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Design of Web-Based Incoming and Outgoing Mail Information System at Diskominfo Kabupaten Tapanuli Tengah

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Keywords

Information System, Letters, Waterfall Method, UML, PHP and Phyton, MySQL

The use of technology that has developed in the current era plays an important role in assisting an activity in the field of information systems. The Communication and Informatics Office in the Central Tapanuli district is a government agency that manages incoming and outgoing mail to communicate with organizations inside and outside the agency. Fulfilled, such as minimal information received. A web-based information system is needed to be able to solve problems in managing mail. Researchers created an information system for incoming and outgoing mail to improve the quality and efficiency of mail management using the Waterfall method in a series of development processes that used UML (Unified Modeling Language) using the programming language PHP, Python, HTML and MySQL database. It is expected that with this information system it is hoped that it will become a proposed system to facilitate the management of letters quickly and accurately.

1. INTRODUCTION

The development of science and technology in the field of information is currently experiencing very rapid progress and has an influence on all activities carried out by organizations. The higher the communication technology used, the faster the information delivery process will be[1]–[3]. In the letter information field system it becomes very important in the activities of government and private agencies. Letters are a means of communication used by certain parties to other parties in writing. Letters are written communication tools to convey messages[4]–[6].Correspondence is an important thing in an agency. Every incoming and outgoing mail data needs to be ensured that it is stored and properly organized. At present, there are still many agencies or organizations that manage mail manually where letters received are recorded manually in a book so that if the records are lost, scattered or damaged, the letter data will be lost. The Office of Communication and Informatics of Central Tapanuli Regency is a KOMINFO institution located in Central Tapanuli Regency which has the task of administering government affairs in the field of communication and informatics for the area of Central Tapanuli Regency, North Sumatra. Therefore, The KOMINFO Office of Central Tapanuli can receive many official letters and invitations and not a few of them need to be disposed of. However, in the management of letters received, DISKOMINFO is still done manually by the receptionist as well as the process of disposition of letters which is still manual in the form of physical letters. This process certainly takes quite a long time and is prone to errors in the management of letters and in the delivery of letters, such as damaged, scattered or lost letters. This causes the management of letters at DISKOMINFO in Central Tapanuli Regency to be inefficient and ineffective. In the process of sending letters there are also problems such as letters that will be sent at any time cannot be sent immediately because they have to wait for the delivery service to return some time later. The excessive use of paper is also the second problem that occurs at DISKOMINFO in Central Tapanuli Regency, this results in more costs being required. the problem of handling mail is a major problem in maintaining the integrity of information that will one day be needed by a company or organization. Mail handling must be carried out in a practical and efficient manner so that incoming letters can be neatly arranged without spending a lot of time and make it easier to search for incoming letters. the problem of handling mail is a major problem in maintaining the integrity of information that will one day be needed by a company or organization. Mail handling must be carried out in a practical and efficient manner so that incoming letters can be neatly arranged without spending a lot of time and make it easier to search for incoming letters. the problem of handling mail is a major problem in maintaining the integrity of information that will one day be

needed by a company or organization. Mail handling must be carried out in a practical and efficient manner so that incoming letters can be neatly arranged without spending a lot of time and make it easier to search for incoming letters.[7]–[10]. A bad mail system can cause losses to organizations such as loss of letters and information contained in letters, the office also becomes untidy due to piles of abandoned letters, and it is difficult to find old letters again. based on some of the problems found by the author, this research proposes an information system with an electronic system that can assist in managing incoming and outgoing mail, namely by utilizing website-based technology that allows management of incoming and outgoing mail to run effectively and efficiently .

2. METHODS

The data collection method was carried out by the author to design an information system for incoming and outgoing mail at DISKOMINFO Tapanuli Tengah.

Method of collecting data

Observation. The observation method is a method of observing and recording directly carried out by researchers in the field of work with the aim that researchers can understand and solve problems in incoming and outgoing letters using effective methods.

Interview. The interview method is a data collection technique that is carried out directly to the head of the field, secretariat and employees who take care of correspondence. This method is carried out to strengthen the results of observations. So we need an interview with questions and answers.

Waterfall method

The waterfall model provides a sequential or sequential software lifeflow approach starting from software requirements analysis, design, coding, testing, and support stages.[11], [12]. According to[13]–[15]suggests that "The SDLC waterfall model is also called a linear sequential model or classic life cycle". The following are the stages of the waterfall method as follows.

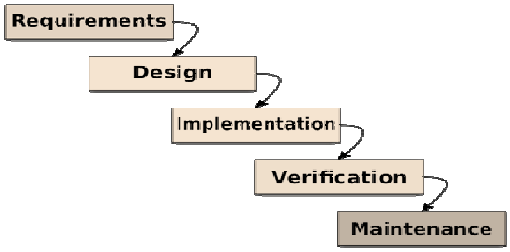

Figure 1. Waterfall method

Requirements Stage

At this stage the author studies the incoming and outgoing mail work system to be able to evaluate the problems that exist in the Central Tapanuli DISKOMINFO such as: The large use of paper used, Recording and searching for mail files that are still manual using an agenda book, Late letters due to waiting to be re-approved, Operational costs of mail delivery services. So it is necessary to design a web-based system to make it easier to process incoming and outgoing mail. For the data collection stage taken from observation, interviews, literature study.

Design Stage

At this stage the author uses UML (Unified Modeling Language) tools. This system is designed using diagram.io software from starting to make use case diagrams, class diagrams, activity diagrams.

Implementation Stage

At this stage the system was developed using the programming languages php, python and html. for the database using the mysql application as well as the ubuntu server to run / running the program.

Verification Stage

The testing phase is carried out to ensure that several series of processes have been made in the previous stage, black box testing is carried out to fulfill program functions according to user needs.

Maintenance Stage

This final stage is system maintenance in software development that has been made to improve service to the needs of the new system and minimize bugs in the previous system.

Functional Requirements

Is an illustration of a need for service activities carried out by users in the system. The following is descriptive of user needs as follows.

Table 1. Functional Requirements

No	Actor	Description
1.	Head of Division (Kabid)	System Login Receive incoming mail Receiving Outgoing Mail Giving a Letter Disposition See Disposition Results
2.	Secretary	System Login Receive incoming mail Receiving Outgoing Mail Validating Letters Receiving Disposition
3.	Employee	System Login Manage Incoming Mail Manage Outgoing Mail See Disposition Results
4.	Outside Agency	Send Outgoing Mail Receiving Incoming Mail

Non-Functional Needs

A requirement that prioritizes devices and is property in the form of hardware (Hardware), human resource requirements (Brainware) and also software requirements (Software) [V.Rajlich, 2016].

3. RESULTS AND DISCUSSION

Use Case Diagrams

Use Case Diagram description of the interaction of one or more actors in a system that has been created.

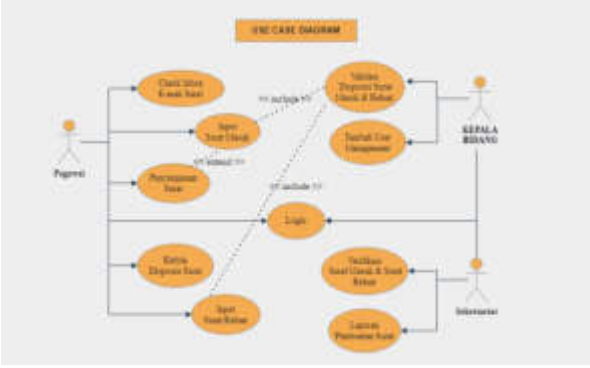

Figure 2. Use Case Diagram

Class Diagrams

Class Diagram is a diagram in the form of class, attribute, structure which has a very clear relationship between each object. The following is an overview of the system model using the Class Diagram:

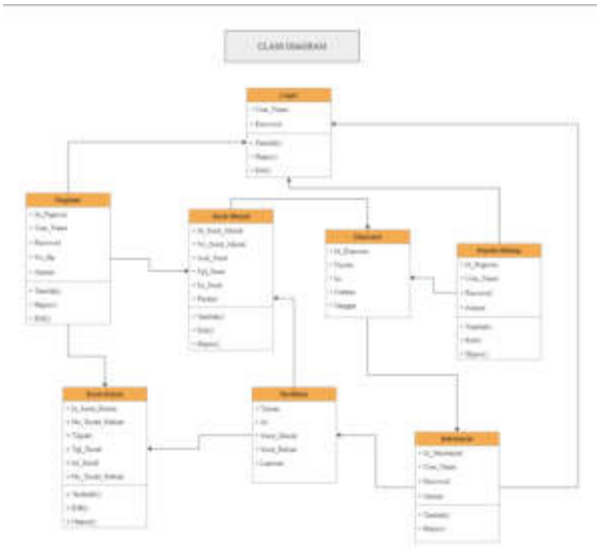

Figure 3. Class Diagrams

Activity Diagrams

Activity Diagram Designing a web-based incoming and outgoing mail information system at DISKOMINFO Tapanuli Tengah which is described in the form of workflows, activities and selection or repetition actions as follows:

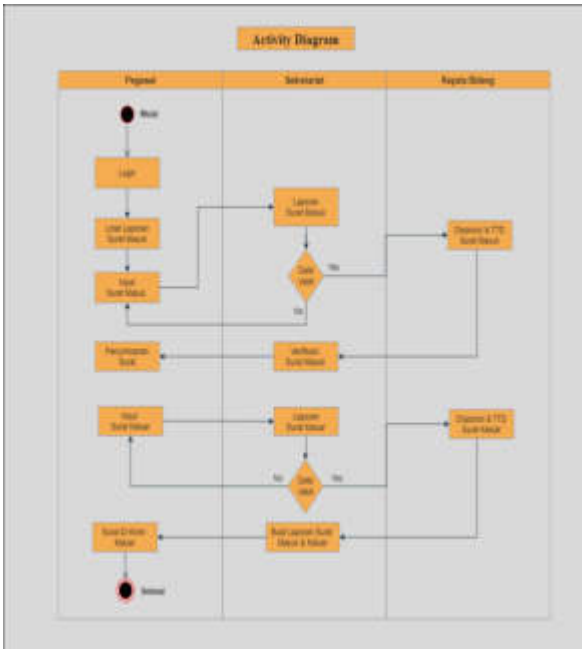

Figure 4. Activity Diagrams

System Implementation

The following shows the results that have been developed during the implementation and testing stages in the waterfall method as follows:

Figure 5. Login Page

The login page is a page where the user enters with a user and password that has been validated by the system according to the access rights that have been created.

Figure 6. Dashboard Page

The Dashboard page is a continuation page after successfully entering the username and password on the login page. This page displays some information on incoming and outgoing mail data, user management, letter graphs.

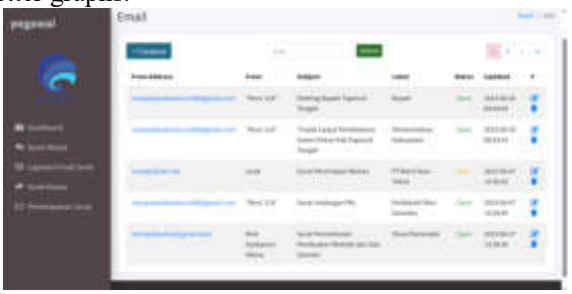

Figure 7. E-mail Letter Page

The e-mail page is a page that receives and sends letters from outside agencies.

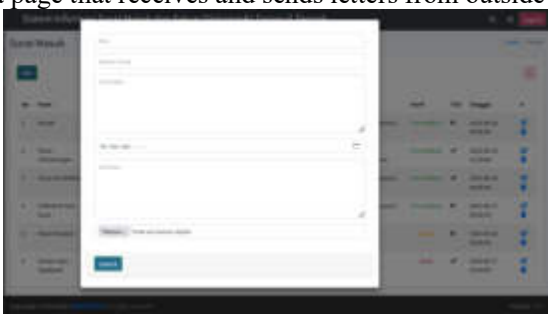

Figure 8. Add Incoming Mail

Add incoming mail is used to input incoming mail again which will be addressed to the head of the field and secretary of the Communications and Information Service for follow-up.

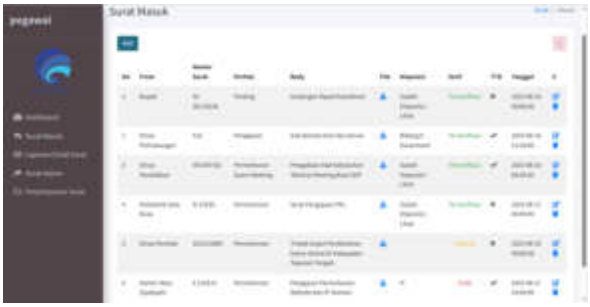

Figure 9. Incoming Mail Page

Incoming mail page is a page that displays all incoming mail information that has been processed further or not

Figure 10. Add Outgoing Mail

Add incoming mail is used to make a reply letter for purposes of outside agencies and will be approved if the letter has been signed by the head of the field.

Figure 11. Outgoing Mail Page

Outgoing mail page displays all outgoing mail information that has been processed further.

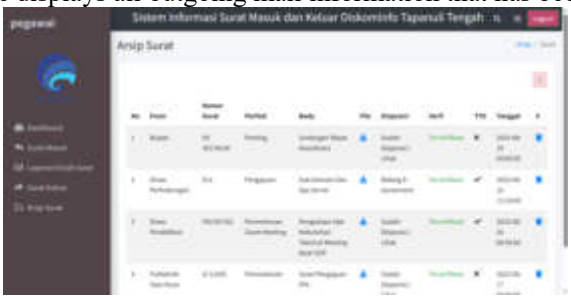

Figure 12. Mail Archive Page

Mail archive is a page that displays letters that have been disposed and verified by the head of the field and the secretariat and then submitted to employees to be saved to the letter archive page.

Figure 13. User Manage page

The user page is a page that can only be accessed by the field head and is used to add employee users to process the flow of incoming and outgoing mail.

System Testing

Black box testing aims to allow writers and users to facilitate testing of the system so that it can be used and the system functions properly.

Table 2. Black Box Testing

No	Tested function	How to test	Interfaces	Results
1.	Login	The user enters the Username and Password	The user enters on the dashboard page with the steps that have been made.	valid
2.	Incoming mail	Click Add on the incoming mail page	A list appears to input incoming mail	valid
3.	Outgoing mail	Click Add Outgoing Mail	A list appears to input outgoing mail	Valid
4.	Mail Archive	Click Mail archive at the bottom of the edit	The letter is saved to the mail archive page	Valid
5.	Letter Verification	Click the edit button on the right side of the letter	The verification list page appears	Valid
5.	Letter Signature	Click the edit button on the right side of the letter	The letter disposition page appears	Valid
6.	User Management	Click the user manage page	Displays multiple user pages	Valid

4. CONCLUSION

Based on the outcomes of letter writing and discussion at DISKOMINFO Central Tapanuli Regency, the following can be concluded: a) With the transition to web-based incoming and outgoing correspondence, the Central tapanuli kominfo office will reduce the potential for excessive paper usage. b) With a web-based email system, it is simpler for users to search for archived letters, which can be accessed from any location with a network connection. c) The web-based incoming and outgoing mail system enables collaboration between various agency parties from outside or within the organization, making it easier for users to share information; d) With this web-based mail system, time effectiveness and efficiency make it simple to send outgoing letters in a short amount of time.

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