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# Transformasi Data Geospasial: Masjid Dan Mushalla Di Kelurahan Kampung Baru Nan XX

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**Abstract**
The Kampung Baru Village Mosque/Musalla Geographic Information System (GIS) is a web-based application designed to provide accurate and easily accessible information about the locations, facilities, and activity schedules of mosques and musallas in the area. The system utilizes digital mapping technology to visually and interactively display spatial data. Users can search for mosques or musallas based on name, location, or desired facilities. Additionally, the system is equipped with a navigation feature integrated with popular mapping applications to facilitate users in finding routes to places of worship. With this system, it is hoped that it can improve convenience and ease for Muslims in carrying out their religious duties and strengthen ties among the congregation.
**Keywords:** Information and communication technology (ICT); Digital mapping; Digital mosque

## Introduction

The rapid advancement of information technology has transformed the way society accesses information. One sector significantly impacted by this transformation is the field of religion. Mosques and prayer rooms, as centers of worship for Muslims, play a central role in community life. However, in the modern era, many individuals, particularly newcomers or tourists, face challenges in locating places of worship that meet their needs.

To address these challenges, this study focuses on developing a Geographic Information System (GIS) specifically designed to map the locations of mosques and prayer rooms in Kelurahan Kampung Baru. This GIS is expected to provide accurate, up-to-date, and easily accessible information about the locations, facilities, and schedules of activities at various places of worship. Consequently, the community will be able to easily find nearby worship places and plan their religious activities.

Previous research has demonstrated the significant potential of GIS in managing spatial data. However, the application of GIS in the religious context at a local level, such as in neighborhoods, remains relatively limited. Therefore, this study aims to fill this gap by developing a system that not only provides location information but also enhances the worship experience for the community.

## Research Methods

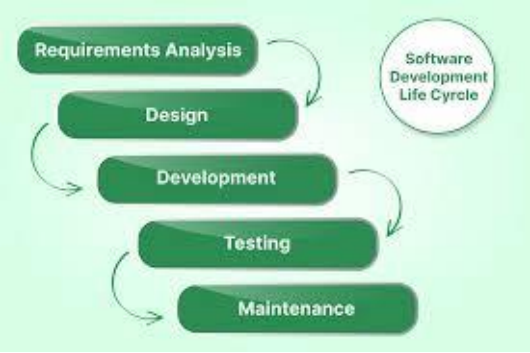


**Figure 1**. *Waterfall* Method

The waterfall method is chosen because of its linear and systematic nature, making it highly suitable for information system development projects that have clear definitions, such as this GIS project. The following are the stages that will be followed in this study:

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1. Requirement Analysis
    - User identification: Determine who the main users of the system are (e.g., mosque administrators, general public, tourists).
    - Data collection: Conduct interviews, surveys, or direct observations with users to understand their needs and expectations from the system.
    - Functional requirement analysis: Determine the features that must be included in the system, such as location-based search, facilities, prayer schedules, etc.
    - Non-functional requirement analysis: Determine the expected quality of the system, such as access speed, data security, and ease of use.
2. System Design
    - System architecture design: Define the system components, their interactions, and the technologies to be used (e.g., database, programming language, framework).
    - User interface design: Design an intuitive and user-friendly system interface.
    - Database design: Design the database structure to store spatial data (mosque/mushalla locations, facilities) and non-spatial data (schedules, contact information).
3. Implementation
    - Programming: Develop the system according to the design created.
    - Database creation: Create the database and populate it with the collected data.
    - Integration with digital maps: Combine spatial data with digital maps using GIS technology (e.g., QGIS, ArcGIS).
4. Testing
    - Unit testing: Test each system component individually.
    - Integration testing: Test how the system components work together.
    - System testing: Test the entire system to ensure it functions as expected.
    - User acceptance testing: Involve users to test the system and provide feedback.
5. Deployment and Maintenance
    - System deployment: Launch the system into the production environment.
    - User training: Train users to effectively use the system.
    - Maintenance: Perform regular updates and improvements to the system to ensure optimal performance.

## RESULTS AND DISCUSSION

*Usecase Diagram*

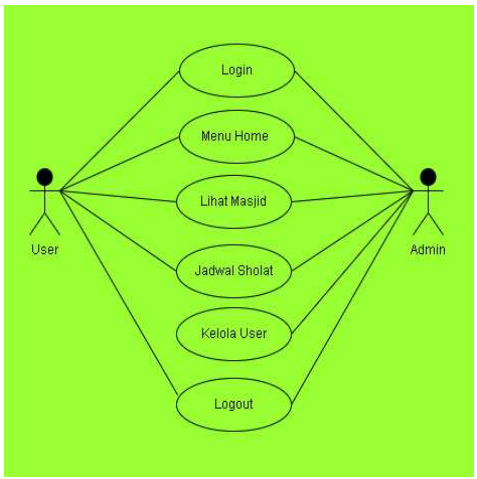


**Figure 2. *Usecase Diagram***

The Use Case Diagram illustrates the interaction between the system users and the developed system. This diagram helps to understand the workflow and the overall functionality of the system..

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| Table | Action | Rows |
|---|---|---|
| admin | Browse Structure Search Insert Empty Drop | 0 |
| announcements | Browse Structure Search Insert Empty Drop | 1 |
| masjid | Browse Structure Search Insert Empty Drop | 5 |
| users | Browse Structure Search Insert Empty Drop | 1 |
| 4 tables | Sum | 7 |

**Figure 3. Storage Table**

The observations show that the designed database consists of four main tables: admin, announcements, masjid, and users, with a total of 7 rows of data. The admin table is still empty, while the announcements and users tables each have 1 row of data, indicating that the announcement and user registration features have started to be used. The masjid table contains 5 rows of data, indicating that most of the mosque data has been successfully entered. Overall, the database structure meets the basic requirements of the system, although further data entry and management are needed to support a more optimal implementation.

| | id | name | location | facilities |
|---|---|---|---|---|
| Edit Copy Delete | 1 | Masjid Baitul Haadi | Jl. Taruko | Ruangan Ibadah Ac |
| Edit Copy Delete | 2 | Masjid Nurul Ihsan | Jl.Kampung Baru | Wifi,Ac |
| Edit Copy Delete | 3 | Mushalla Al-Firdaus | Jl.Ampera | Ruangan AC,Wc |
| Edit Copy Delete | 4 | Masjid Husnul Khatimah | Kp.Baru | Taman,Ruang TPQ |
| Edit Copy Delete | 5 | Masjid Al-Kautsar | Jl.Kampung Baru | Ruang TPQ |

Check all *With selected:* Edit Copy Delete Export

**Figure 4. Data Record Storage Table**

The observation of the mosque table shows that it contains 5 rows of data related to mosque and mushalla information. This table includes four main columns: `id` as a unique identifier, `name` for the name of the mosque or mushalla, `location` for the location, and `facilities` which records the available facilities. Based on the data, the registered mosques and mushallas offer a variety of facilities, such as air-conditioned prayer rooms, WiFi, gardens, and TPQ rooms. For example, "Masjid Baitul Haadi" is located on Jl. Taruko with air-conditioned prayer rooms, while "Masjid Nurul Ihsan" on Jl. Kampung Baru is equipped with WiFi. This data shows that the database system has successfully managed mosque-related information, supporting the basic needs of the designed information system..

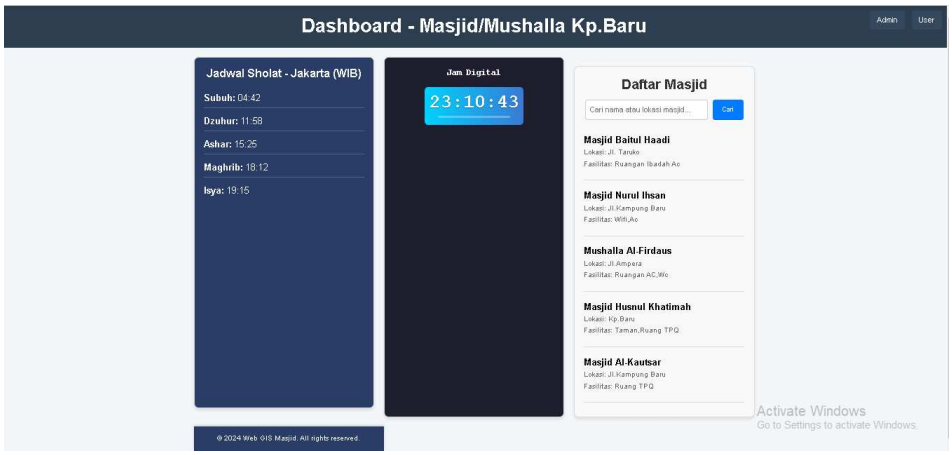


**Figure 5. Data Record Storage Table**

The image above shows the Dashboard for Masjid/Mushalla Kp. Baru, designed to provide information on prayer schedules, digital time, and a list of registered mosques. On the left, there is information about the prayer schedule based on Jakarta time (WIB), ranging from Fajr to Isha, presented in a simple yet

informative display. In the center, there is a digital clock feature that shows real-time time, helping users easily track the time. On the right, there is a Mosque List along with its location and facilities, with a search feature that allows users to find mosques based on name or location. The navigation button at the top right provides access to both Admin and User modes, making this dashboard practical and organized to meet user needs.

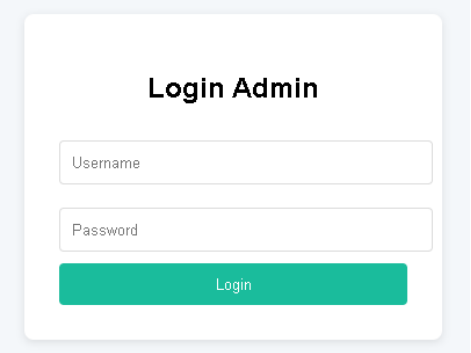


**Figure 6. Admin Login**

The image above shows the interface of the Admin Login page, designed to access the system. This login form consists of two main input fields:

- Username: A field to enter the administrator's username.
- Password: A field to enter the administrator's password.

Below, there is a minimalist green Login button, which serves to authenticate the user. This simple design prioritizes ease of access and focuses on the primary functionality—admin authentication. The design supports a good user experience and ensures that system access is only granted to authorized personnel..


**Figure 7. Admin Main Page**

The image above shows the main interface page of the Mosque/Mushalla Admin, designed to manage mosque data and system users. This page has a main navigation menu at the top, including features such as View Mosques, Prayer Schedule, Manage Users, and Log Out, making it easy for the admin to access various system functions. In the Manage Mosques section, the admin can add new mosque data by filling out a form that includes columns for Mosque Name, Location, and Facilities, and saving it through the Add Mosque button. The list of registered mosques is displayed in the View Mosques section, complete with their location and facilities, where the admin can edit or delete mosque data using the Edit and Delete buttons. Additionally, the Manage Users section allows the admin to manage user data by adding new users through a form with fields for Username, Password, and Role, as well as editing or deleting existing users, such as "Pak David." This page layout is simple yet functional, supporting effective

management of mosque and user data through the provided add, edit, and delete features, ensuring that the system remains flexible and dynamic according to needs.

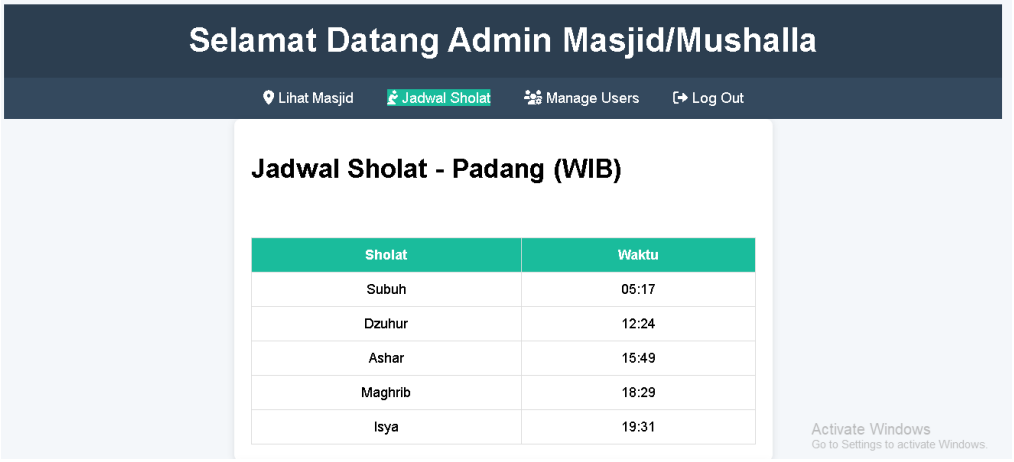


**Figure 8. Prayer Schedule**

The image displays the Prayer Schedule page for the admin in the Mosque/Mushalla application. The page features a main title, "Welcome Admin Mosque/Mushalla," with a navigation bar at the top consisting of several options: View Mosques, Prayer Schedule, Manage Users, and Log Out.

The prayer schedule table shows the prayer times for the Padang region (WIB) with columns for Prayer and Time. The schedule starts with Fajr at 05:17, Dhuhr at 12:24, Asr at 15:49, Maghrib at 18:29, and Isha at 19:31. The table layout is simple, neat, and easy to read, with green highlighting the table headers.

This page is designed to help admins easily view prayer schedules at a glance.


**Figure 9. Mosque/Mushalla Location**

The image shows a map with a highlighted point labeled "Mushalla AL-Firdaus." The map also displays other points of interest, including a gas station, a restaurant, and a school. At the top of the image is a navigation menu with options to view mosques, check prayer schedules, manage users, and log out.

The page title, "Welcome Admin Mosque/Mushalla," indicates that this image is from a web application designed to assist mosque and mushalla administrators in managing their facilities.

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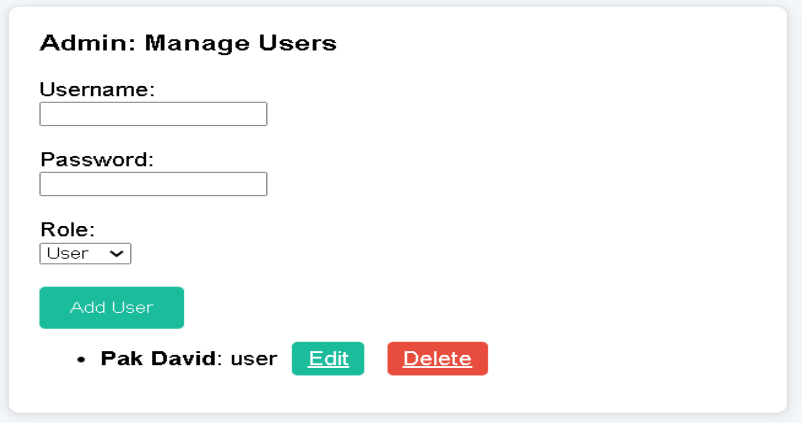


**Figure 10. Manage User**

In Figure 10, this page serves the purpose of adding users who will log in, ensuring that users can access the website once their username and password have been created.

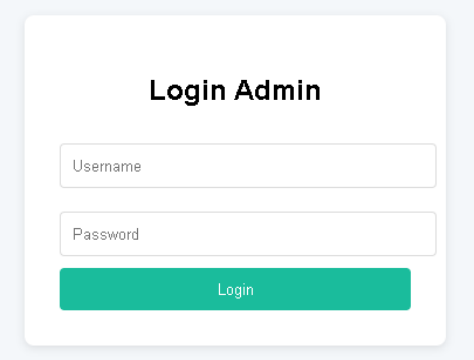


**Figure 11. User Login**

The next section is the user login page. This section is designed to allow users to access information about mosques and mushallas around the Kampung Baru subdistrict. Before accessing, the admin must first create a user account.

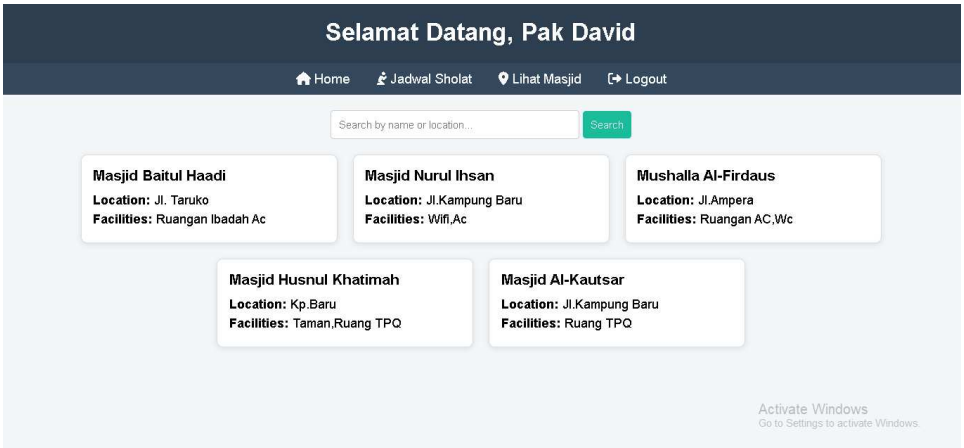


**Figure 12. User Page After Login**

From Figure 12, once the user logs in, the system directs them to the main user interface. This page features menus and a list of available mosques/mushallas, and users can search through the list of mosques/mushallas.

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**Figure 13.** Prayer Schedule

In Figure 13, users can view the prayer schedule as a daily reminder and to know the prayer times.


**Figure 14. Mosque Locations**

On this page, users can view the locations of mosques and mushallas around the Kampung Baru subdistrict.

## CONCLUSION

The development of the Geographic Information System (GIS) for Mosques/Mushallas in the Kampung Baru subdistrict has successfully resulted in a web-based application that provides information about the locations, facilities, and activity schedules of mosques/mushallas. This system utilizes digital mapping technology to deliver an interactive and user-friendly spatial data visualization. With features such as searching by name, location, or facilities, and integration with popular map navigation applications, this GIS simplifies the process for the community to find a place of worship that suits their needs.

System testing shows that all features, from mosque data management to the user interface, function as expected. Therefore, this GIS is expected to enhance the accessibility of worship places, improve the convenience of worship activities, and strengthen relationships among congregants in the Kampung Baru subdistrict.

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