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# Web-Based Data Collection Service System Design for the Social Services Department of Nias Selatan

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**ABSTRACT** – *The Social Services Department of Nias Selatan faced challenges in managing data on Penyandang Masalah Kesejahteraan Sosial (PMKS) due to manual processes and geographical constraints across the district. This study aimed to design a web-based data collection service system to improve data management, complaint handling, announcements, and dissemination of social welfare information. Data were collected through observations and interviews, and the system was modeled using Unified Modeling Language (UML) diagrams, including Use Case, Activity, Sequence, and Class Diagrams. The system was developed using the waterfall method, with PHP and MySQL as the programming and database technologies. Functional testing using the black box method showed that the system functioned as expected. The resulting web application facilitated effective and transparent management of PMKS data, enhanced complaint services, and improved information delivery to the community. The system supported the Social Services Department in performing its duties more efficiently, particularly in managing PMKS data across multiple sub-districts. Future developments were considered, including security enhancements and integration with social media platforms for broader information dissemination.*

***Keywords*****:** *E-Government Services, Penyandang Masalah Kesejahteraan Sosial (PMKS), Social Welfare Data Management, UML Modeling, Web-Based System Design.*

## INTRODUCTION

Currently, the development of information technology is very rapid so that communication and obtaining information are no longer limited by distance and time. The ongoing development of technology has an impact on the process of data processing and delivering information according to needs. The use of the internet in aspects of government encourages the realization of e-government which is expected to bring benefits in empowering the community through increasing access to information, improving government services to the community and improving more efficient and transparent government management [1], [2], [3]. The public service information system is a series of activities that include storing information from the organizer to the community and vice versa in oral form and presented manually or electronically. Public services must be able to realize good governance and clean governance [4].

Data on Penyandang Masalah Kesejahteraan Sosial (PMKS) refers to individuals, families, or community groups who, due to obstacles, difficulties, or disorders, cannot carry out their social functions, resulting in their physical, spiritual, and social needs not being adequately and reasonably met. The Social Services Department, as a government agency at the district level, has the main task and function of conducting data collection, data management, and community services [5].

In carrying out its function, the social service has not maximized the use of information technology that can facilitate officers in terms of data collection services for people with social welfare problems because officers still use manual work processes in data management services for people with social welfare problems, which then for data collection of employees at the district social service is not adequate, and the geographical location of the Nias Selatan district area which consists of several land areas that are far away and access to locations that are still difficult and some are on the islands, so that in the process of collecting and managing data on people with social welfare problems which are still not effective and efficient for officers at the Nias Selatan district social service, which is expected to facilitate activities that occur between sub-district and district officers in conducting data collection, and make it easier for district social service officers to provide data information on services for people with social

welfare problems, news of social service activities, assistance information, more effective social service announcements [6], [7].

Based on the background described above, the author designed and developed a web-based system titled "Web-Based Data Collection Service System Design for the Social Services Department of Nias Selatan".

## METHOD

### 2.1. Overview

The social service is an agency with the main task and function of conducting data collection, data management and services to the community experiencing social problems in accordance with applicable regulations. This study only focuses on the information system for data collection services for people with social welfare problems, complaint services, announcements and news activities at the Nias Selatan Regency Social Service.

### 2.2. Method of Collecting Data

To obtain the data needed in this study, the author collected data using the methods used to support the implementation of the research as follows:

1. Observation
   On June 10, 2021, the researcher directly reviewed the research location at the Nias Selatan Regency Social Service Office located at Jl. Arah Lagundri km 7 Postal Code 22865. This observation was carried out to collect data on people with social welfare problems.
2. Interview
   At this stage, the researcher conducted an interview and direct discussion on June 14, 2021, with Mr. Eka Darma Putra Hondre, Head of the Program and Data Section. The discussion focused on the research objectives, specifically exploring the previous information system used for collecting data on social welfare problem cases (PMKS) and identifying the challenges faced by officers during the data collection process.

### 2.3. System Design

#### 2.1.1. Use Case Diagram

The following is an overview of the system in the form of a use case diagram, as shown in Figure 1. The use case diagram illustrates the actors involved in the proposed system, which consist of: Administrator (Admin Dinas Sosial), Operator and Community (Masyarakat). Each actor has a use case role such as Administrator can login, see the dashboard, manage admin data, operator can add and delete admins, receive public complaint information, manage news and announcements, verify PMKS data, print data reports and PMKS recapitulation. Operator can login, see the dashboard, input PMKS data collection. The community can see information on the social service website, PMKS data service information, can submit complaints by accessing the complaint form service on the website.

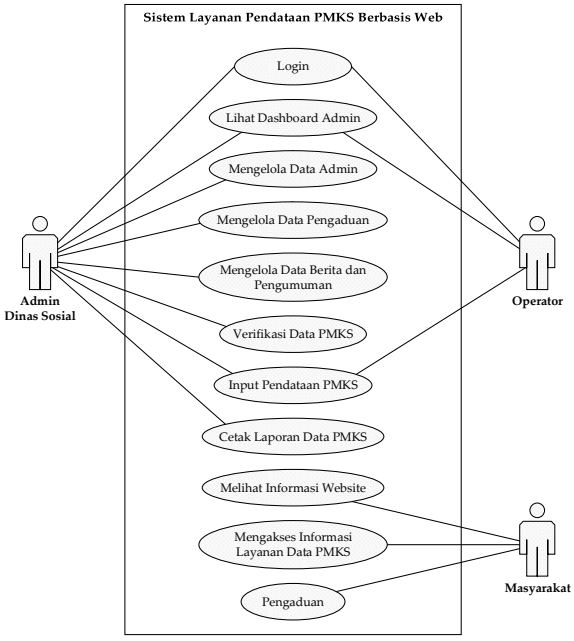


**Figure 1.** Use Case Diagram

#### 2.1.2. Activity Diagram

1. Activity Diagram Admin Login
   Admin login activity diagram is seen in the web-based application system that is carried out by the admin before entering the admin Dashboard page (see Figure 2).

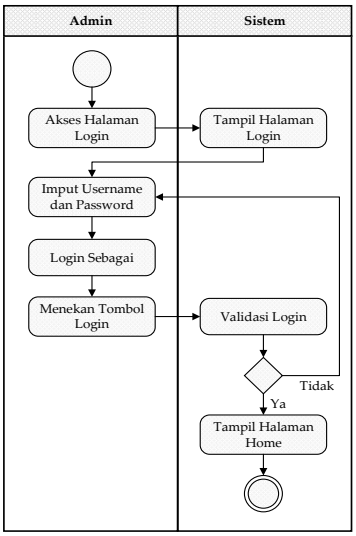


**Figure 2.** Activity Diagram Admin Login

2. Activity Diagram for Data Collection
   Activity diagram of data collection that can be done by the admin on the system to input data on people with social welfare problems (see Figure 3).

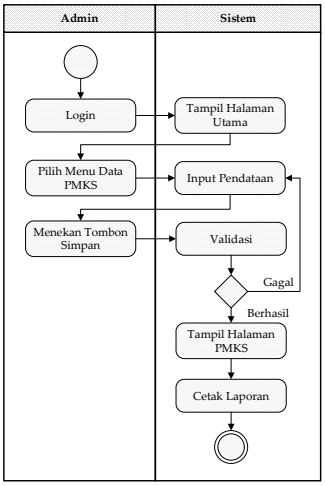


**Figure 3.** Activity Diagram Data Collection

### 2.1.3. Sequence Diagram

1. Sequence Diagram of Data Collection
   Sequence diagram of data collection that can be done by the admin to input PMKS data (see Figure 4).

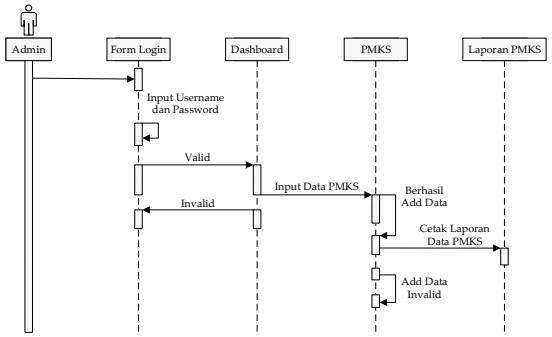


**Figure 4.** Sequence Diagram of Data Collection

2. Sequence Diagram Admin Login
   Sequence diagram of admin login in the data collection system (see Figure 5).

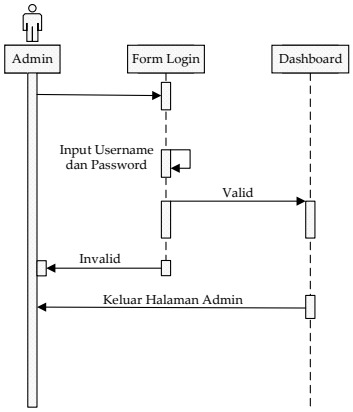


**Figure 5.** Sequence Diagram of Admin Login

### 2.1.4. Class Diagram

Class diagram describes the static relationship that occurs in the social welfare problem data collection service information system where each class has attributes owned by a class and methods or operations owned by a class (see Figure 6).

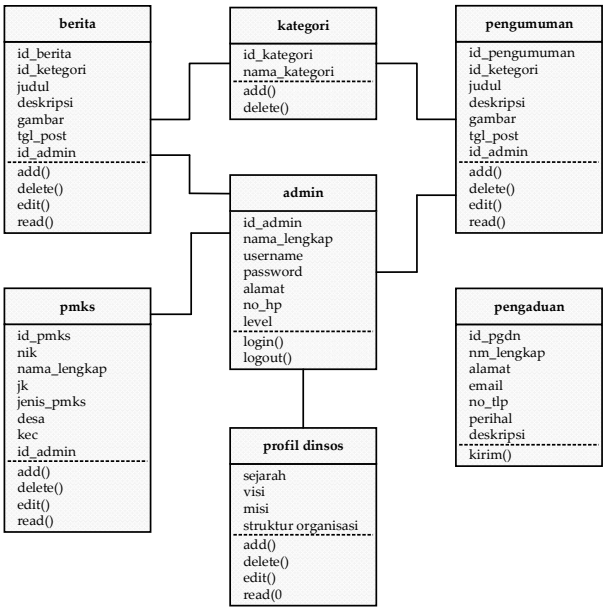


**Figure 6.** Class Diagram

## 2.4. Entity Relationship Diagram Design

Design an entity relationship diagram to show the relationship between several tables in the system and the relationship between each entity. Figure 7 illustrates the entity relationship diagram for the system to be designed.

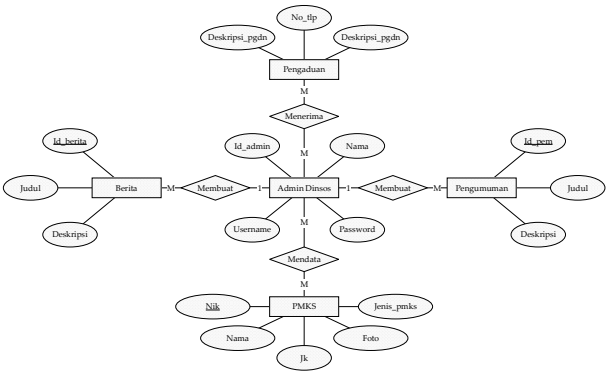


**Figure 7.** Entity Relationship Diagram

## RESULTS AND DISCUSSION

### 3.1. Results

The final results obtained from the research at the Nias Selatan Regency Social Service Office, namely producing a website program created using the PHP programming language and the MySQL database which is run on a localhost network.

### 3.2. Discussion

#### 3.2.1. Login View

First, the admin enters the login page (see Figure 8) by filling in the username and password and if the password is wrong, there is a notification on the system "Sorry, Login Failed, your password does not match!".

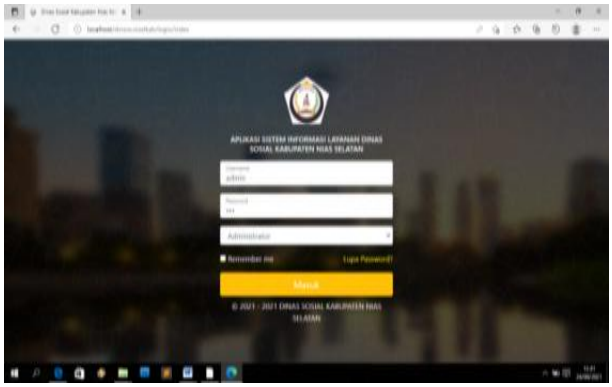

**Figure 8.** Login Page

#### 3.2.2. Dashboard View

After entering the login page and successfully, the admin dashboard page or main page will appear (see Figure 9).

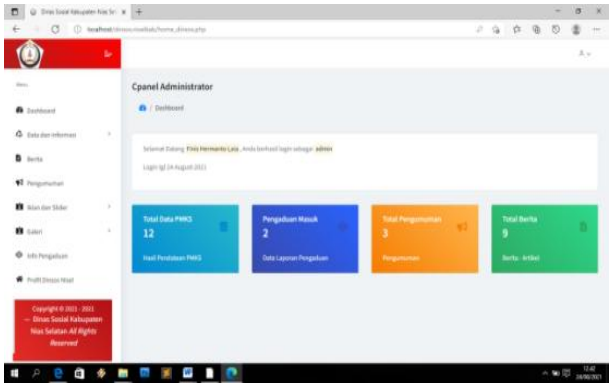


**Figure 9.** Dashboard View

#### 3.2.3. PMKS Data Display

Display of data on social welfare problem sufferers that has been successfully saved by the admin in the system (see Figure 10).

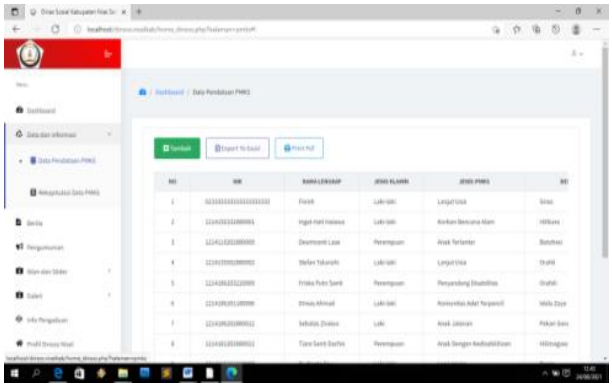

**Figure 10.** PMKS Data Display

#### 3.2.4. PMKS Data Print Report View

Display of the output of the print report of data on people with social welfare problems according to the data collection results inputted by the admin (see Figure 11).


**Figure 11.** PMKS Data Print Report

#### 3.2.5. Home View

The home page display that can be accessed by anyone without having to log in first (see Figure 12). On this display there are several menus including the home menu as the main menu display, the profile has a submenu of vision and mission, history, organizational structure, and news menus, the data and information menu has a submenu of PMKS data, the gallery menu has a submenu of photos, videos, announcement menus, the service menu has a submenu of complaints.


**Figure 12.** Home Page

#### 3.2.6. Complaint Service View

The appearance of public complaint services on the social services website page (see Figure 13), where the public can submit criticism and suggestions through the available form.

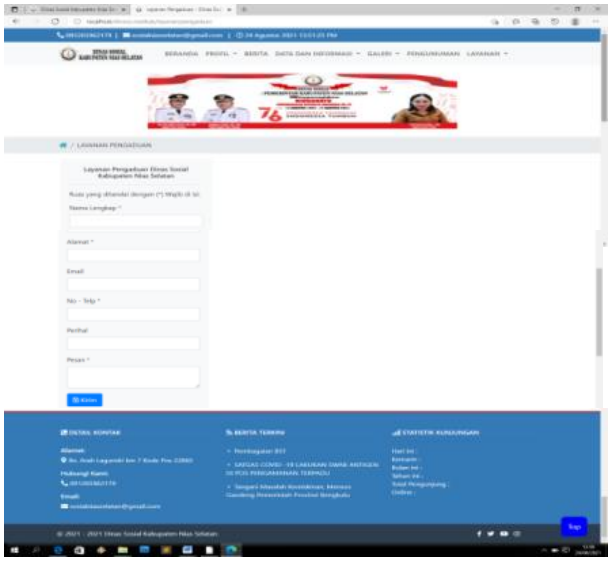

**Figure 13.** Public Complaints Service

### 3.3. Black Box Testing

Black box testing is a software testing method performed without prior knowledge of the internal structure of the code or program. This testing focuses on evaluating whether system functions produce appropriate outputs based on specific inputs. The testing was conducted by a team of testers following the system's functional specifications. The testing mechanism involved providing various input scenarios to the features being evaluated and assessing whether the resulting outputs met expectations. If the outputs matched the expected results, the test was deemed successful; otherwise, any discrepancies were recorded as findings or bugs. Table 1 below presents the results of black box testing conducted on the login page of the system.

**Table 1**. Login Form Page Testing

| No | Test Conditions | Test Case | Expected Results | Test Results |
|---|---|---|---|---|
| 1 | Username and Password are not filled in then click the login button | Username (blank) Password (blank) | The system will display that the input field is mandatory. | As Expected |
| 2 | Entering the correct Username and incorrect Password | Username (admin) Password (admin1) | The system will display "Sorry, login failed, your password does not match" | As Expected |
| 3 | Enter the correct Username and Password according to the database. | Username (admin) Password (admin123) | The system accepts login access and then immediately displays the admin Dashboard menu. | As Expected |

## CONCLUSION

Based on the results of system testing conducted in accordance with the research objectives, it can be concluded that this information system is capable of assisting and facilitating officers at the Nias Selatan Regency Social Service, particularly in the programs and data division, in managing data on PMKS and recapitulating the number based on the types of PMKS across several sub-districts more effectively, transparently, and in an up-to-date manner. Furthermore, this system also simplifies the delivery of information related to announcements, news about social service activities, and provides a more effective and efficient public complaint service. For future development, it is recommended to enhance the system's security and adapt the system to current technological advancements. Adding social media sharing features to each news article could also be beneficial to allow information to be more easily accessed and widely shared by the public.

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