Jurnal Mantik
Volume 4, Number 1, May 2020, pp. 647-653 E-ISSN 2685-4236
https://iocscience.org/ejournal/index.php/mantik

Implementation of the Waterfall Method for Designing Sisar (Archive Information System) at the National University

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ARTICLE INFO

Article history:
Received: 04/04/2020
Revised: 20/04/2020
Accepted: 30/05/2020

Keywords:
Archives,
Letters In,
Letters Out,
Information, Systems

ABSTRACT

Technology that is constantly increasing we are required to follow it. One of them is in making system that can be applied to the community in various ways to facilitate its use. In an organization/institution a system is needed to facilitate the regulation of incoming and outgoing data. Especially in the case of letter archiving. Because after conducting a case study at the National University Administration Bureau, it was found that managing the filing of letters was still done manually and was not well organized, therefore a neat and orderly information system was needed. In this archive system it is necessary to store, update incoming and outgoing letters and provide reports of incoming outgoing letters if needed. It is hoped that with the realization of this archive system, managing correspondence is more structured and helps in the complete information process.

1. Introduction

The rapid technological advancement that is demand by humans to create sophisticated, effective and efficient technology[1]. Likewise, the government / organization environment requires technological advancements. In management, management is very important to get accurate, accurate, and fast information[2]. One of the information used by the government / organization is the archive. Because the important role of records in an organization is to support the work done by all employees of the organization.

The purpose of archiving is as a container of information if at any time requires information that is in the archive, we can easily and quickly find it[3]. In achieving these objectives, effective and efficient archive management is needed. The most appropriate in managing the archive is to form a filing system because with this information system, we can search any archive if needed, and can be easily found quickly and accurately. This filing system also helps in structured structuring[4].

At the National University Administration Bureau where the duties, principles and functions are administrative services. Where in the storage of correspondence both incoming and outgoing letters are still done manually. Storage physically stored in a cupboard. This causes the need for a very large space in storage. And in the process of finding correspondence, it is difficult for employees to find it. This has become inefficient in time and effort[5].

To solve the above problem, the National University Administration Bureau needs to change the storage scheme that is now used, namely manually into a digital filing system[6]. This Archive Information System will later be web-based. In this archive information system, there are incoming and outgoing mail features that are softcopy stored and searching features that greatly facilitate the search for incoming and outgoing mail. It also features a printed report on incoming and outgoing mail reports per month if needed[7].

2. Research methods

2.1 Research methods in data collection are as follows:

A. Observation

Activities undertaken to find out information that is useful as research material.

B. Interview

Question and answer activity to complete some data meetings from other techniques.

C. Literature review

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Literature study is collecting books related to case studies that are being studied as reference material for writers.

2.2 The method in developing this system uses Mtode Waterfall

The Waterfall method or also called a waterfall. This method is a software system process that is used to develop or change using models that others can use[9][10]

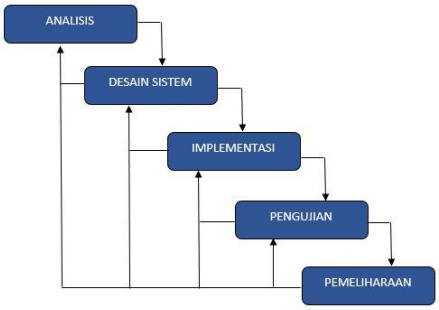

Fig 1. Waterfall method

A. Analysis

This stage is the initial stage in the research. To identify the problems that exist and what needs will be needed in designing the system, after understanding the previous workflow.

B. System Design

This system design is a stage of design and regulation starting from the database, system architecture and interface that will be made as a whole so that later it will function properly.

C. Implementation

At this stage, making the program code that refers to the previous system design that has been made. Then testing whether the system is in accordance with the design needed or not.

D. Testing

This test is carried out to ensure that the system output is in accordance with the system designed

E. Maintenance (Maintance)

This stage is the last step of this method to perform system maintenance if an error occurs in the previous step.

3. Results and Discussion

3.1 *Usecase Diagram*

Usecase Diagram emphasize the system's functionally of how the systems are connected to one another or interact. The following for the actors involved are:

- User

  Users login to the system with a username and password acting as a manager of mail and user data[11].

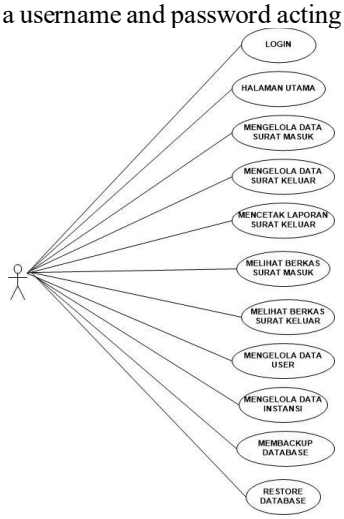

Fig 2 Use Case Diagrams

3.2 *Activity Diagram*

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Activity Diagram explain how the user flow to make the process of accessing information available on the system[11].

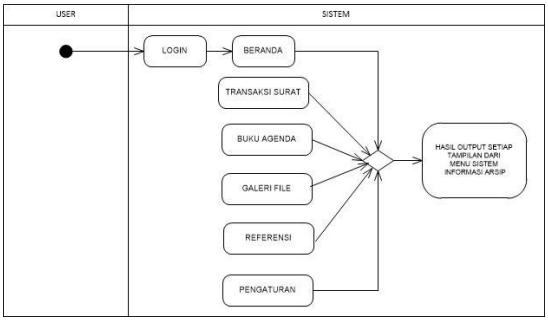

Fig 3 Activity Diagram

3.3 *Sequence Diagram*

Sequence Diagram show systems activities that are designed about how the system's sub menus begin and also how the system ends[11].

3.4 *Class Diagram*

Class Diagram shows the classes or packages that will be used on the system[11].

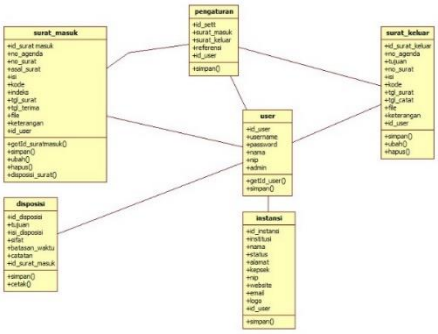

Fig 4 Sequence Diagram

3.5 *Login Form*

The Login Form functions as a system security specifically for a user of the website and as an initial step into the system by entering a username and password.

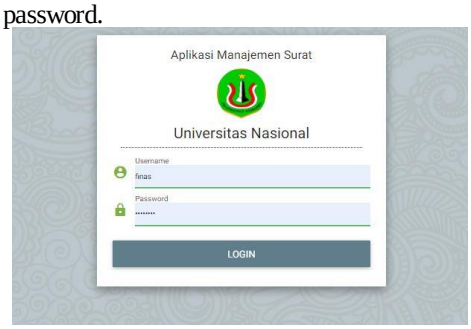

Fig 5. Login Display

3.6 Main Display (Home)

The initial appearance of the website if the user managed to log into the system and the initial appearance to see the menu tabs on the system

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Fig 6. Main Display (Home)

3.7 Incoming Mail Form

This form serves to fill in the incoming mail that will be entered into the system. The inbox input form contains the origin of the letter, letter number, date and subject.

Fig 7 Incoming Mail Form

3.8 Outgoing Mail Form

Form that serves as the addition of outgoing mail and also forms to fill outgoing mail that will be input into the system.

Fig 8. Outgoing Mail Form

3.9 Display of Incoming and Outgoing Letters Agenda Book

This display functions as a bookkeeping or report of incoming and outgoing letters that can be printed every month or every desired date.

Fig 9. Display of Incoming Agenda Book

Fig 10. Display Outgoing Agenda Book

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3.10 Display Gallery of Incoming and Outgoing Letters

Fig 11. Display of the Inbox Gallery

Fig 12. Display of Outgoing Mail Gallery

3.11 Reference Form

The Reference Form functions as a reference to where the inputted letter will be categorized and the data reference can be changed as needed.

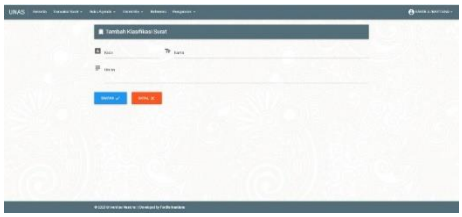

Fig 13. Display Reference Form

3.12 Display Institution Settings

Set a profile automatically if at any time it needs to be changed

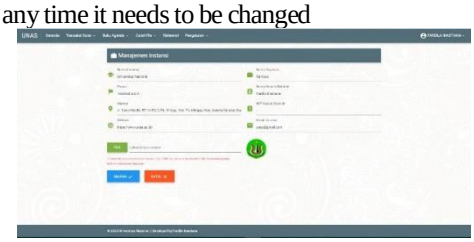

Fig 14. Display Institution Settings

3.13 Display User Settings

Set user username and password data

Fig 15. Display User Settings

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3.14 Database Backup Display

The function on this page is to back up the database periodically to create a backup that can be restored whenever needed.

Fig 16. Display Database Backup

3.15 Display Restore Database

The function on this page is to restore the database from the backups that have been made previously.

Fig 17. Display Restore Database

3.16 System Testing

Testing used for Archive Information Systems (SISAR) is Black Box Testing. Where the Black Box testing method performs a tes whether every function in the program can run smoothly regardless of the control structure in the program.

Table 1
System Testing

Function Name	Form of Testing	Expected results	Test result
Login	a. Valid username and password b. Invalid username and password	a. The system accepts login credentials and displays the home page (main page) b. The system displays a message that the username and password do not match.	a. Validation is valid, the system accepts login access b. Validation is invalid, the system displays a message that the username and password do not match.
Add incoming and outgoing mail	Input incoming and outgoing letters in accordance with important matters recorded on the letter.	The system can add incoming and outgoing letters based on the origin of the letter, letter number, letter date and subject matter.	Validation is valid, the system can add incoming and outgoing mail.
Displays the agenda book for incoming and outgoing mail	Search for incoming and outgoing mails based on the desired date	The system can display the agenda book incoming and outgoing mail that has been stored according to the desired date or month.	Validation is valid, the system can display the agenda of incoming and outgoing mail according to the desired date or month.
Displays a gallery of incoming and outgoing mail files	Search for incoming and outgoing mail files in pdf format based on the desired date	The system can display incoming and outgoing mail files in pdf format based on the desired date.	Validation is valid, the system can display incoming and outgoing mail files in pdf format based on the desired date.
Add letter references / categories	Input a reference / category letter	The system can add references / categories of letters.	Validation is valid, the system can add a reference / category letter.
Backing up the Archive Information System Database	By clicking on the "Backup" button on the Backup database menu	The system can successfully backup the archive information system database.	Validation is valid, The system can successfully backup the archive information system database.
Restore Database	By selecting the database file that was created earlier then click the restore button.	The system can run normally and does not experience errors.	Validation is valid, the system can run normally and does not experience errors.

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4. Conclusion

Based on the design of the system that has been implemented, the conclusions are as follows:

a. The application of the Archive Information System (SISAR) at the National University facilitates the process of archiving, saving space on archiving, time of filing, and the process of searching for archives.
b. The design of this system will improve the efficiency and effectiveness of work carried out by employees of the National University Administration Bureau.
c. Documents are kept safe.

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