



Web-Based Patrol Scheduling System in Tinggarjaya Village RT 03 RW 03 Jatilawang District, Banyumas Regency

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Abstract

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RT 03/03 Tinggarjaya Village, Jatilawang District is one of the RTs in Tinggarjaya Village, Jatilawang District, Banyumas Regency. On RT 03/03, Ronda is held every night. So far, the system for writing patrol schedules and recapping Jimpitan data still uses manual or written by hand and does not use automatic computer storage. No website is still used to record resident data, Jimpitan data, and patrol schedules. This causes less efficiency in making data reports in these activities. This practical work aims to create a simple website that can make creating reports on citizen data, Jimpitan data, and patrol schedules easier. The Patrol Scheduling System was created using the Waterfall model. The application is a tool for creating citizen data reports, traffic jam data, and patrol schedules.

Keywords: Ronda; Patrol Scheduling System; Timetable; Waterfalls; Web

Abstrak

RT 03/03 Desa Tinggarjaya, Kecamatan Jatilawang merupakan salah satu RT yang berada di Desa Tinggarjaya, Kecamatan Jatilawang, Kabupaten Banyumas. Pada RT 03/03 setiap malam mengadakan Ronda. Selama ini sistem penulisan Jadwal Ronda dan rekap data Jimpitan masih menggunakan manual atau masih ditulis tangan belum menggunakan penyimpanan otomatis menggunakan komputer dan juga masih belum ada website yang digunakan untuk Mencatat Data Warga, Data Jimpitan, Serta Jadwal Ronda. Hal ini menyebabkan kurang efisien dalam membuat laporan data dalam kegiatan tersebut. Kerja Praktek ini memiliki tujuan membuat sebuah website yang sederhana namun bisa mempermudah pembuatan laporan data Warga maupun Data Jimpitan serta Jadwal Ronda. Metode yang digunakan dalam pembuatan Sistem Penjadwalan Ronda menggunakan model Waterfall. Aplikasi yang dibangun merupakan sebuah alat bantu dalam membuat laporan data warga, data jimpitan serta jadwal ronda.

Kata-kata kunci: Ronda; Sistem Penjadwalan Ronda; Jadwal; Waterfall; Web



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1. Introduction

As information technology develops more rapidly. Therefore, more and more new ideas are emerging in information technology. Along with the availability of communication devices such as Wifi, gadgets, and mobile phones based on internet services, as well as the proliferation of social media sites such as Facebook, Twitter, Instagram, WhatsApp, and others [1]. An information system is a set of interconnected components that collect, process, store, and distribute information to support decision-making and monitoring within an organization. Information systems aim to produce information through important data where the data is processed into a valuable form for its users [2].

Tinggarjaya Village is one of the villages in the Jatilawang sub-district, Banyumas district. The Tinggarjaya Village patrol scheduling information system still uses a manual system, so the public cannot see it anytime and anywhere. To improve the information system further, Tinggarjaya Village needs a website to make it easier for the public to get information. Seeing this problem, the author chose "Ronda Scheduling System in Tinggarjaya Village, RT 03/03, Jatilawang District, Banyumas Regency". The Web-Based Patrol Scheduling System developed for RT 03/03 Tinggarjaya Village offers an innovative approach to integrating information technology with community management needs. This system automates scheduling patrols and data collection and facilitates real-time data accessibility and interaction between community members and RT administrators. This system combines citizen databases, patrol schedules, and Jimpitan data in one easy-to-access platform, promoting transparency and efficiency. This system also has essential analysis tools that allow RT administrators to monitor trends and make data-backed decisions. This system will make it easier for the public to conduct patrol activities. Based on the background of the problem above, the problem can be formulated, namely how to make it easier and how to create a "Web Based Patrol Scheduling System" at RT 03 RW 03, Tinggarjaya Village, Jatilawang District, Banyumas Regency.

The aim of practical work at RT 03 RW 03, Tinggarjaya Village, Jatilawang District, Banyumas Regency, using the CodeIgniter and MySQL Framework is to create a systematic, structured, directed, and complete patrol scheduling system. In this way, the application system is handy and makes it easier for the public to manage patrol schedules and withdraw cash deposits. After achieving the goal, there are several benefits: It can make providing information easier, record pinches easily, and discipline the community when carrying out patrols.

2. Method

This research uses a development method called Waterfall, which is used in a descriptive qualitative study. This method is a series of software development processes that proceed like water (like a waterfall) through planning, modeling, implementation (development), and testing. The stages of creating the system used in this research use the waterfall model, as in **Figure 1**.

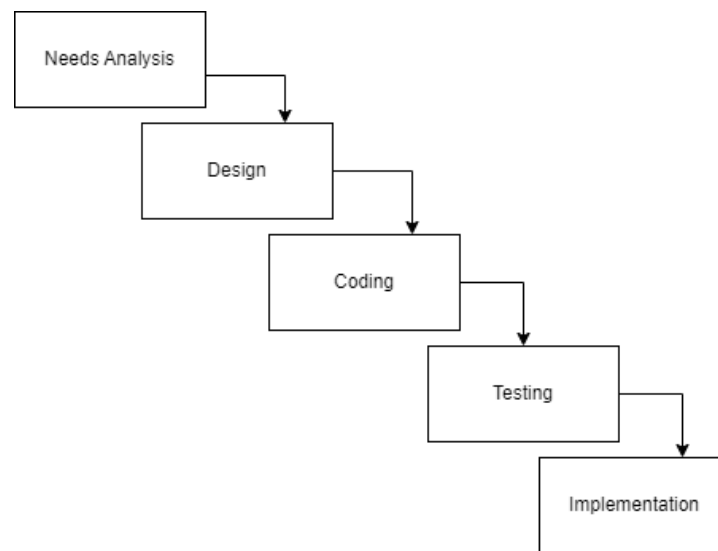


Figure 1. Application Design [3]

3. Results and Discussion

3.1 Needs Analysis

Developing this application requires several analyses. Requirements that will later be used for application development. The data requirements are observation, interview, and tool requirements. The result of the data requirement is that the data obtained in making this application came from observations made at the Ronda Activities, which took place at RT 03 RW 03, Tinggarjaya Village, Jatilawang District, Banyumas Regency, Central Java Province. Data was then collected by interviewing Mr Anas, the head of the local RT. The hardware used in designing and making this application is an Acer brand laptop, with the specifications: processor: AMD Quad-Core Processor A12-9700P with Turbo CORE Technology up to 3.40 GHz, RAM: 8GB, and storage: 1 TB hard disk. The software needed to develop this application is Visual Studio Code, an application creation code editor [4]. XAMPP is an application access server [5]. MySQL as the application database. Draw.io as a UML (Unified et al.) design [6].

3.2 Design

The business designs used include Use Cases and Activity Diagrams as application workflows. To make them yourself, use Draw io because it is easy to use, and the diagrams are not restricted.

a. Use Case Diagrams

Use case diagram of the patrol scheduling system is presented in **Figure 2**.

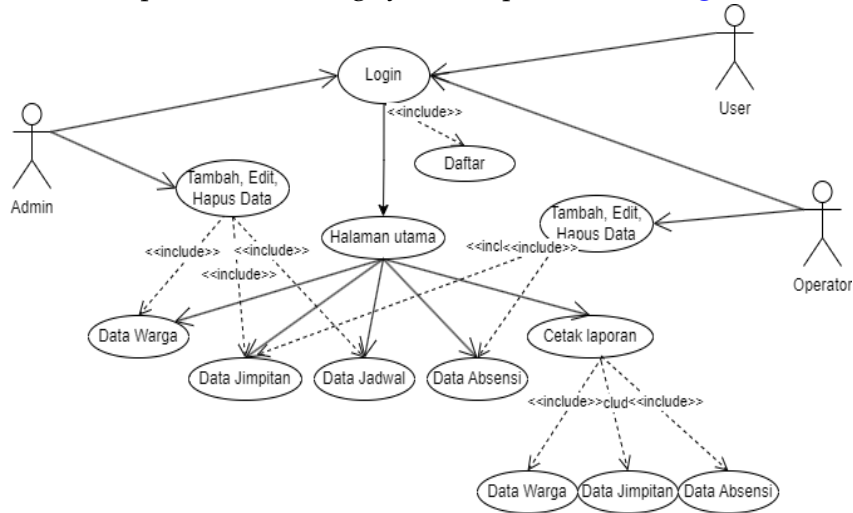


Figure 2. Use Case Diagram of the Patrol Scheduling System

b. Activity Diagrams

The Home/Dashboard Activity Diagram explains the procedures for Admins, Operators and Users to enter the home display, namely by logging in first, they will be directed straight to the home display. Which consists of the number of residents, the number of operations, the number of stops and the patrol schedule according to the day it opens. Activity diagram of dashboard is presented in **Figure 3**.

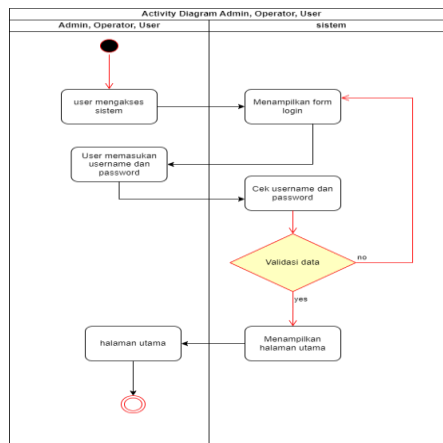


Figure 3. Activity Diagram Home/Dashboard

The Jimpitan Data Activity Diagram is a procedure for Admins, Users and Operators to display the Jimpitan Data Table. Namely, by going to the main page, and selecting the Jimpitan menu, the system will display the Jimpitan Table. Jimpitan data activity diagram is presented in **Figure 4**.

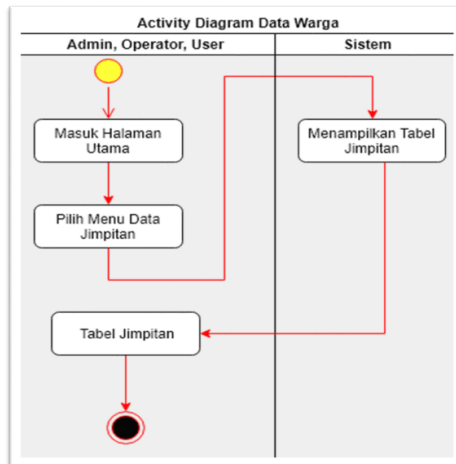


Figure 4. Jimpitan Data Activity Diagram

Activity Diagram Add, Edit and Delete Jimpitan Data is a procedure for adding, editing, and deleting pinch data by the admin and also the operator. That is, if you press the add button, the system will display the add form. If you add, the system will save the data and display the pinch table again. Editing is the same as adding data; if you delete it, the system will delete the data from the database. The activity diagram for adding, editing, and deleting Jimpitan data is presented in **Figure 5**.

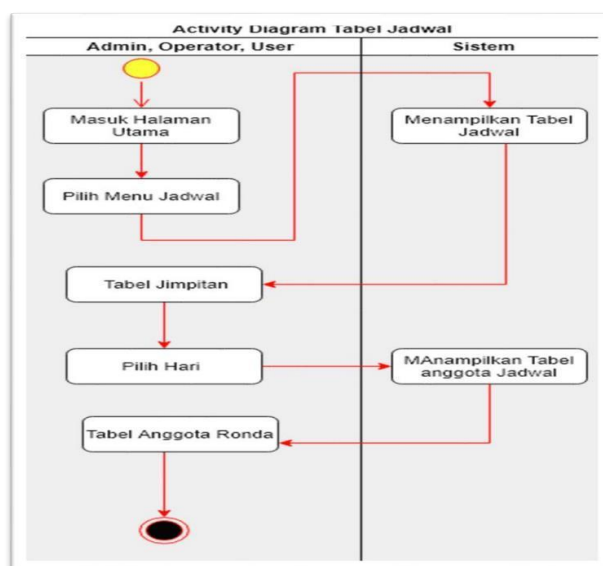


Figure 1. Activity Diagram Add, Edit and Delete Jimpitan Data

Activity Diagram Input and Delete Schedule is the admin's procedure for inputting and deleting patrol members. The method is to press the input button on the schedule table; the system will display the schedule form; if yes, the system will save the data; if not, it will return to the schedule table. If you want to delete patrol member data, enter the patrol member table and press the Delete button. Then, the system will delete the desired data. The activity diagram input and schedule deletion are presented in **Figure 6**.

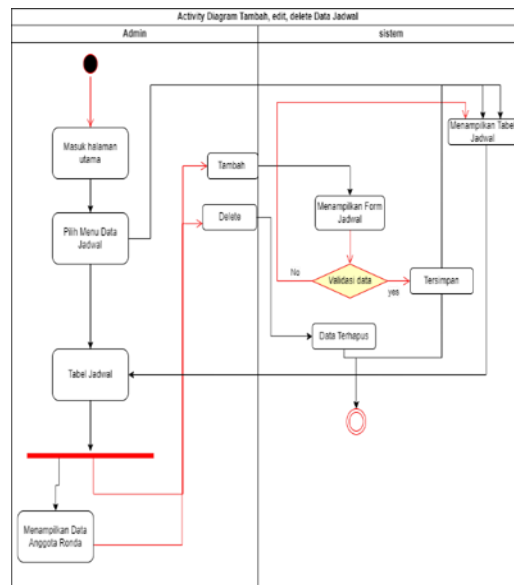


Figure 6. Activity Diagram Input and Delete Schedule

c. Interface Design

1) Home/Dashboard

The Home/Dashboard design, as in Figure 7, has a naming label on the top left and a name label on the top right. Then the Butoon menu on the left also has a Text Area to display Total Residents, Total Implementation, and Total Jimpitan. At the bottom of the Text Area there is a Patrol Schedule Table. Home design is presented in **Figure 7**.

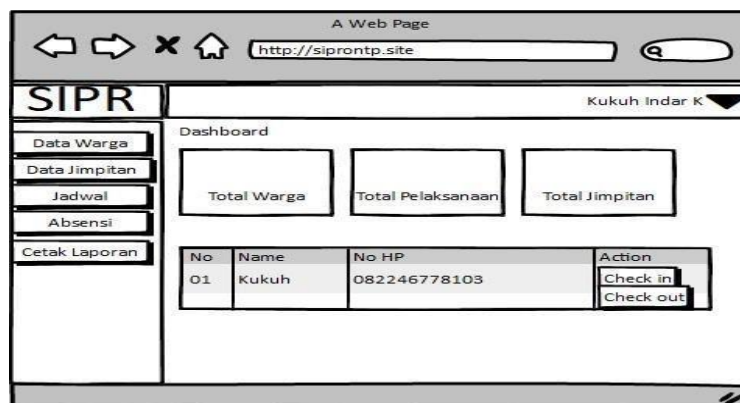


Figure 7. Home/Dashboard Design

2) Schedule Table Design.

As in **Figure 8**, the schedule table design has a naming label and a schedule table consisting of number, day, start time, end time and input.

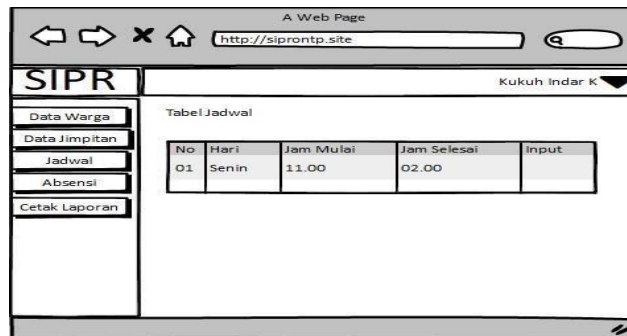


Figure 8. Schedule Table Design

3) Ronda Member Table Design.

The design of the Ronda Member Table, as in **Figure 9**, has a Naming Label and a Table consisting of Number, Name and Action is presented in **Figure 9**.

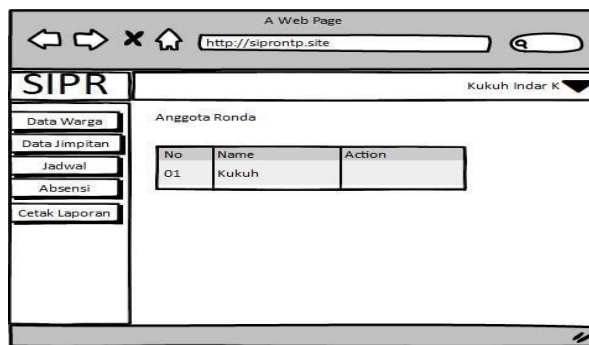


Figure 9. Ronda Member Table Design

4) Attendance Table Design.

The design of the Jimpitan Table is as in **Figure 10**, and there is a Naming Label and also a Jimpitan Table which consists of Number, Day/Date, Name, Status, Departure Time, Return Time, and Fines presented in **Figure 10**.

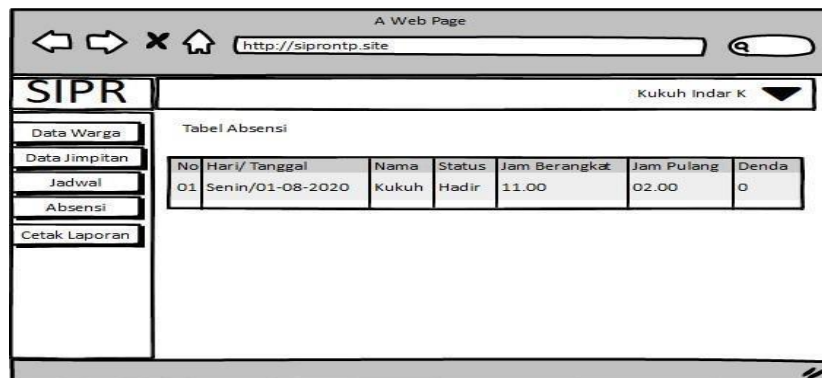


Figure 10. Attendance Table Design

d. Database Design

The process for determining the content and organisation of data required to support the design of the Patrol Scheduling System. Database table relations of the patrol scheduling system are presented in **Figure 11**.

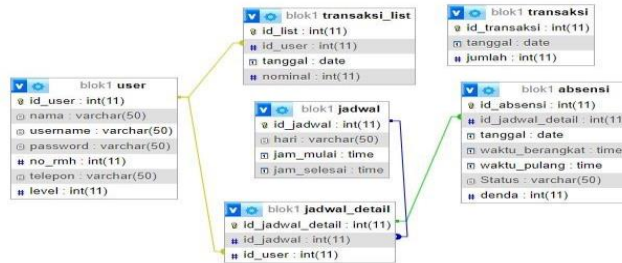


Figure 21. Database Table Relations of the Patrol Scheduling System

3.3 Coding

a. Home/Dashboard

Home/Dashboard itself is the first display after the Admin, Operator or User logs in. For the Home/Dashboard display itself, there are the number of residents, number of operations, number of stops, and the patrol schedule table; for admin and users, the same is shown in **Figure 12**.

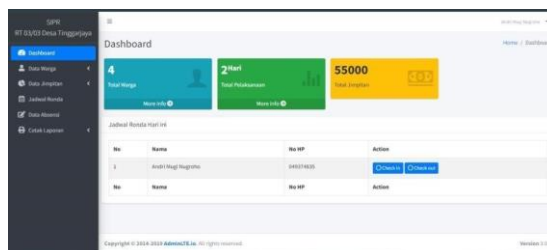


Figure 32. Operator Home/Dashboard Display

a. Admin Schedule Table Display.

The Admin Schedule Table display is as shown in Figure. The Schedule Table is to display the Ronda Schedule, namely Day, Start Time, End Time, then a button to enter Ronda Members according to the day you want to add, as in **Figure 13**.

No	Hari	Jam Mulai	Jam Selesai	Action
1	Senin	11:00:00	02:00:00	<input type="button" value="Input"/>
2	Selasa	11:00:00	02:00:00	<input type="button" value="Input"/>
3	Rabu	11:00:00	02:00:00	<input type="button" value="Input"/>
4	Kamis	11:00:00	02:00:00	<input type="button" value="Input"/>
5	Jumat	11:00:00	02:00:00	<input type="button" value="Input"/>
6	Sabtu	11:00:00	02:00:00	<input type="button" value="Input"/>
7	Minggu	11:00:00	02:00:00	<input type="button" value="Input"/>

Figure 13. Admin Schedule Table Display

b. Table view of Operator and User Patrol Members.

The Ronda Member Table is a table to displays Ronda Members according to the days selected in the Schedule Table, and the Ronda Member Table displays the Number, Name and Delete button for Admin if the User and Operator are the same, but there is no Delete button as in **Figure 14**.

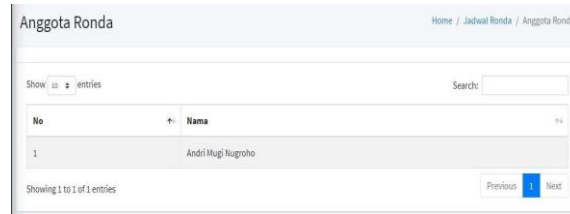


Figure 44. Table view of Operator and User Patrol Members

c. Attendance Table Display

The attendance table is a table for displaying attendance data, as shown in the figure. For those in charge of carrying out attendance, the operator is the first to check out, and then the data is in the table below. The return time has not been recorded, the status is still said to be No Departure, and a fine will be imposed. The data will change if the operator checks out, as shown in the figure. The top data on return time is filled with a fine of 0, and the status changes to Present as in **Figure 15**.

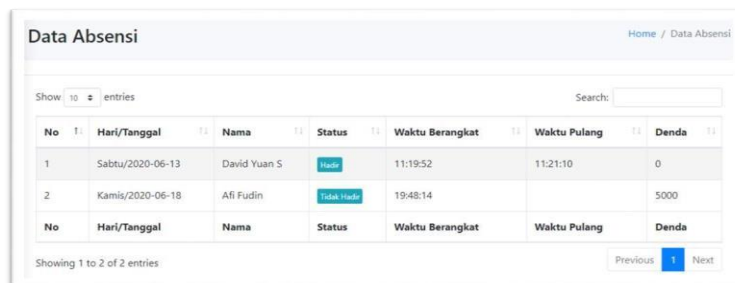


Figure 15. Attendance Table Display

3.4 Testing

a. Testing Admin and User Home/Dashboard Pages

Table 1. Testing Admin and User Home Pages.

No	Testing	Expected results	Test result	Status
1	Displaying Page Home/Dashboard After logging in	Can display Home Page/Dashboard	Successfully displays the page Home/Dashboard	Succeed
2	Test whether the existing menu can be run or not	Can be run	Run successfully	Succeed

b. Operator Home Page/Dashboard Testing

Table 2. Operator Home Page/Dashboard Testing

No.	Testing	Expected results	Test result	Status
1	Displaying Page Home/Dashboard After logging in	Can display Home Page/Dashboard	Successfully displays the page Home/Dashboard	Succeed
2	Test whether the existing menu can be run or not	Can be run	Run successfully	Succeed
3	Absence	Can take attendance and enter data into the database	Successfully conducted attendance and entered attendance data into the database	Succeed

c. Testing Admin Schedule Data Table

Table 3. Admin Schedule Data Table Testing.

No.	Testing	Expected results	Test result	Status
1	Displaying Data Table Timetable	Can display Schedule data table	Successfully displays the Schedule data table	Succeed
2	Add Member Data Ronda	Can add patrol member data	Successfully saved patrol member data	Succeed
3	Displaying Ronda Member Data if you press the desired day	Can Display Ronda Member data table according to the desired day	Successfully displays the patrol member table according to the desired day	Succeed

d. Testing Operator and User Schedule Data Table.

Table 4. Testing Operator and User Schedule Data Table

No.	Testing	Expected results	Test result	Status
1	Displaying Data Table Timetable	Can display Schedule data table	Successfully displays the Schedule data table	Succeed
2	Add Member Data Ronda	Can add patrol member data	Successfully saved patrol member data	Succeed
3	Displaying Ronda Member Data if you press the desired day	Can Display Ronda Member data table according to the desired day	Successfully displays the patrol member table according to the desired day	Succeed

e. Testing Admin Patrol Member Data Table

Table 5. Data Table Test for Admin Ronda Members.

No.	Testing	Expected results	Test result	Status
1	Displaying Data Table Member Ronda	Can display Member data table Ronda	Successfully displays the Member data table Ronda	Succeed
2	Deleting Member data Ronda	Can delete data, Ronda Member	Successfully deleted Member data Ronda	Succeed

f. Testing Data Table for Operator and User Patrol Members

Table 6. Data Table Test for Operator Patrol Members and Users.

No.	Testing	Expected results	Test result	Status
1	Displaying Data Table Member Ronda	Can display member data table Ronda	Successfully displays the Member data table Ronda	Succeed

3.5 Implementation

Currently, the Web-Based Patrol Scheduling System has not been implemented for users. However, the planned implementation stages differ significantly from the approach of the previous research. In an earlier study, system implementation was often done directly without considering the adaptation and user training stages. This usually results in a need for more understanding and acceptance from society, which affects the system's effectiveness. This study took a more careful, gradual approach. System implementation will begin with an explanation to the RT head and community members, followed by training in using the system. The system will be used gradually once people understand how to use it. This approach is required to increase public understanding and acceptance of the system, ensuring more effective implementation.

4. Conclusion

The Web-Based Patrol Scheduling System in RT 03 RW 03, Tinggarjaya Village, Jatilawang District, Bayumas Regency, has been successfully built and tested by the developer and is running as desired. The Ronda Scheduling System is hoped to facilitate Ronda activities in RT 03 RW 03, Tinggarjaya Village, Jatilawang District, Bayumas Regency.

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