soembayak, Tanggal Berdiri : 10 Juni 1970, Resort Medan Utara	edit   hapus
	GKPS Helvetia	Jl. Budi Luhur No. 34	645	Pengantar Jemaat : St. Wilsen Sumbayak, Tanggal Berdiri : 07 Mei 1970, Resort Medan Barat	edit   hapus
	GKPS Jln. Bina K.H. 7	Jl. Bina K.H. 7 No. 335	664	Pengantar Jemaat : St. Drs. Joseph Saragih, Tanggal Berdiri : 11 Juni 1961, Resort Medan Barat	edit   hapus
	GKPS Gloria	Jl. Karya No. 20	152	Pengantar Jemaat : St. Wartulisman Saragih, Tanggal Berdiri : 11 Januari 1981, Resort Medan Barat	edit   hapus
	GKPS Teladan	Jl. Akrama 3 No. 7 Teladan Barat Medan	811	Pengantar jemaat : St. Ir. Batara Girang, M.H. Tanggal Berdiri : 06 Mei 1955, resort Teladan	edit   hapus
	GKPS Pasang Bulan	Jl. Termael No. 45	630	Pengantar jemaat : St. Alipin Sijaat, S.H. Tanggal berdirinya : 31 Mei 1964, Resort Polonia	edit   hapus
	GKPS Pitu Air Simalingkar	Jl. Pitu air I No 3	184	Pengantar jemaat : St. Ir. Darmasjah Damanik, Tanggal Berdiri : 15 oktober 2006, Resort Medan Selatan	edit   hapus
	GKPS Harauwa	Jl. Bunga sekap malam no 15	265	Pengantar Jemaat : St. Jasrah Sinag, Tanggal berdirinya : 28 Mei 1945, Resort Medan Selatan	edit   hapus
	GKPS Kehangah	Jl. Goru I	829	Pengantar Jemaat : St. Mahpal Saragih S.H. Tanggal Berdiri : 28 April 1961, Resort Teladan	edit   hapus

Figure 2. Display List of Protestant Christian Church Information

c. Admin Login Page

The admin login page is a page for entering the admin user name and password. This administrator login page can only be used by the admin to input information login data from the Simalungun Protestant Christian Church (GKPS). The form of this administrator login page can be seen in Figure 3.

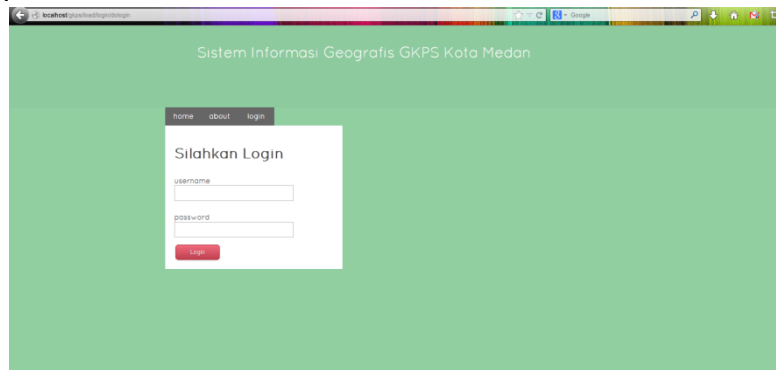
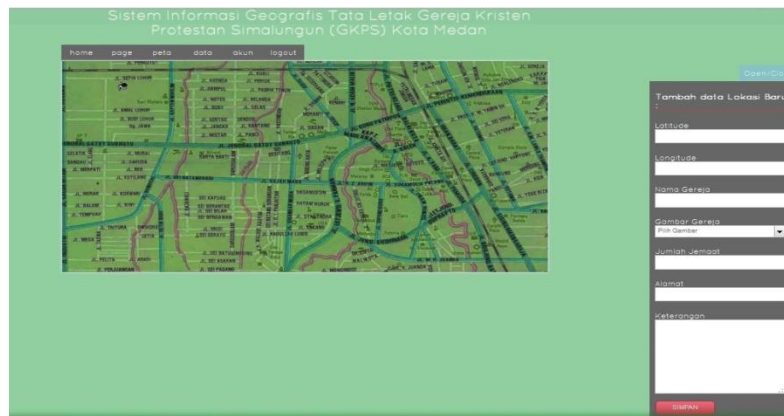


Figure 3: Display Admin Login Page

d. Admin Menu page

The admin menu page is a page that can be accessed by the admin. On the admin page there are several menus, namely home, add location data, pages, maps, data, accounts, and logout. The form of this administrator menu page can be seen in Figure 4.



**Figure .4:** Display Admin Menu Page

e. Add Data page

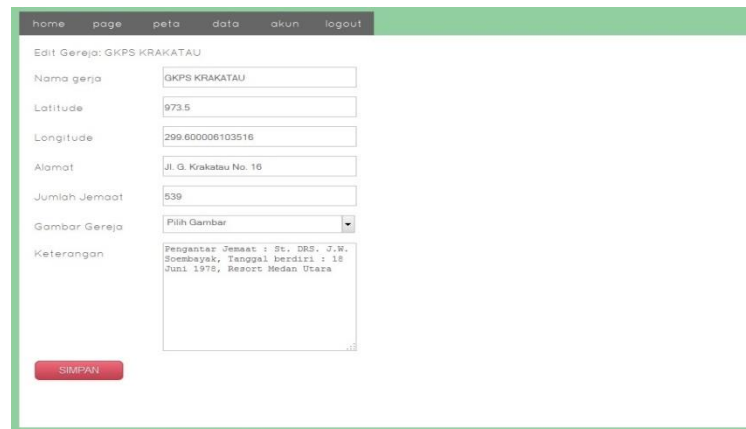
The data information page is a page for inputting location data, coordinates, name of the church, number of congregations, address and layout information for the Simalungun Protestant Christian Church (GKPS). The form of this added data page can be seen in Figure 5.



**Figure 5 :**Display Add Data Page

f. Simalungun Protestant Christian Church (GKPS) Data Edit Page

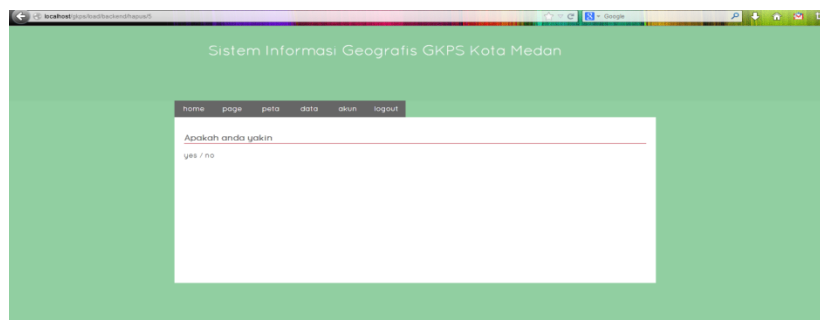
The Simalungun Protestant Christian Church (GKPS) data edit page is a page for changing all data and information of the Simalungun Protestant Christian Church (GKPS). The shape of the Simalungun Protestant Christian Church (GKPS) information data editing page can be seen in Figure 6.



**Figure 6:** Display of Simalungun Christian Protestant Church (GKPS) Data Edit Page

g. Simalungun Christian Protestant Church (GKPS) Delete Data page

The Simalungun Protestant Christian Church (GKPS) data delete page is a page for deleting Simalungun Protestant Christian Church (GKPS) data, if the admin selects the delete menu on the Simalungun Protestant Christian Church (GKPS) information data page, a data delete page will appear according to the admin's choice of data which one to delete. The shape of the Simalungun Protestant Christian Church (GKPS) data delete page can be seen in Figure 7.



**Figure 7 :**View of the Simalungun Protestant Christian Church (GKPS) Delete Data Page

h. Change Map Page

The change map page is a page for changing the map that will be displayed by the geographic information system. The shape of the changing map page can be seen in Figure 8



**Fig.8:** Edit Map view

i. Account Page

The account page is a page for changing the geographic information system admin password. The form of this account page can be seen in Figure I9.

 The image shows a web browser window displaying the 'View Edit Admin' page. The page has a green header with the title and a navigation menu with links for 'home', 'page', 'peta', 'data', 'akun', and 'logout'. The main content area is titled 'ganti password' and contains three input fields: 'password lama', 'password baru', and 'ketik ulang password'. Below the fields is a red 'Simpan' button.

**Figure 9:** View Edit Admin

### 3.2 Trials

Testing using the Black Box testing method is a testing phase that focuses on the functional requirements of the software. This test case aims to show the function of the software on how it operates. The results of testing this system is a result that shows the accuracy of a system. The results of testing in this sub-chapter the author analyzes that the web-based geographic information system for the layout of the Simalungun Christian Protestant Church (GKPS) Medan City has an accuracy rate of 90% close to true facts. The comparison of this system is 9: 1 where out of the 10 existing data 9 are true or in accordance with reality and 1 is doubtful, that is, the map shown is not very detailed.

### 4. CONCLUSION

Based on the design and implementation of the program, the following conclusions can be drawn. This geographic information system can help the congregation to inform the congregation of the number of congregations and the layout location of the Simalungun Protestant Christian Church (GKPS) in Medan City to the congregation effectively and efficiently. This information system can assist users in searching for the layout location of the Simalungun Protestant Christian Church (GKPS) in Medan City. With this information system, it will be easier for the congregation to find a place of worship that is closer to the location where the congregation is located. With this

information system, the congregation will be motivated to become more familiar with geographic information system technology.

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