

Web-Based Geographic Information System Design In Madrasah In The North Area Of Tangerang District

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Abstract

Many madrasah under the auspices of the Tangerang Disctrict Education Office are scattered and the public does not know where the madrasah are. So that mapping is needed to find out the distribution of these madrasah. The development of residential areas and the increasing number of residents raises several problems, including inadequate school capacity, lack of access points to schools, incomplete supporting facilities and so on. Conditions like this can disrupt the stability of education services in the northern region of Tangerang District. With the development of the world of information today makes a lot of convenience, one technology that is currently being developed is the Geographic Information System (GIS). The information system regarding school mapping is a combination of GIS and web technology, allowing the information to be visualized into the web so that it can be accessed by the wider community without any time and place limits. This system was built using the Google Maps API to display a map of the location of madrasah in the northern area of Tangerang district. Spatial data for madrasah was obtained from the Tangerang District Education Office. The results of the trial of the Geographic Information System application in the Northern area of the Tangerang Disctrict, have provided information to the community and the Education Office about mapping madrasah in the Northern Region of Tangerang Disctrict.

I. INTRODUCTION

The Ministry of Religion of the Republic of Indonesia together with the Ministry of Education and Culture are the ministries in charge of managing education in Indonesia. The Ministry of Education and Culture manages general education, while the Ministry of Religion manages religious and religious education which are important aspects for the progress of a country [1].

The government since May 2, 1994 by President Soeharto launched or planned a 9-year compulsory education program in Indonesia. According to Aplha Amirrachaman from the Smart Indonesia Movement (GIP), even though Indonesia has been independent for 77 years, access to education has not been evenly distributed [2].

Islamic-based education in the northern region of Tangerang Regency is spread throughout the region. Islamic-based education in the northern region of Tangerang Regency is still little known by the public. One of the factors causing this is the availability of scanty and incomplete data, while the community's need for information is high, the availability of data for schools based on the North Tangerang District in the internet network is scanty and incomplete. The sites that provide Islamic school data only contain a few school level data. In addition, none of these sites have a school location feature.

There are so many schools in Tangerang Regency, especially Madrasah Schools, that it will be difficult for the Education Office and the Office of the Tangerang Regency Ministry of Religion to check school needs. It is difficult for the community to find the location of the school and find out about the facilities at the madrasah school.

With a digital map that visualizes Madrasah Schools in the North Tangerang Regency Region, it's easier to find out the names and locations of the various Madrasah Schools in the North Tangerang Regency Region. Geographic Information System to provide more complete location and profile information about Islamic-based educational institutions in the northern region of Tangerang District. The geographic information system is built on a web basis using the PHP programming language, MySQL database, and the Google Maps API map base.

II. RELATED WORKS/LITERATURE REVIEW

Geographic Information Systems (GIS) computational applications make it possible to create, store, manipulate, visualize, and analyze geographic information systems. Useful Geographic Information Systems (GIS) are resource management, utilities management, telecommunications, urban and territorial planning, vehicle routing and parcel delivery and all sciences involving the surface of the earth [3].

Geographic Information System as a computer system is used to store and manipulate geographic information. A Geographic Information System is designed to collect, store and analyze objects and phenomena for which geographic location is an important or critical characteristic for analysis, or in a narrower sense, is a computer system that can build, store, organize and display geographic reference information, for example data identified by location, in a database [4].

Mapping done in a Geographic Information System (GIS) is a collection of intelligent illustrations that mark the relationship between the Earths. Geographic Information System (GIS) as a tool that allows for changing information, obtaining new data sets and existing data. Geographic Information System (GIS) tools to extract information from data to implement analytical functions that write results into data sets [5].

API is a set of commands, functions, classes and protocols allows the software to communicate with other software. The goal of the API is to remove the "clueless" from the system by create a large block of software around the world and reuse commands, functions, classes or protocols they or the API have. Programmers no longer need to waste time creating and writing infrastructure, thereby saving work time and being more efficient. Google Map is a web-based map application and technology service provided by Google, including the Google Map website (<http://maps.google.com>), Google Ride Finder, Google Transit, and maps that can be embedded on other websites through Google. Maps API. Google Map is a mapping service based popular websites, can add Google Map services to websites using the Google Maps API. The Google Maps API can be added to websites using JavaScript. The API provides many facilities and utilities for manipulating maps and adding content to maps through various services, allowing users to create powerful map applications on the website to be created. The knowledge required to develop the Google Maps API is about HTML and JavaScript, while the map has been provided by Google. Simply by concentrating data and maps by Google, can save time [6].

III. METHODS

Waterfall is a model that takes basic activities such as specification, development, validation and evolution, and represents them into different phases such as specification requirements, software design, implementation, testing, and so on. Waterfall systematic and sequential software development approach begins from analysis, design, code, testing, and maintenance. The main stages of the waterfall model map out the basic software development activities, In this study, reviewing documents, collecting secondary data and data related to travel information systems, among other tourist sites, the potential that exists around tourist sites, tourist sites photograph and description of the existing attractions [7], Stages of the waterfall method [8]:

1. Requirements

The system developer stage aims to understand the software expected by the user and the limitations of the software. Information obtained through interviews, discussions or direct surveys. Information is analyzed to obtain the data required by the user.

2. Design

Developers create a system design that helps define hardware and system requirements and also helps in defining the overall system architecture.

3. Implementation

Systems are developed in small programs called units, which are integrated in a later stage. Each unit developed and tested for functionality is referred to as unit testing.

4. Verify

The system is verified and tested, does the system meet the system requirements?. Testing is categorized into unit testing

(performed on specific modules of code), system testing (to see how the system reacts when all modules are integrated) and acceptance testing (performed by or the customer's name to see if all the customer's needs are satisfied).

5. Maintenance

The final stage of the waterfall method. The software has already been run and carried out maintenance. Maintenance includes fixing errors that were not found in the previous step.

IV. RESULTS

Geographic Information System model (GIS) based on madrasah web for the north region of tangerang district the northern region is part of the tangerang regency development concept. Included in the prototype that will become part of the Geographic Information System (GIS) for the madrasah district of north tangerang region is the madrasah website system, which is used for the office of the tangerang district minister of religion or related parties in managing madrasah data more effectively.

1. Use Case Diagram

This system uses use case diagrams to make it easier to know the process and an overview of the design of this system. The following design use case diagram in the form.

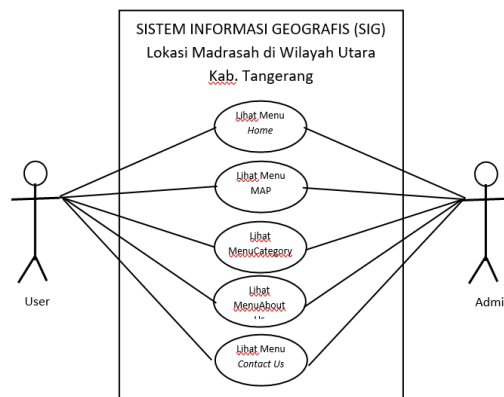


Figure 1. Use Case

In designing the admin use case, the admin is allowed to log in. To maintain web security. Admins are allowed to edit and change data when changes occur, the information obtained is always up to date.

2. Class Diagram

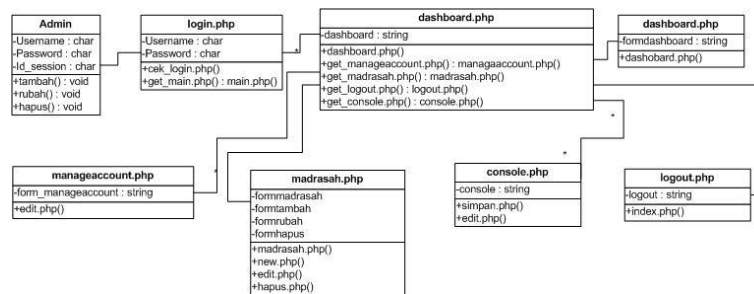


Figure 2. Class Diagram

V. DISCUSSION

System implementation

The implementation stage is the creation of a geographic information system for Madrasah Tangerang District North Region based on the design stage. Needs analysis, it is hoped that the geographic information system can display madrasah information in the northern region of Tangerang Regency.

a. Main course



Figure 3. Main Menu

The application is run to the application's main page. The home page has three sections, namely, the top contains the Geographic Information System (GIS) application logo. Above there is a navigation menu, then in the middle is the Tangerang Regency Ministry of Religion Office. Then the welcome is continued with the contents, and the last one is equipped with a footer section.

b. Madrasa Information Map

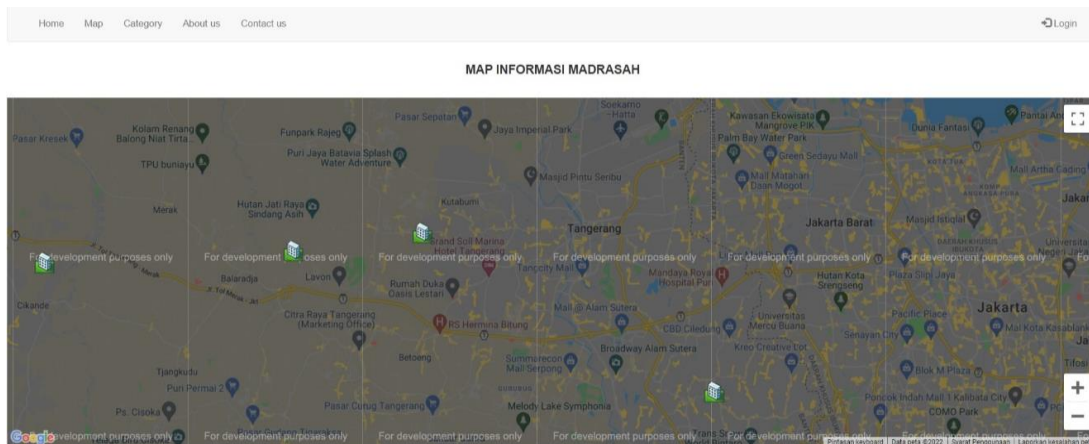


Figure 4. Madrasa Information Map

In the menu display of the Madrasah Information Map, there is a distribution of Madrasahs in Tangerang Regency which are located in the Northern Region.

c. Madrasa Information Data



Home Map Category About us Contact us Login

DATA INFORMASI MADRASAH

Show 10 entries

Nama Madrasah	Jenis Madrasah	Alamat	Akreditasi	NPSN	Peta
Madrasah Diniyah Nahdlatul Ulum Cempaka	Swasta	Cempaka, Kec. Kresek, Tangerang, Banten 15620	A	20622414	Click here
Madrasah Ibtidaiyah Plus (SD) Al Husna	Swasta	Jl. Cipto Mangunkusumo No.73, RT.001/RW.013, Paninggitan Utara, Kec. Ciledug, Kota Tangerang, Banten 15153	A	60706132	Click here
Madrasah Tsanawiyah Darul Amal	Swasta	Jl. Galeong No.39, RT.003/RW.007, Margasari, Kec. Karawaci, Kota Tangerang, Banten 15114	A	69887075	Click here
MIS Nurul Falah Gaok	Swasta	Kp. Gaok RT 03/04, Pangadegan, Kec. Pk. Kemis, Tangerang, Banten 15900	A	69824931	Click here

Showing 1 to 4 of 4 entries

Previous 1 Next

Figure 5. Madrasa Information Data

The Madrasah Information Data page will appear when the Madrasah Information Data navigation menu is selected. Information on this page contains: Name of Madrasah, Type of Madrasah, Address, Accreditation, NPSN and Map of Madrasah Locations.

VI. CONCLUSIONS

Based on the discussion that has been described, some conclusions are as follows:

1. The geographic information system for searching for madrasahs was developed on a web-based basis to make it easier for people in the northern region of Tangerang Regency to search for madrasahs in that area
2. The information presented about the local madrasahs is so that the madrasahs located in the northern region of Tangerang Regency are better known by the local community in particular and the wider community in general.

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