Development of Web-Based Archiving Management System Using Extreme Programming Method at PT Media Medan Pers

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Abstract
Effective archive management is one of the key factors in supporting the smooth operation of a company. PT Media Medan Pers faces challenges in traditional archive management, such as time-consuming archive searches, the risk of data loss, and limited accessibility. This study aims to develop a web-based archive management system using the Extreme Programming (XP) method to improve the efficiency, accuracy, and accessibility of the company's archive data. The XP method was chosen because of its iterative and collaborative approach, allowing software development that is responsive to user needs. The development process is carried out through four main stages: planning, design, coding, and testing. This system is designed with key features, such as keyword-based archive search, archive category management, digital document upload, and user authorization-based access. The results of the study show that this web-based archive management system has succeeded in reducing archive search time by up to 50%, increasing the reliability of data storage with an automatic backup mechanism, and providing easy access for users through a user-friendly interface.

Keywords: System, Archive, Website, Extreme Programming, Data Flow Diagram.

Introduction

Along with the development of current information systems, many information systems in organizations want to reach the stage of information systems quickly, relevantly and accurately. The rapid growth of science and technology, especially in the field of computers in every aspect of life and the use of computer technology and communication technology that produces a combination of information systems that are currently easy to access without time and distance restrictions using the internet network. The increasingly rapid advancement of technology has encouraged the development of information, one of which is the Data Archive Management Information System at PT Media Medan Pers.

The stages of research carried out by the author, namely by observing and conducting field reviews, the author found a problem or obstacle experienced by data processing employees at PT Media Medan Pers which resulted in an obstacle in work activities. With the development of technology, archives can be in the form of a digital system. Given the increasing number of archives created and received by Bawaslu Sumut, it is necessary to have archive management which is better known as the archiving system through several jobs or activities to manage the archives in the data processing of PT Media Medan Pers.

This study aims to conduct a business process analysis to identify the needs of PT Media Medan Pers, design the proposed system process using Data Flow Diagram (DFD) and build a web-based archiving management system and implement the system in a user-friendly manner. This system is expected to provide information quickly and accurately to improve services.

Literature Review

According to Sutabri, a system is a collection or set of elements, components or variables that are organized, interact with each other, are interdependent on each other and are integrated[1]. According to Edhy Sutanta, an information system is a collection of interconnected subsystems, gathered together and forming a single unit, integrating and cooperating with each other in a certain way to perform data processing functions, receiving input in the form of data, then processing it (processing), and producing output in the form of information as a basis for making decisions that are useful and have real value that can be felt both at that time and in the future, supporting operational, managerial, and strategic activities of the organization, and utilizing various resources that exist and are available for these functions in order to achieve goals[2].

Archives are the results of recording an event or activity that has occurred, so archives must be maintained and preserved so that they continue to exist. In today's era, archive storage can be done with several media, both print and electronic (online). Archive management has been regulated in the Republic of Indonesia Law Number 43 of 2009 concerning Archives. This Law covers all matters relating to archives and archiving[3]. Archives comes from the Dutch word archief [4] which has several meanings as follows: (1) A place for regularly storing archival materials: written materials, charters, letters, decisions, deeds, lists, documents, maps; (2) An orderly collection of these archival materials; (3) The materials that must be archived themselves.

Website can be interpreted as a collection of pages containing digital data information in the form of text, images, animations, sound and video or a combination of all of them provided through an internet connection so that it can be accessed and viewed by everyone around the world. Website pages are created using a standard language, namely HTML. This HTML script will be translated by a web browser so that it can be displayed in the form of information that can be read by everyone.[5]. A website is a collection of HTML documents owned by a person or company that contains information and is located on a Web Server (a computer that functions to store information and manage computer networks) and can be accessed by all internet users.[6].

HTML stands for Hypertxt Markup Language, a language used to write web pages. Usually has the extension .htm, .html, or .shtml. HTML is composed of tags, used to determine

the appearance of the HTML document translated by the browser. HTML tags are not case sensitive. So you can use <HTML> or <html>. Both produce the same output[7].

PHP stands for Hypertext Preprocessor which is used as a server-side scripting language in web development that is inserted into HTML documents. PHP is open source software that is distributed and licensed for free and can be downloaded freely from its official website http://www.php.net[8]

Extreme Programming (XP) is a software engineering development that targets small to medium-scale teams, and this method can also be used for system development with unclear requirements or very rapid changes to requirements, XP or better known as extreme programming is an approach or modeling language for software development that analyzes and simplifies various levels of development so that it can be easier to use and practical. XP not only focuses on coding but also on all parts of the software development area[9].

Data Flow Diagram (DFD) is a tool used in structured system development methodology (Structured Analysis and Design). DFD symbols are divided into 2 versions, namely the Gane/Sarson version and the Youdon/De Marco version, but still have the same symbol meaning [10]. DFD development usually uses a tiered method. Starting from the Context Diagram, DFD level 1, level 2 and so on according to the complexity of the system being developed. A context diagram is a diagram that consists of a process and describes the scope of a system. The context diagram is the highest level of DFD that describes all inputs into the system or outputs from the system that provide an overview of the entire system[10].

Research Methodology

Approach Method

This research uses the Extreme Programming method approach, which is an approach or modeling language for software development that analyzes various stages of development so that it can be easier to use and more practical.

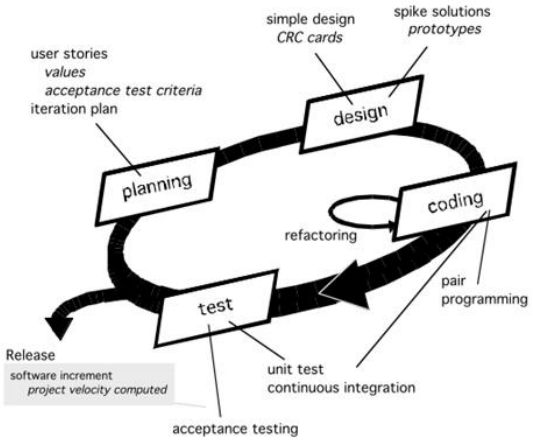

Figure 1. Extreme Programming Scheme

Location and Time of Research

The location of the research was conducted at the MBKM partner of the Computer Systems Study Program, namely PT Media Medan Pers, located at Jalan Sisingamangaraja Km 8.5 No. 134, Timbang Deli, Medan Amplas District, Medan City, North Sumatra 20148. The research period was from October 2024 to December 2024.

Data collection technique

1. Observation, is one of the data collection methods that is quite effective for studying a system. The activity is by conducting direct observation of the data archiving management process activities.
2. Interviews, conducted by communicating directly with the employees concerned regarding the procedures for activities that take place in carrying out data archiving.
3. Library Research, conducted to obtain data on web-based data archiving management from various reading sources such as web programming books, database management, data archiving and others.

Results

System Requirements Analysis

Based on the results of the field study that has been conducted, 2 types of files were obtained that are important for management to archive, namely incoming and outgoing letters. The following are the results of the system requirements analysis.

Table 1. System Requirements

Users	Requirements
Researcher	1. See the existing correspondence archiving process and mechanism. 2. See the admin's needs as a processor of incoming and outgoing mail. 3. See the process of incoming and outgoing mail procedures. 4. See the tools needed for the process of storing incoming and outgoing mail.
Administrative Employee	1. Processing overall data on incoming and outgoing mail, both from the incoming and outgoing mail processing procedures.

Design Results

The context diagram contains entities that are sources of data flow or data destinations related to the information system and where the information will be given. The following is the result of the context diagram design of the archive management system.

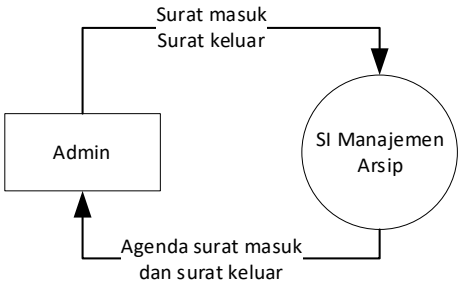

Figure 2. Context Diagram Design

Data Flow Diagram (DFD) level 1 is a derivative or further stage or details of the context diagram DFD, where all processes in DFD level 0 will be detailed in full so that they are more complete and detailed. The main processes that exist will be broken down into sub-processes.

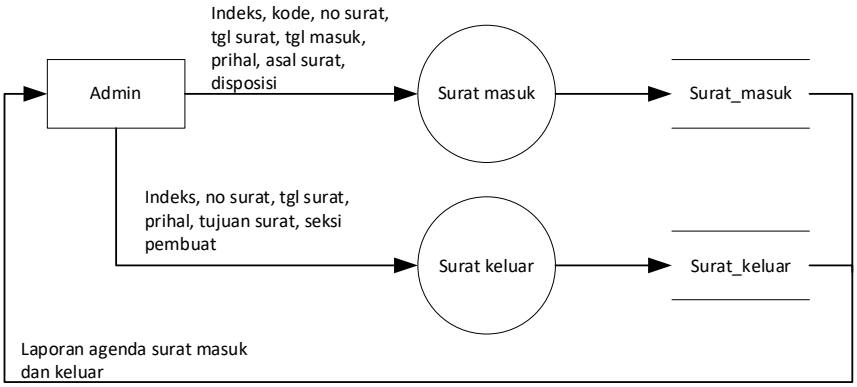

Figure 3. DFD Level 1 Design

Discussion

On the login page, the admin as the user of this system enters the username and password to be able to access the system as a whole. By logging in as an admin, you can later add, edit, or delete letter data in this system.

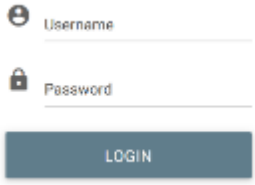

Figure 4. Login Page View

The Incoming Mail Entry page is accessed through the Mail Entry menu then select the Incoming Mail submenu. This page has a table to display incoming mail data that has been entered previously. The table on this page has columns to describe incoming mail including index, letter code, letter origin, subject and file, letter number, letter date, and letter entry date.

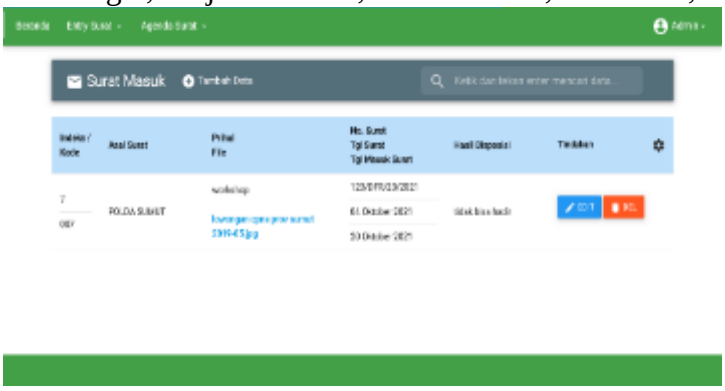

Figure 5. Incoming Mail Entry Page View

The Incoming Mail Attachment Preview page can be accessed via the incoming mail entry page, namely in the "Subject and File" column, where previously the user has entered the physical scan data of the incoming mail as a file attachment on the add incoming mail page.

Figure 6. Incoming Mail Attachment Preview Page View

The profile page can be accessed through the Admin menu and the profile submenu. This page contains information about system users. Users can change their username and password to log in to the system. In addition, users can also change their username.

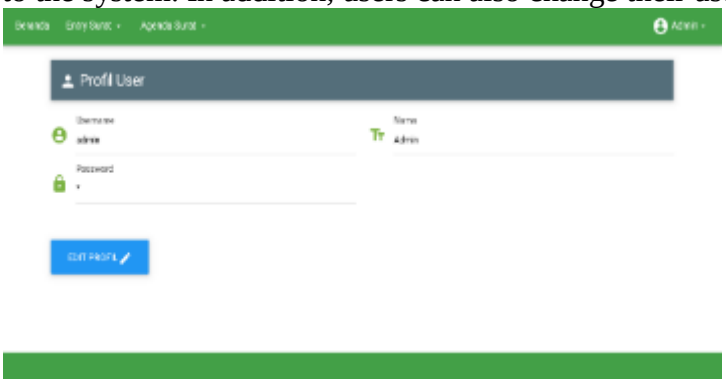

Figure 7. Profile Page View

System Testing

At this system testing stage, the author did several structured things to see the results of the system trial that will be used to manage incoming and outgoing mail archives.

Table 2. System Test

No	Test Class	Test Scenario	Expected Results	Description
1	Admin login	Enter username and password according to the database	Data can be processed without any error messages	According
2	Home	The main page display consists of information about correspondence.	Displaying the home menu, admin can view and update correspondence	According
3	Incoming mail	a. Adding incoming mail b. Editing incoming mail c. Deleting incoming mail d. Searching incoming mail	a. Data can be input and processed b. Data can be edited and processed c. Data can be deleted d. Displays the searched letter data	According
4	Outgoing mail	a. Adding outgoing mail b. Editing outgoing mail c. Deleting outgoing mail d. Searching outgoing mail	a. Data can be input and processed b. Data can be edited and processed c. Data can be deleted	According

			d. Displays the searched letter data	
5	Letter Agenda	Search for mail agenda (incoming and outgoing mail) according to period	Displays incoming and outgoing mail data searches according to the input period.	According
			Print the search results for incoming and outgoing mail data according to the input period.	According
6	Profile	Information about user profile	Displaying user profile	According
7	Change password	Info about editing profile	Show edit profile	According

Conclusion

Here are some of the conclusions of this study, obtained from the design and testing of the archive management information system at PT Media Medan Pers, as follows:

1. This system has been able and appropriate in managing incoming and outgoing mail archives such as the letter management process at PT Media Medan Pers.
2. This system has been able to provide convenience to the Admin in processing and processing archives.
3. The results of the tests carried out by the author on this system show that the functions contained in the application run well and are in accordance with the needs and designs.

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