

DEVELOPMENT OF A WEB-BASED REGISTRATION SYSTEM AT THE TUNJUNGSEKAR SUBDISTRICT OFFICE

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ABSTRAK

The Tunjungsekar subdistrict office regularly organizes various activities involving local participants. Currently, the registration process is conducted using Google Forms, which, while facilitating data collection, presents challenges such as duplicate registrations and difficulties in managing participant quotas. Additionally, participant data processing and activity summaries are still handled manually, reducing administrative efficiency. To address these issues, a web-based registration system was developed using PHP with the Laravel framework and a MySQL database. This system enables automatic validation to prevent duplicate registrations and allows for more effective participant quota management. Blackbox testing shows that the system works, the system functions properly without significant bugs or errors. With this system, activity data management becomes more structured, participant records are more accurate, and administrative processes are more efficient. The implementation of this system is expected to support the digitalization of community services and enhance the community's experience in accessing information and services more practically and systematically.

Keyword : *Information System, Administrative Digitalization, Laravel, MySQL*

1. INTRODUCTION

The Tunjungsekar subdistrict office regularly organizes various with local participants. Currently, the registration process for these activities is conducted using Google Forms, and then shared through the social media channels. While this method facilitates data collection, several challenges often arise, such as participants registering multiple times and difficulties in controlling participant quotas. Additionally, managing participant data and summarizing activities are still done manually, making the administrative process less efficient.

To address these issues, a system is needed to help the community access information in a more structured manner while assisting staff in managing participant data and activities systematically. With this system, registration validation can be automated to prevent duplicate entries, and participant quota management can be controlled more effectively..

The research conducted at Posyandu Lemahayu by developing a registration information system serves as a solution to existing challenges, such as data loss caused by manual record-keeping. Additionally, the developed information system makes activity reporting at Posyandu easier, faster, and more accurate [1]

Another study on the implementation of the Laravel framework for developing a restaurant information system was conducted due to the previous manual reservation process, which required customers to visit the restaurant in person. This method was inefficient, prompting the development of a website to address the issue. The research show that the implementation of this information system

improves the efficiency of restaurant reservations [2].

Another study focused on the registration process for the MBKM program, which was still conducted using Google Forms. An application was developed using PHP with the Laravel framework to facilitate the registration process and supervisor selection. This application helps streamline registration and minimizes issues such as data duplication and potential errors [3].

The Registration System at the Tunjungsekar Subdistrict Office was built using PHP as the programming language, utilizing the Laravel framework and MySQL as the database management system. The use of Laravel enables a more structured, secure, and efficient system development, while MySQL serves as the database that organizes and stores registration information systematically [4]

With this registration system, it is expected to enhance the efficiency of activity registration administration and provide a better experience for the community in accessing subdistrict office services digitally.

2. LITERATURE REVIEW

2.1. Website

A website consists of multiple pages that deliver content such as text, images, audio, video, and animations, and can be accessed through the internet. With an internet connection, anyone can access a website through a browser to obtain useful digital information. In general, a website consists of

interconnected pages that serve as a platform for providing information in a digital format [5].

The benefits of websites today are not limited to the IT sector. During the pandemic, websites became essential for business development. The demand for websites continues to grow in line with increasing needs. Moreover, Indonesia has moved past the pandemic and entered the new normal era, where new regulations are being implemented. This situation requires business and industry players in Indonesia to make wise and strategic decisions [6].

2.2. PHP

PHP is a scripting language that runs on the server side and was originally created for web development, although it is also capable of general-purpose programming. It was initially developed by Rasmus Lerdorf in 1994. The name PHP now stands for "PHP: Hypertext Preprocessor," forming a recursive acronym. As an open-source language, PHP is freely available and distributed under the PHP License, which differs in some aspects from the widely used GNU General Public License (GPL) in other open-source projects [7].

2.3. Laravel

Laravel is a framework that serves as a conceptual foundation for solving complex problems. In other words, Laravel is a framework used for web development. Its use helps reduce development time and simplifies the maintenance and improvement process of websites [8].

Laravel is a PHP framework that follows the Model-View-Controller (MVC) architectural pattern, which separates business logic, presentation, and data layers, allowing for cleaner and more organized code management. This framework utilizes the Blade engine to generate views, employing Blade syntax that closely resembles PHP [9].

2.4. Database MySQL

MySQL is a database server software capable of processing and delivering data quickly, supporting multiple users simultaneously, and utilizing standard SQL (Structured Query Language) commands.

MySQL is a free database server, making it accessible for both personal and business use without requiring a license fee. It was first developed by Michael Widenius, a database programmer. In addition to functioning as a database server, MySQL can also be used to access databases hosted on a MySQL server [10].

2.5. Information System

An information system is a collection of interconnected data combined with technology to support management in achieving its goals. It consists of structured and systematically integrated

components [11]. An information system utilizes humans as sources, along with hardware, software, data, and networks, to carry out input, output, processing, storage, and control, converting data into information [12].

2.6. Blackbox Testing

Black Box testing is a software testing technique where the internal workings of the application under test (AUT) remain unknown to the tester. Also known as functional or input-driven testing, it focuses on evaluating system functionality based on inputs and expected outputs. This method includes six approaches: equivalence partitioning, boundary value analysis, cause-effect graphing, fuzzy testing, and model-based testing [13].

Black Box testing has both advantages and disadvantages in its implementation. One key advantage is its ability to identify unmet aspects of software requirements. However, its limitation lies in the tester's restricted knowledge of the internal workings of the software, preventing comprehensive testing [14].

2.7. Tunjungsekar Subdistrict Office

Tunjungsekar comes from the combination of the words *tunjung*, which refers to the name of a flowering tree, and *sekar*, which means flower or blossom. Thus, Tunjungsekar can be interpreted as a village with the *Tunjung/Tanjung* flower as its icon or mascot. Philosophically, Tunjungsekar represents a village or urban area where the residents are always cheerful, appreciate beauty, and value peace and happiness.

Tunjungsekar subdistrict office is one of the subdistrict located in Lowokwaru District, Malang City, East Java. The Tunjungsekar Urban Village Office has the primary duty of carrying out urban village governance, empowering the community, providing public services, maintaining public order and security, as well as preserving infrastructure and public service facilities [15].

3. METHOD

3.1. Admin Menu Structure

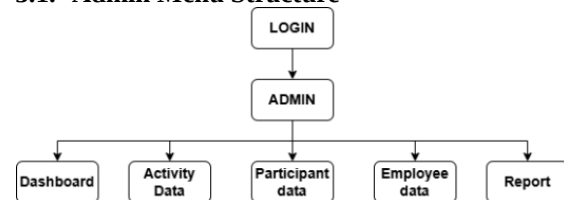


figure 1. Admin Menu Structure

In the Admin Menu Structure, the admin has access to all available features, including the Activity Data, Participant Data, Employee Data, and Report Data pages. Additionally, the admin can manage and process data that has been inputted by users. Users are required to log in through the Login Page before they can access the admin panel. After

a successful login, they gain entry to the admin interface and can make use of its available features.

3.2. User Menu Structure

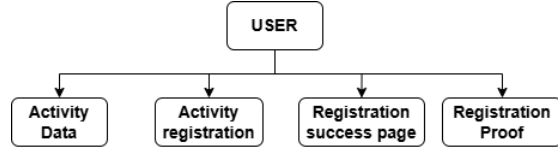


figure 2. User Menu Structur

In the User Menu Structure, users can access the Activity Data page to view the list of available activities. They can then proceed with the Activity Registration process. Once the registration is completed successfully, users have the option to print the Registration Proof as confirmation of their successful enrollment.

3.3. Admin System Flowchart

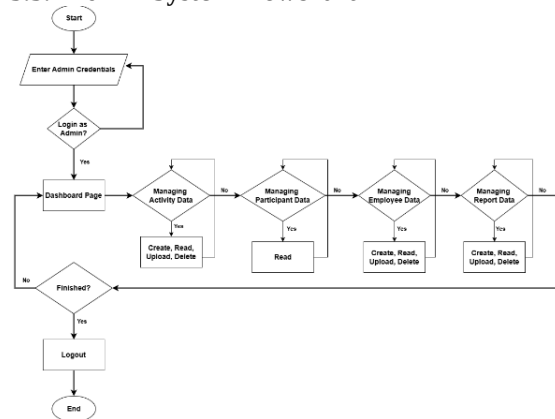


figure 3. Admin System Flowchart

In the Admin Flowchart, if an admin user already has an account, he will proceed to the Admin Login page, where he should enter their username and password. If the entered credentials are correct, they will be directed to the Admin Dashboard. However, if the email or password is incorrect, they will be redirected back to the Login Page to re-enter the credentials. Once successfully logged in, the admin can manage activity data, participant data, employee data, and report data through the dashboard.

3.4. User System Flowchart

The flowchart begins with the Available Activities Page, which can be accessed by the user. The user can then select the desired activity to register for and proceed with the registration process. If the registration is successful, the system will direct the user to the Registration Success Page. At this stage, the user has the option to print the registration proof. Once the process is completed, the user will be redirected back to the main page.

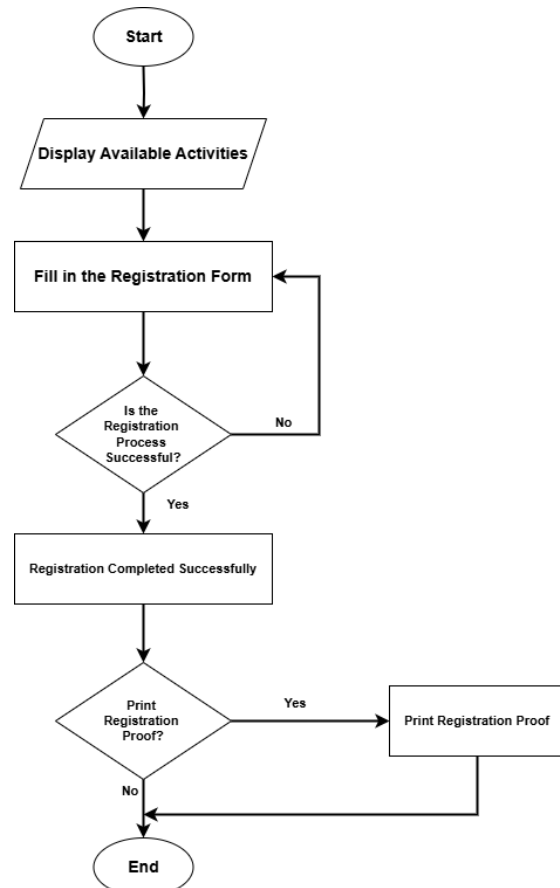


figure 4. User System Flowchart

3.5. DFD Level 1

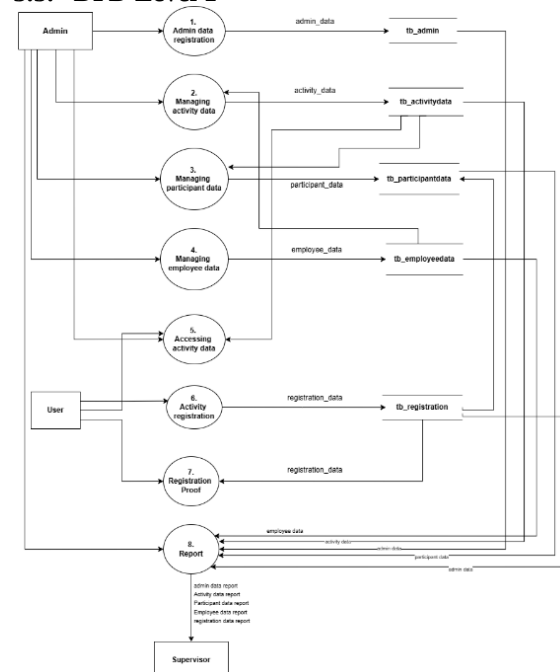


figure 5. DFD Level 1

The diagram above represents a Level 1 Data Flow Diagram (DFD) for an activity management system, involving two main actors: Admin and User. The Admin has several key processes, including

managing data registration (1), managing activity data (2), managing participant data (3), managing employee data (4), and accessing activity data (5).

The User can register for an activity (6) and obtain registration proof (7). The final process is Report (8), which integrates various data, such as employee data, activity data, admin data, participant data, and registration data, to generate a comprehensive report. The data from each process is stored in database tables like `tb_admin`, `tb_activitydata`, `tb_participantdata`, `tb_employeedata`, and `tb_registration`, which are interconnected to ensure data completeness and consistency within the system.

4. RESULT AND DISCUSSION

4.1. Dashboard Page

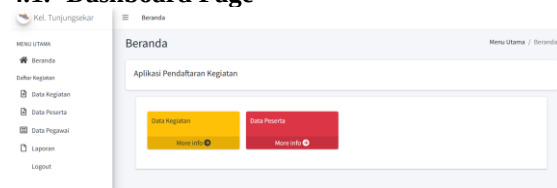


figure 6. Dashboard Page

The dashboard page is the first menu in the application. On this page, there are buttons to access the activity data page and the participant data page. This page can only be accessed by the admin.

4.2. Activity Data Page

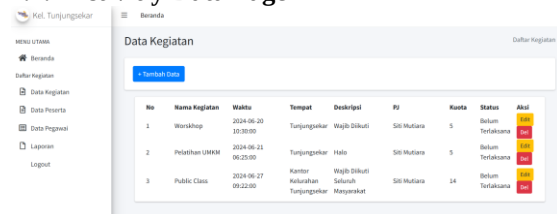


figure 7. Activity Data Page

The Activity Data page serves to manage information related to activities and is accessed by admin only. Here, the admin can add, modify, or remove activity entries as necessary. Moreover, the admin has the ability to define participant quotas for each activity.

4.3. Participant Data Page

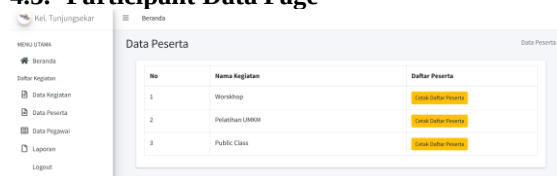


figure 8. Participant Data Page

The Participant Data page displays a list of participants who have registered for each activity. This page can only be accessed by the admin. On this page, the admin can export participant data into a .pdf format.

4.4. Employee Data Page

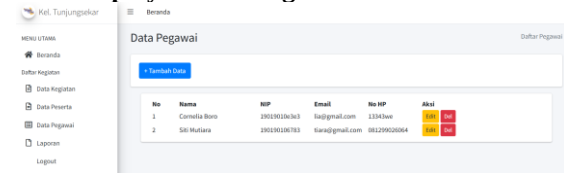


figure 9. Employee Data Page

The Employee Data page is used for recording employee data. This page can only be accessed by the admin, and the employee data is also used on the Activity Data page to assign a person in charge for each activity.

4.5. Report Page

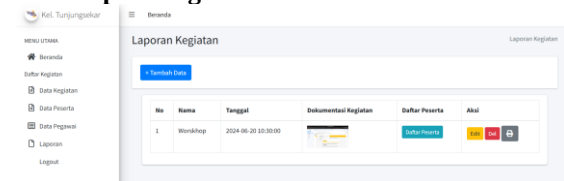


figure 10. Report Page

The Activity Report page contains reports of completed activities. On this page, the admin can add activities that have been conducted and upload activity documentation in .jpg or .jpeg format. Additionally, the admin can create activity reports that include the activity description, participant list, and activity documentation.

4.6. Activity Data Page



figure 11. Activity Data Page

The page above is the Activity Registration page. This page can be accessed by users or the public. The public can view the activities that are currently being held or available to join. They can register for an activity as long as there is still available. Additionally, participants are only allowed to register once for each activity.

4.7. Registration Form Page

figure 12. Registration Form Page

This is the Activity Registration page. On this page, users or the public can enter their personal data according to the provided form. Only those who have not previously participated in the same activity can register. If National Identification Number (NIK) is already registered, he will not be able to sign up. Once the registration is successful, participants can print their registration proof.

4.8. Blackbox Testing

The testing was conducted using the Blackbox testing method.

Table 1. Blackbox Testing

No	Features	Testing Scenarios	Expected Results	Test Results
1.	Login	Clear login data, then click login.	Logged in successfully	Valid
		Log in with registered credentials	System denies access and redirects to the login page	Valid
		Log in with unregistered credentials	System denies access and redirects to the login page	Valid
		Log in with an incorrect password	System denies access and redirects to the login page	Valid
2.	Dashboard Page	Click the "More Info" button for activity data	Redirected to the activity data page	Valid
		Click the "More Info" button for participant data	Redirected to the participant data page	Valid
3.	Activity Data Page	Click the "Tambah Data" button	Redirected to the "Add Data" page	Valid
		Attempt to add data while leaving one field empty	Failed to add data; all fields must be filled	Valid
		Successfully add data by filling in all available fields	Successfully added data	Valid
		Click the "Edit" button	Redirected to the "Edit Data" page	Valid
		Edit data by modifying one of the fields	Successfully edited data	Valid
		Click the "Del" button	Data successfully deleted	Valid
4.	Participant Data Page	Open the participant data page	Display a list of activities and the "Daftar Peserta" button	Valid
		Click the "Cetak Daftar Peserta" button	Successfully generate the participant list in .PDF format and make the file available for download	Valid
5.	Employee Data Page	Click the "Tambah Data" button	Successfully redirected to the "Add Data" page	Valid
		Attempt to add data while leaving one field empty	Failed to add data; all fields must be filled	Valid
		Successfully add data by filling in all available fields	Successfully added data	Valid
		Click the "Edit" button	Successfully redirected to the "Edit Data" page	Valid
		Edit data by modifying one of the fields	Successfully edited data	Valid
		Click the "Del" button	Data successfully deleted	Valid

No	Features	Testing Scenarios	Expected Results	Test Results
6.	Report Page	Click the "Tambah Data" button	Successfully redirected to the "Add Data" page	Valid
		Attempt to add data while leaving one field empty	Failed to add data; all fields must be filled	Valid
		Successfully add data by filling in all available fields	Successfully added data	Valid
		Click the "Edit" button	Successfully redirected to the "Edit Data" page	Valid
		Edit data by modifying one of the fields	Successfully edited data	Valid
		Click the "Del" button	Data successfully deleted	Valid
		Click the "Print" button	Successfully download the data in .PDF format	Valid
7.	Activity Data Page	User accesses the activity data page	Displays information about ongoing activities	Valid
		Click the "Daftar" button	Successfully redirected to the registration page	Valid
		Activity quota is full	"Daftar" button is disabled with a notification indicating full capacity	Valid
8.	Registration Form Page	Click the "Register" button without filling in the required fields	System rejects the submission and returns to the registration page	Valid
		Enter an already registered NIK	A notification appears stating that the NIK is already registered	Valid
		Fill in all fields and click the "Daftar" button	Successfully registered for the activity	Valid
		Click the "Kembali" button	Successfully returned to the activity list page	Valid

Based on blackbox testing conducted on Table 1. Blackbox Testing, the system has been proven to function properly. The login feature operates in verifying user credentials, ensuring that only registered users can access the system. Page navigation works smoothly without any issues, including the "More Info," "Tambah Data," and "Edit" buttons. Data management works well, as the system can prevent incomplete input and allows users to add, edit, and delete data correctly. The report printing feature in PDF format performs as expected, enabling users to download participant lists and activity reports. Additionally, the system successfully handles registration quota limits by disabling the "Daftar" button when the capacity is full and ensuring proper input validation on the registration form. Overall, no significant bugs or errors were found during this testing.

5. CONCLUSION

Based on the blackbox testing conducted on Table 1. Blackbox Testing, it can be concluded that the application functions well. All key features, including login, page navigation, data management, report generation, and input validation, operate optimally without any significant bugs or errors. Therefore, this application can help the Tunjungsekar subdistrict office in managing activity data more efficiently. With the available features, the process of managing activity data, participants, and reports becomes more systematic, allowing administration to be carried out in a more structured. This proves that the application is an effective

solution in supporting the digitalization of activity management at the Tunjungsekar subdistrict office.

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